U.S. Military Assistance to International Health Emergency Response:
Examining Frameworks for an Ebola-like Disaster in the Asia-Pacific

After-Action Report
28-29 January 2015
Honolulu, Hawaii
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On January 28 and 29, 2015, Banyan Analytics conducted U.S. Military Assistance to International Health Emergency Response: Examining Frameworks for an Ebola-like Disaster in the Asia-Pacific, a two-day tabletop exercise and high-level discussion involving domestic and international participants. This tabletop exercise provided an opportunity to discuss approaches for effective, coordinated international response to a health emergency. The exercise aimed to

- improve participants’ understanding of the use of U.S. military assets during an international health emergency,
- identify solutions that increase effectiveness of U.S. military support during international health emergencies, and
- develop participants’ understanding of and ability to apply the basic principles of risk communication.

This report summarizes participant discussions, provides supplemental information to expand on key issues in the discussions, and contains additional analysis related to challenges identified during the tabletop exercise. It includes recommendations for actions that the U.S. Government should take to help improve its capability to support partner nations in the Asia-Pacific for health emergencies. It further identifies potential needs for further analysis to address issues identified by participants during the tabletop exercise. This report is intended to provide a foundation for understanding international disaster response processes and inform decisions on the use of U.S. military assets in response to foreign health emergencies. Proposed recommendations and analyses aim to improve U.S. response in support of partner nations and in turn support U.S. foreign policy goals.

Key Findings Summary

- Though public health investments have established some necessary response systems, many countries still lack the capacity to fully and effectively respond to a large disease outbreak. Given these capability gaps, investment in partner capacity building would better position partner nations in the Asia-Pacific to contain an outbreak before it becomes a crisis.
- Engagement and coordination with all partners involved in response to an international health emergency is a challenge that could benefit from better frameworks to help organize and expedite the provision of support.
- Health emergencies involve activities not conducted in response to other types of natural disasters, so a clear understanding of needs is necessary to identifying the required resources and appropriate provider of those resources.
- The current response system for health emergencies is too slow to address the rapidly evolving needs of a growing epidemic, and may be further delayed by time-distance factors.
within the Asia-Pacific.
• Force protection issues will impact the scope of U.S. military support in a country with an infectious disease outbreak.
• Regional stability considerations may impact provision of U.S. support and could involve a transition from humanitarian operations to military support of the host country.
• Existing risk communication resources can guide the development of risk communication strategies that ensure effective messaging to differing audiences during a health emergency.

Key Challenges
• Ensuring the capacity to coordinate and communicate among various partners involved in international response
• Initiating and maintaining public health preparedness investments
• Conducting timely needs assessments and determining the appropriate type and scope of response for a health emergency
• Maintaining regional stability during a health crisis
• Conducting effective risk communication to different target audiences during a health emergency

Action Items
• Engage regional forums such as ASEAN, NGOs, and private-sector partners on coordination of international disaster response
• Educate on the process for requesting and using U.S. assets, including military assets, in international disaster response
• Develop regional response agreements and an international coordination framework to allow for more rapid delivery of resources
• Continue further expansion of outreach programs in the Asia-Pacific to establish relationships and build partner capacity
• Develop a framework for joint risk communication with partner nations in the Asia-Pacific

Areas for Further Research
• Determine metrics for global public health preparedness to guide investment in existing and new systems
• Develop indicators and triggers for health crises
• Develop an effective funding mechanism for international disaster response
• Conduct a cost-benefit analysis of using U.S. military assets in international health emergencies
• Conduct analysis to determine the impacts of using or altering standing rules of engagement
• Analyze disease outbreak impacts on local and regional stability in the Asia-Pacific
# Exercise Overview

<table>
<thead>
<tr>
<th>Exercise Name</th>
<th>U.S. Military Assistance to International Health Emergency Response: Examining Frameworks for an Ebola-like Disaster in the Asia-Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise Dates</td>
<td>28-29 January 2015</td>
</tr>
<tr>
<td><strong>Scope</strong></td>
<td>The exercise was a tabletop exercise and high-level discussion focused on response to an international health emergency that lasted for two days. Day One of the exercise featured four moves:</td>
</tr>
<tr>
<td></td>
<td>• Move 1: Asiana in Crisis: A discussion related to the provision of international support to an Ebola outbreak in the fictional Asia-Pacific island nation of Asiana.</td>
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<td>• Move 2: Planning for Effective Response: A discussion of determining and utilizing the appropriate response assets, including U.S. military assets.</td>
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<td></td>
<td>• Move 3: Managing In-Country Support: A discussion of challenges arising from the unique nature of a health emergency including issues such as health safety and civil unrest.</td>
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<td></td>
<td>• Move 4: Risk Communication: Introduction to risk communication principles followed by a short message-development activity.</td>
</tr>
<tr>
<td>Mission Area(s)</td>
<td>Response</td>
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</tbody>
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Objectives

- Participants will identify challenges and barriers that international partners face when requesting and utilizing military assistance.
- Participants will identify and discuss military assets that are applicable in the various stages of a health emergency.
- Participants will discuss equipment and training requirements to ensure that personnel are safe during response.
- Participants will identify shortfalls in current plans, policies, and procedures for responding to international health emergencies.
- Participants will suggest solutions to identified challenges and barriers.
- Participants will develop risk communication messages for deployed military personnel and their families.
- Participants will discuss strategies for communicating effectively with stakeholders, communities, and the general public.

Threat/Hazard

Outbreak of Zaire ebolavirus (Ebola)

Scenario

**Move 1:** An outbreak of Zaire ebolavirus has been confirmed in the nation of Asiana, one of the least developed countries in the Asia-Pacific. With its population already suffering from widespread poverty, malnutrition, and lack of access to clean drinking water and healthcare, Asiana is quickly overwhelmed by the Ebola outbreak. Although Australia and Japan have sent medical teams to help, international bodies such as the World Health Organization (WHO) and Médecins Sans Frontières (Doctors without Borders) cannot provide significant support due to their concurrent Ebola response efforts in West Africa. Recognizing that his country does not have the capacity to mount an effective response, the Prime Minister of Asiana has convened a meeting of foreign experts and U.S. Government and military officials to discuss how to request and coordinate international assistance, with a focus on assistance from the U.S. Government and military.

**Move 2:** The Prime Minister of Asiana decides to request U.S. assistance. The National Security Council Staff and the lead federal agency, the U.S. Agency for International Development (USAID) Office of Foreign Disaster Affairs (OFDA), coordinate efforts regarding the request. USAID OFDA begins assessing interagency capabilities to support Asiana. Given the situation and the presence of military support to the response in West Africa as a precedent, use of U.S. military assets in Asiana may be likely.
Scenario

**Move 3:** The U.S. Government mounts a major interagency response that includes USAID OFDA, the Centers for Disease Control and Prevention (CDC), the U.S. Public Health Service, and the Department of Defense (DoD). The U.S. military deploys over 2,000 troops in various support capacities, including logistics support, command and control, engineering support, and public health and medical training. The U.S. assists in constructing outpatient clinics to expand medical capacity, although local populations not presenting at these facilities hamper response. During the course of the response, deployed personnel express concerns over whether the level of personal protective equipment (PPE) is adequate. In addition, incidents of civil disorder erupt in Asiana, disrupting response efforts and increasing the likelihood of disease spread.

**Move 4:** Families of deployed soldiers are concerned about their military loved ones. They ask what precautions were taken to prevent deployed soldiers from becoming ill, and what procedures would ensure their return without putting families at risk.

<table>
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<tr>
<th>Sponsor</th>
<th>Banyan Analytics</th>
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<tbody>
<tr>
<td>Participating Organizations</td>
<td>Participants included representatives from the U.S. Government, U.S. military, state and local governments, and the private sector. A full list of participants can be found in Appendix A.</td>
</tr>
</tbody>
</table>
| Point of Contact | Ms. Frances Veasey  
Deputy Director  
Banyan Analytics  
703.416.3347  
frances.veasey@anser.org |
Findings and Analysis

International Resources to Support Health Emergencies in the Asia-Pacific

*International Health Regulations*

Participants received information on the International Health Regulations (IHR) to establish a baseline of knowledge preceding the discussion. The information covered the general purpose of IHR guidance and the capacities of local governments to achieve IHR compliance. While the background information did not cover details, the information did provide a foundation for how IHR guidance related to the role of the WHO in international health disasters.

Research and Analysis: The International Health Regulations

The complexity of health emergencies requires a timely and coordinated response to control the spread of disease. To prepare for future emerging pandemics, the WHO established the International Health Regulations (IHR) in 2005. Signed by 194 member states, the IHR serve as a global mechanism for building public health capacity to contain the spread of health emergencies. The IHR set a global authority for preparedness and response activities for all threats, defining core capacities (Table 1) for each nation in order to effectively detect, assess, and report health events and notify the WHO.
<table>
<thead>
<tr>
<th>CAPACITY</th>
<th>LEVEL</th>
<th>REQUIREMENTS</th>
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</table>
| Legislation, Policy, and Financing | National | • Establish an adequate legal framework to support and enable implementation of all of their obligations and rights.  
• Adopt implementing or enabling legislation for some or all of these obligations and rights.  
• Adopt new or modified legislation to support the new technical capacities being developed.  
• Revise some legislation, regulations, or other instruments in order to facilitate implementation in a more efficient, effective, or beneficial manner, if desired.  
• Establish policies that identify national structures and responsibilities and otherwise support implementation.  
• Allocate adequate financial resources to support implementation. |
| Coordination              | National | • Establish a national public health emergency response plan that includes coordination of multisectoral and multidisciplinary approaches through national partnerships for effective alert and response systems.  
• Designate an IHR National Focal Point to serve as the center for IHR communications.  
• Ensure accessibility of the IHR National Focal Point at all times to communicate with the WHO IHR Contact Points and with all relevant sectors and other stakeholders in the country.  
• Provide WHO with annually updated contact details for the IHR National Focal Point. |
| Surveillance              | National Intermediate Community | • Rapidly detect public health risks and conduct prompt risk assessment, notification, and response to these risks.  
• Establish a sensitive and flexible surveillance system with an early warning function.  
• Clearly define the structure of the system and the roles and responsibilities of those involved in implementing the system, preferably through public health policy and legislation.  
• Identify chains of responsibility to ensure effective communications within the country, with WHO, and with other countries as needed. |
| Response                  | National Intermediate Community | • Establish command, communications, and control operations mechanisms to facilitate the coordination and management of outbreak operations and other public health events.  
• Establish multidisciplinary and multisectoral Rapid Response Teams to be available 24 hours a day, 7 days a week, for response to events that may constitute a public health emergency of national or international concern.  
• Provide appropriate case management, infection control, and decontamination capabilities. |

<table>
<thead>
<tr>
<th>CAPACITY</th>
<th>LEVEL</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparedness</td>
<td>National Intermediate</td>
<td>• Develop national, intermediate, and community or primary response-level public health emergency response plans for relevant biological, chemical, radiological, and nuclear hazards.</td>
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<tr>
<td></td>
<td>Community</td>
<td>• Map potential hazards and hazard sites.</td>
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<td></td>
<td></td>
<td>• Identify available resources and develop appropriate national stockpiles of resources.</td>
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<td></td>
<td></td>
<td>• Develop the capacity to support operations at the intermediate and community or primary response levels during a public health emergency.</td>
</tr>
<tr>
<td>Risk Communication</td>
<td>National Intermediate</td>
<td>• Establish a multilevel and multifaceted process that aims to help stakeholders define risks, identify hazards, assess vulnerabilities, and promote community resilience.</td>
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<td></td>
<td>Community</td>
<td>• Identify a method and the appropriate channels to disseminate information to the public about health risks and events, such as outbreaks of disease.</td>
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<td></td>
<td></td>
<td>• Plan to take into account the social, religious, cultural, political, and economic aspects associated with the event, as well as the voice of the affected population.</td>
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<td></td>
<td>• Communicate appropriate prevention and control action through community-based interventions at individual, family, and community levels.</td>
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<td></td>
<td></td>
<td>• Identify communication partners and stakeholders in the country.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Establish functional coordination and communication mechanisms.</td>
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<td></td>
<td></td>
<td>• Establish communication policies and procedures for the timely release of information with transparency in decision-making to build trust between authorities, populations, and partners.</td>
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<tr>
<td></td>
<td></td>
<td>• Develop, test, and update emergency communications plans, as needed.</td>
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<tr>
<td>Human Resources</td>
<td>National Intermediate</td>
<td>• Strengthen the skills and competencies of public health personnel regarding public health surveillance and response at all levels of the health system.</td>
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<tr>
<td></td>
<td>Community</td>
<td></td>
</tr>
<tr>
<td>Laboratory</td>
<td>National Intermediate</td>
<td>• Establish laboratory services (including detection, investigation, and response) for every phase of alert and response.</td>
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<td></td>
<td>Community</td>
<td>• Conduct laboratory analysis of samples either domestically or through collaborating centers.</td>
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<tr>
<td></td>
<td></td>
<td>• Establish mechanisms that assure the reliable and timely laboratory identification of infectious agents and other hazards likely to cause public health emergencies of national and international concern, including shipment of specimens to the appropriate laboratories if necessary.</td>
</tr>
</tbody>
</table>
The WHO set a June 2012 deadline to meet these core capacities for full implementation and compliance. However, due to the limited capacity of many individual nations, fewer than 20% of member states met the deadline.\(^2\) The IHR allowed countries unable to meet the deadline to request a two-year extension. By September 2012, 102 countries had requested extensions accompanied by national action plans to implement IHR capacities within that timeframe, while an additional 15 countries indicated the need for an extension but offered no national action plan.\(^3\) The IHR continued to offer two additional two-year extensions until June 2016.\(^4\) In the summer of 2014 in Europe alone, 21 nations requested an additional two-year extension.\(^5\)

As a signatory of the IHR, the United States follows in the process to identify and report public health events to the WHO. When the CDC becomes aware of an event through routine disease notification, media, or anecdotal reports, the agency invites state and territorial epidemiologists to assess the situation within 48 hours of notification. If the event meets criteria for reporting, the CDC notifies the IHR National Focal Point, which in the United States is the Department of Health and Human Services Secretary’s Operations Center, which then notifies the WHO of a potential public health threat that meets IHR assessment criteria (Appendix D). The WHO Director-General will then determine whether the situation meets the declaration criteria for a Public Health Emergency of International Concern, which is defined as “an extraordinary event which is determined, as provided in these Regulations:

- to constitute a public health risk to other States through the international spread of disease; and
- to potentially require a coordinated international response.”\(^6\)

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6 WHO role player presentation.

Similar to many nations, the fictional country of Asiana used for the exercise did not have the resources or capacity to conduct the surveillance, assessment, notification, and response required under the IHR. While the WHO does not have the resources, capacity, or mandate to fill in-country gaps or serve as a first response agency, the organization can serve as a coordinator to bring these countries together with donor nations that have the resources to help build capacity.\(^7\) Participants expressed concern about spread of the disease through the Pacific Islands due to issues such as high tourism rates and undocumented immigration. Some participants felt that these island nations are often overlooked in planning and response. The Western Pacific Region Office of the WHO covers these islands, which also fall under the IHR; however, many of these nations also lack the capacity to meet compliance requirements. Participants also noted that the international health community gained a good deal of experience and established a number of resources during pandemic influenza planning and preparedness and that countries should bring these resources to bear for other health events.

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\(^7\) WHO role player remarks.
Given the scenario, the WHO role player indicated that the WHO would declare the situation a Public Health Emergency of International Concern and ask Asiana and its neighboring countries to secure entry and exit points, conduct contact tracing, and look at incidence within the urban slums of Asiana’s capital, Pacifica. Due to limited capacity within Asiana, the country has difficulty monitoring and reporting on these urban slums where the outbreak has the potential to grow exponentially, as experienced in the 2014 West Africa Ebola outbreak. This outbreak became the first to hit urban centers, and the outbreak progression appeared to be strongly influenced by these urban settings. Biweekly counts of cases showed a significant peak reflecting movement of the disease into Liberia’s densely populated capital city of Monrovia.

Association of Southeast Asian Nations

Founded in 1967, the Association of Southeast Asian Nations (ASEAN) currently consists of ten member nations with the intent to use collaboration and cooperation to improve economic, social, and cultural advancement as well as political stability within the region. ASEAN hosts a number of intergovernmental centers and facilities to address research, development, and assistance in these areas, including the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management, also known as the AHA Centre. The AHA Centre focuses on coordination and cooperation among ASEAN member states, the United Nations, and international organizations for disaster management and emergency response in the ASEAN region. The AHA Centre serves as a focal point for information gathering, consolidation, analysis, and dissemination among member nations. During an emergency response within the ASEAN region, the AHA Centre also facilitates a joint emergency response between ASEAN members and external response partners.

In the scenario, the country of Asiana had been working towards joining ASEAN. Given its role in disaster coordination for ASEAN members, ASEAN would likely play a role in the response to the health crisis within the country. While ASEAN has coordination mechanisms identified for working with international partners such as the United Nations, participants described uncertainty regarding how the United States would coordinate with regional bodies such as ASEAN.

Participants noted that ASEAN member nations could use military assets to support response operations. This expectation arises from ASEAN’s efforts to improve the integration and use of its member nations’ military assets in humanitarian assistance and disaster relief responses. As an example of this commitment, the ASEAN Regional Forum highlighted the importance of military cooperation for disaster response during its 2011 disaster relief tabletop exercise in Manado, Indonesia. Moving a step further, ASEAN launched its first Humanitarian Assistance and Disaster Relief and Military Medicine Joint Exercise in 2013 involving all 10 ASEAN member states as well as eight partner dialogue nations: Australia, China, India, Japan, New Zealand, Russia, South Korea, and the United

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8 WHO role player remarks.
10 The ASEAN members are Indonesia, Malaysia, the Philippines, Singapore, Thailand, Brunei Darussalam, Viet Nam, the Lao People’s Democratic Republic, Myanmar, and Cambodia.
13 The ASEAN Regional Forum brings together ASEAN members and partner nations to facilitate dialogue on security and political issues within the Asia-Pacific region. The current participants in the forum are Australia, Bangladesh, Brunei Darussalam, Cambodia, Canada, China, the Democratic People’s Republic of Korea, the European Union, India, Indonesia, Japan, the Lao People’s Democratic Republic, Malaysia, Mongolia, Myanmar, New Zealand, Pakistan, Papua New Guinea, the Philippines, the Republic of Korea, Russia, Singapore, Sri Lanka, Thailand, Timor-Leste, the United States, and Viet Nam (http://aseanregionalforum.asean.org/about.html).
States.\textsuperscript{15} When responding to a disaster, ASEAN military assets do not carry weapons, and ASEAN member states maintain bilateral agreements to address concerns related to arming orders and force protection. If ASEAN uses military assistance, the supporting nations provide military-civilian liaisons to better integrate with the local response structure. Deployment of military forces in these situations is generally limited to a four-week period with the option to extend it if necessary.

Besides military support, ASEAN has mechanisms and programs to support information sharing, laboratory networks, and coordination. Disaster management and humanitarian assistance, however, remain a small portion of ASEAN’s capability. The Standard Operating Procedures within the AHA Centre assign $10,000 for assistance in a disaster, and any further funding would require fundraising efforts with the member nations.\textsuperscript{16} Due to the limited funding and focus on disaster management, participants noted that ASEAN might not be able to provide a large enough response for an Ebola-like disaster.

Participants also discussed whether ASEAN could provide assistance to a country that is within the region but not a member state. One participant noted that ASEAN would likely be proactive in this scenario and move quickly to provide assistance based on member states’ interest in maintaining stability within the region. Many ASEAN members have economies driven by industries such as tourism and shipping, both of which could be negatively impacted by the presence or potential threat of disease in the region. For example, the 2003 SARS (severe acute respiratory syndrome) outbreak had heavy impacts on the economies of ASEAN nations. In response, ASEAN leaders convened a meeting early in the outbreak to identify measures to detect, prevent, and contain spread of the virus. ASEAN implemented measures to (1) support information sharing not only among ASEAN members, but also with China and Hong Kong, (2) align departure screenings with WHO recommendations to help prevent the spread of SARS, and (3) coordinate public messaging strategies and education on SARS.\textsuperscript{17}

**Bilateral and Multilateral Support**

While nations may engage in response through international organizations and multilateral coordination mechanisms, they can also provide levels of assistance through bilateral engagement. The authority to deploy personnel to provide technical assistance may precede the establishment of a large-scale international response structure, as was the case with the CDC response that preceded the August 2014 Public Health Emergency of International Concern declaration from the WHO for the Ebola outbreak in West Africa.\textsuperscript{18} The United States will generally conduct coordination for this type of support through the relevant departmental agency via the ambassador.

Given the exercise scenario, participants stated they expected a regional response involving Asia-Pacific partners such as Japan and China. During the 2014 Ebola outbreak in West Africa, Japan provided medical and technical gear, medicine, relief supplies, and medical experts to support WHO missions.\textsuperscript{19} One participant also stated that Japan has packages for full sets of medical equipment to provide to local hospitals if needed. Japan can provide these sorts of resources through bilateral coordination.

Participants noted that China would also likely provide some support in the response efforts. Participants were unsure of the level and type of support that China would provide, however, because China does not participate in donor meetings within


\textsuperscript{16} Participant comments.


the region. China’s response capability is growing, and the country has efforts in place to improve disaster response capabilities, such as the Institute for Disaster Management and Reconstruction set up jointly by the Hong Kong Polytechnic University and Sichuan University. In 2014, this institute also established a partnership with the Asian Disaster Preparedness Center, an independent nongovernmental organization (NGO) focused on disaster risk management capacity building in the Asia-Pacific. China has also engaged with regional partners for disaster response and humanitarian assistance and disaster relief preparedness, including participation of the Chinese hospital ship Peace Ark in the 2013 ASEAN Humanitarian Assistance and Disaster Relief and Military Medical Joint Exercise.

Nongovernmental and Intergovernmental Organizations

NGOs, particularly humanitarian organizations, often play a central role in disaster response and relief efforts. These organizations have a different nature than donor nations due to their independent status. For example, participants stated that the International Federation of Red Cross and Red Crescent Societies is one of the few organizations that can immediately enter an area, including war zones, to begin working. Many large disaster response agencies have validated the Code of Conduct for the International Red Cross and Red Crescent Movement and NGOs in Disaster Relief, which establishes principles and ethical standards for humanitarian actors to follow when involved in international response operations. While the code is voluntary and self-policing, most NGOs strive to adhere to the code and maintain an impartial stance in disaster response.

NGOs include a diverse set of organizations that can offer a variety of resources to support response and relief efforts. Within the Asia-Pacific, organizations such as the Asian Disaster Preparedness Center support preparedness and capacity building. The response to the Ebola outbreak in West Africa involved participation by more than 60 NGOs in the areas of health promotion, case management, communication and social mobilization, contact tracing, and coordination. Médecins Sans Frontières served as the largest support provider, constituting nearly 5,000 staff members supporting treatment centers in Guinea, Liberia, and Sierra Leone. Besides treatment services, Médecins Sans Frontières provided outreach and training support to the affected nations. The Red Cross and Red Crescent provided support for safe burial practices, community education and engagement, emotional and psychological support services, and clinical case management.

Besides NGOs, participants identified intergovernmental organizations (IGOs), such as the World Bank and the United Nations, that can provide support for disaster response and relief. The World Bank is one of the leading disaster risk management organizations, providing financial and technical support to countries for disaster risk assessment and reduction measures. In partnership with 41 countries and eight international organizations, the World Bank also hosts the Global Facility for Disaster Reduction and Recovery to serve as the organization’s mechanism for managing disaster risks.

20 Hong Kong Polytechnic University, “Development Base in the Western Region (Sichuan [Institute for Disaster Management and Reconstruction]),” Regional Bases, Sichuan Centre, http://www.polyu.edu.hk/cmao/eng/?p=regional-bases&name=Sichuan-Centre.
22 Scott Cheney-Peters, “Southeast Asian Rivals Work Together in Disaster Relief Exercise.”
disaster risk management operations. The United Nations and its affiliated programs also provide significant support during disaster response. During the 2014 West Africa Ebola outbreak, the United Nations World Food Programme provided food for individuals within the impacted area in addition to logistical and infrastructure support. The United Nations Children’s Fund (UNICEF) programs worked to stop the spread of the virus and support children and families impacted by the crisis. UNICEF also became one of the largest providers of essential supplies to treatment and care centers.

NGOs and IGOs must coordinate with the host nation and other responding entities to ensure integration of response efforts and avoid duplication of efforts. In foreign disaster response, the U.S. Government would coordinate with many of these IGOs through USAID or the State Department, but some organizations would coordinate closely with other U.S. agencies. The World Bank, for example, could coordinate with the affected nation’s treasury and the U.S. Treasury Department for supporting response operations. Participants also stated that more recently there has been a shift toward increased cooperation between NGOs and responding military forces. Besides these organizations that fulfill requests for assistance made by the host nation, unsolicited organizations offer assistance but often operate outside of the established coordination mechanisms. Participants said that relationships and linkages for obtaining, using, and coordinating these resources need to be established and understood prior to an incident.

Research and Analysis: Cooperation and Integration of NGO and Military Disaster Response and Relief Operations

There can be disagreement when discussing the coordination and integration of NGO and military organizations to support humanitarian operations, with some arguing for integration and some arguing against. The case for this sort of integration highlights how successful civil-military interactions improve response operations and have become a necessity given the increased presence of militaries in disaster response operations. However, some argue that NGOs absolutely must not integrate operations with militaries, suggesting that such activity is at odds with the neutral and impartial nature of NGOs and highlighting the conflicting operational natures of NGOs and military forces.

In a 2006 article, the Executive Director of Médicins Sans Frontières–USA, Nicolas de Torrenté, stated that there is a fundamental incompatibility between using the military and conducting humanitarian operations and urged NGOs to avoid working in close cooperation with militaries. He highlighted dangerous precedents that can be set by coordinating humanitarian actions with military actors, referring to a speech given by Secretary of State Colin Powell in October 2001, when Powell referred to NGOs as a “force multiplier” and “an important part of our combat team.”

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discussing civil-military interaction during the response to floods in Pakistan in 2010 noted that the military lacked the necessary impartiality in its distribution of aid, which resulted in disproportionate amounts provided to specific communities, indicating a requirement for better needs assessments to drive decision-making for allocation of aid.\textsuperscript{32}

Military involvement in humanitarian affairs is not a new practice, but the military has been more engaged in recent years than ever before. Increased military involvement in humanitarian and disaster relief operations stems from factors such as the increasing incidence of natural disasters, increasing complexity of disasters, and increasing interest of governments in using the military in this manner. Militaries can serve as force multipliers and bring critical capabilities—such as large-scale logistics, search and rescue, and infrastructure support—to disaster response.\textsuperscript{33} In light of this trend, some advocate better civil-military integration for both civilian authorities and NGOs. A report on the floods in Pakistan in 2010 highlighted the complementary roles filled by humanitarian organizations and the Pakistani military forces.\textsuperscript{34} An evaluation of the humanitarian response credited prevention of massive loss of life to the use of the military in first responder roles for evacuating people and rapidly distributing relief supplies to isolated populations. In a complementary role, humanitarian actors had access to the needed relief supplies through international supply chains. One of the key conclusions of the report was that coordination between military and humanitarian actors is essential in large-scale natural disaster response.

In large-scale disasters involving multiple response organizations conducting varied response and relief operations, coordination needs to occur across all fronts to avoid duplication of efforts and ensure that gaps in capabilities are met in a timely manner. The expanding involvement of military forces in disaster response increases the likelihood that NGOs and militaries will interface, even if the coordination occurs indirectly through governmental or international organizations. Responding organizations must be educated about existing guidelines for military involvement in humanitarian operations.\textsuperscript{35} The report on the 2010 floods in Pakistan also suggested that the guidelines alone are insufficient and should be accompanied by a civil-military strategy to promote coordination and facilitate dialogue between humanitarian and military actors.\textsuperscript{36} Establishing a clear framework for coordination and outlining any necessary limitations can ensure that NGOs can continue to operate in a neutral and impartial status when the response involves military support.


\textsuperscript{33} Elizabeth Ferris, Future Directions in Civil-Military Responses to Natural Disasters, Australian Civil-Military Centre, May 2012, \url{http://www.brookings.edu/research/papers/2012/05/civ-mil-disasters-ferris}.

\textsuperscript{34} Ajay Madiwale, Peter Holdsworth, and Kudrat Virk, “Civil-Military Relations in the 2010 Pakistan Floods.”


\textsuperscript{36} Ajay Madiwale, Peter Holdsworth, and Kudrat Virk, “Civil-Military Relations in the 2010 Pakistan Floods.”
Private-Sector Integration

Though full discussion regarding the capabilities of the private sector in disaster response was outside the scope of the exercise, participants noted that the private sector contributes humanitarian support for disaster response and relief. Companies can provide support through expertise or resources, but many work outside of the official government coordination channels to avoid bureaucratic delays. While some private-sector donors work within an organized support structure, some groups self-organize and create a secondary, irregular operational capability in addition to the regular response structure.\(^\text{37}\)

Participant comments.

Research and Analysis: Integrating the Private Sector into International Disaster Response

The private sector can offer expertise, resources, and financial support for disaster response and relief operations. In response to the 2014 West Africa Ebola outbreak, businesses pledged $50.8 million in cash and in-kind donations to support relief and recovery efforts. Support offered by the private sector ranged from medical equipment such as respirators and masks to supplies of safe drinking water.\(^\text{38}\) The private sector can also provide extensive logistical support, often a capability provided by militaries during disaster response. The United Parcel Service, TNT Express N.V., Agility, and Maersk partnered to provide Logistical Emergency Teams for the response to Typhoon Haiyan, offering volunteer logistics staff and transportation services. These companies had the resources, expertise, and geographical presence to give the private sector a key role in managing supply chains and inventories for the World Food Programme’s relief operations.\(^\text{39}\)

Given the depth of expertise and capabilities offered by the private sector, governments and IGOs have established efforts to better integrate private-sector partners into disaster response and relief operations. In the United States, the National Response Framework (NRF) includes a Private Sector Coordination Support Annex to describe the policies, responsibilities, and concept of operations for federal incident management activities involving the private sector.\(^\text{40}\) The UN Office for the Coordination of Humanitarian Affairs (OCHA) established guidance for public-private partnerships

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\(^\text{37}\) Participant comments.

\(^\text{38}\) U.S. Chamber of Commerce Foundation, Ebola Outbreak—Corporate Aid Tracker, \url{http://www.uschamberfoundation.org/ebola-outbreak-corporate-aid-tracker}.


www.anser.org/banyan_analytics
in humanitarian operations, outlining how the private sector and the humanitarian community can engage in a collaborative and ethical manner for international disaster relief operations.41

A clear framework to guide coordination with private-sector entities on an international level, however, does not exist. In the 2011 response to the Fukushima Daichi disaster in Japan, coordination faltered due to a lack of clear roles and responsibilities to guide interactions among U.S. private-sector entities, the U.S. Government, the Japanese Government, and the Tokyo Electric Power Company. Despite the large nuclear industry expertise in the United States, U.S. companies received pushback when they attempted to make this expertise available.42 A 2014 report on private-sector engagement by UN OCHA highlighted barriers to collaboration between private-sector partners and aid agencies. These barriers included the lack of a clear representative of the different response communities within the coordination mechanisms, particularly with regard to the private sector, given the size and diversity of the private-sector community, as well as limited interactions and knowledge of engagement processes for both the private sector and aid agencies.43

To better integrate the private sector into international disaster response and relief operations, all parties (the private sector, national governments, NGOs, etc.) need to work towards establishing relationships prior to a disaster, expanding dialogue through existing forums, and establishing a framework to guide how to engage and integrate the private sector. Education on processes, agreements, and partnerships needs to extend to in-country offices. This planning and education can help avoid delays in response and reduce barriers towards use of private-sector resources in an international setting.


Existing Resources for Public Health Response

One of the speakers provided a presentation on existing resources that nations and international organizations had developed for previous threats that could be used to detect and contain future outbreaks. The presentation focused primarily on epidemiological capabilities developed through preparedness efforts focused on the pandemic influenza threat.
Pandemic Preparedness Investments

The following information is based on a presentation from an academic expert in the field of public health preparedness and response.

The 2003 outbreak of SARS drove much of the initial pandemic planning initiatives within public health systems worldwide and emphasized the importance of examining the issue at a global level. The appearance of the avian influenza strain H5N1 triggered global public health investments for preparedness and response to a potential pandemic.44

Surveillance networks and supporting laboratory capacity are essential elements for early detection and containment of infectious diseases. The Asia-Pacific Strategy for Emerging Diseases (ASPED) highlights both surveillance and laboratory capabilities as focus areas for development. Within these focus areas, ASPED identified event- and indicator-based surveillance, accurate laboratory diagnosis, laboratory support to surveillance and response operations, coordination and laboratory networking, and biosafety as key components to implement for strengthening national systems.45 The WHO Global Influenza Surveillance and Response System monitors the evolution of influenza viruses and serves as an alert system to identify influenza viruses with pandemic potential. The network includes national-level centers and reference laboratories (Figure 1). The National Influenza Centers can identify influenza strains from cases sent from sentinel sites throughout a country, as well as identify some other diseases.46 Many countries have established surveillance systems for influenza-like illnesses. Some of these systems are hospital-based, relying on reporting from local hospitals to identify cases of influenza-like illnesses, whereas others rely on field sites. Samples can be sent from these sites through reference laboratories for identification. Most countries have only partial systems. In the WHO Western Pacific Region Office region, many countries have field sites for influenza-like illnesses, but limited or no hospital-based systems.47 Surveillance systems for malaria, a disease endemic to the Asia-Pacific, also provide capacity for detection and notification. Only a few comprehensive malaria surveillance systems exist that can collect, store, and analyze real-time information. Most systems have geographical limitations or do not allow for rapid information analysis.48

44 William Brady, Assistant Dean, Research & Academic Services, School of Global Studies, Thammasat University, Thailand, presentation at the U.S. Military Assistance to International Health Emergency Response conference.
47 William Brady, presentation at the U.S. Military Assistance to International Health Emergency Response conference.
Pandemic influenza preparedness also drove investment into training for rapid response following early detection of cases. Many nations worked to educate communities about H5N1 so that individuals would recognize cases and seek treatment appropriately. Medical personnel also required training to ensure that health systems could conduct the proper treatment and reporting. ASPED also included development of rapid-response capacity as a key component of the surveillance, risk assessment, and response focus for nations in the Asia-Pacific.  

Nations instituted or improved field epidemiology training to build national capacities for detecting and preventing the spread of health threats. Most programs used the CDC Epidemic Intelligence Service course as a base to provide the training, though other countries have shown interest in developing their own courses to suit local audiences. In the areas covered by the WHO Southeast Asia Regional Office and Western Pacific Region Office, Australia, China, Japan, India, Indonesia, Malaysia, the Philippines, the Republic of Korea, and Thailand host field epidemiology training. Of these programs, those in India and Thailand accept trainees from other countries. CDC-sponsored Field Epidemiology Training Programs, modeled after the Epidemic Intelligence Service program, exist in India, Bangladesh, China, Vietnam, Cambodia, and Indonesia. ASPED identified field epidemiology as a key component of the surveillance, risk assessment, and response focus area, supporting the rapid detection, reporting, and confirmation of public health events.

Development of risk communication capacity was another key area for pandemic planning as well as a focus area within ASPED. The development of risk communication capabilities worldwide, however, has been inconsistent. An analysis of the status of IHR core capacities indicated 64% global

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**Figure 1. WHO Global Influenza Surveillance and Response System as of 28 Nov 2014**

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50 William Brady, presentation at the U.S. Military Assistance to International Health Emergency Response conference.
Participants noted that whether the existing systems and mechanisms would work for a certain disease would depend on the infection, since many of these diseases behave differently. The current systems would need to be adjusted for an Ebola-like event not only due to the difference in transmission properties, but also due to different needs for case management, training, and personal protective equipment (PPE). Participants felt that planners would need to further assess the existing systems to determine whether they could adjust for such an event. In addition, while laboratory and surveillance systems have improved, the systems are often specific to a certain type of disease and may not be able to effectively identify emerging infections. National governments and international organizations have made significant investments that they could use if adapted for different diseases. For example, Nigeria had a national public health institution that had been used for previous outbreak responses. The country had experience with the Incident Management System within this structure, including a national Emergency Operations Center that had been part of the national emergency plan for the 2012 global polio

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54 William Brady, presentation at the U.S. Military Assistance to International Health Emergency Response conference.
56 Ten ASEAN member states plus China, Japan, and the Republic of Korea.
58 William Brady, presentation at the U.S. Military Assistance to International Health Emergency Response conference.
eradication initiative. This Emergency Operations Center was activated for the Ebola response and served an important role in the coordination of state and national efforts that resulted in the quick containment of the outbreak.  

While these investments have been made and improvements to the system observed, many nations have not sustained investments in preparedness and planning activities. Participants noted that governments need to continue to invest in and maintain the infrastructure or else they will need to rebuild these systems each time. The system should allow for a capacity to respond that local governments can take ownership of and is affordable enough to maintain. Participants stated that many of the existing systems lack sustainability. Participants identified risk communication as one area that governments do not often maintain because the need declines as the scale of the incident lessens. Some participants felt that regional organizations such as ASEAN could play a role in influencing local governments and policy-makers to commit to maintaining these systems.

Financial Support

Participants noted that since provision of funding involves justification, requests to fund international humanitarian disaster response and relief efforts would require effective political and strategic arguments to explain involvement. The ambassador would work to drive political interest in funding response and identify reasons for the United States to provide support. Participants also stated that simply providing more money is not that effective, but rather donor nations should make targeted investments towards improving existing capacities and capabilities. Additionally, participants suggested that better coordination between the security and public health sectors could provide a source of funding from existing resources since the United States heavily funds security while public health remains underfunded.

Some participants suggested that donor nations should establish an international contingency fund to support meeting IHR requirements. Given the current inability of many nations to fund the establishment of programs under these requirements, this sort of fund could provide the financial basis for expanding local capacities and increasing the number of IHR-compliant nations. Participants also suggested funding for training of health workers, since a large shortage of trained health workers exists in many countries that carry the highest rate of disease. Current training programs have individuals volunteer their time for this work, but participants suggested that these individuals should be paid to increase global interest.

Research and Analysis: Funding Challenges in the 2014 West Africa Ebola Outbreak

As with all disaster response operations involving international support, no standardized funding mechanism exists for funding the response to health emergencies. Responding organizations can channel funds through the U.N., IGOs, NGOs, or the local government. The funds can be earmarked or unearmarked and part of a one-off, annual, or multiannual funding arrangement. Donors can choose to provide funding in terms of grants, debt forgiveness, or interest-free loans.60

In the case of the 2014 West Africa Ebola outbreak, the problem of insufficient funding was not in the generosity of donors. Delays occurred in translating pledges to paid contributions. As of December 2014, 40% of the $2.9 billion pledged by the international community had actually reached affected countries. While the total donation pledges exceeded the estimated needs of the affected countries, the actual amount paid covered only about two-thirds of those needs.61 Donor support did not reach affected countries until six months after WHO declared an emergency.62 Delays in disbursement of the pledges and lapses in financial management may have contributed to the spread of the virus.63 In Sierra Leone, fraud in handling Ebola funds gave birth to thousands of “ghostworkers,” another name for Ebola staff who forged their identities to claim hazard pay or registered twice to claim double pay.64

The estimated needs for Ebola funding did not account for funding needs of the NGOs on the ground, nor did it reflect the amount necessary to rebuild the economic losses in West Africa after the epidemic subsided. Categorizing the crisis in the public health domain instead of as a natural disaster decreased the private funding amount. UN OCHA indicated that only 7% of funds committed to fighting Ebola came from private giving. In comparison, during past crises requiring humanitarian response, such as the 2010 Haiti earthquake and 2004 Indian Ocean tsunami, that number was as high as 62%.65

The 2014 West Africa Ebola outbreak also faced indirect funding challenges related to supporting agencies. The WHO Director-General acknowledged the slow response and concurred that preexisting weaknesses contributed to the WHO’s inability to support containment of the Ebola outbreak swiftly compared to previous health emergencies.66 Looking forward, the WHO identified a clear need for leadership on policy and technical issues, effective operational capacity to monitor and prepare for outbreaks, and surge capacity to resource an emergency response.67 Besides establishing a dedicated fund for public health emergencies, monitoring and tracking donor responses to the 2014 West Africa Ebola outbreak could improve approaches to funding of response to future outbreaks.

**Slow Response Timeline for Health Emergencies**

In the given scenario, the government of Asiana had already experienced some uncertainty due to public distrust developed under the previous repressive regime. Participants noted that a slow response could further the population’s uneasiness and in turn impact the stability of the government. A health disaster adds further complications, since most governments and organizations have limited health disaster experience. Health disasters can often develop slowly before a community experiences exponential growth, and outbreaks can spread over great distances, as opposed to the geographical isolation of most natural disasters. Some participants shared concerns about whether the current system for international response to a health disaster, as well as the U.S. process, could provide a timely response.

The country of Asiana expressed its concerns about its need for rapid response, and its leadership wanted to move forward with obtaining U.S. support without following the standard request process. However, the U.S. process for needs assessment and requesting resources takes time, and the host nation leadership needs to understand the process. Participants suggested that effective disease surveillance and reporting systems can help ensure a faster response by ensuring that the impacted nation can begin identifying capability gaps and requesting resources early. Government leaders must also know the potential sources of assistance for those resources and the procedures for accessing them. The ambassador can play a key role in ensuring that the local leadership understands the process and how to ensure a more expedient response.

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**Research and Analysis: Triggers for Preparedness and Response Activities**

In the wake of the 2014 West Africa Ebola outbreak, many criticized the slow international response as the crisis grew to epidemic proportions. The countries most affected by the outbreak also had weak health care systems and poor coordinating structures, requiring help with organizing their responses. The response from the WHO regional office responsible for supporting these countries, however, was slow and ineffective. Recognizing this gap, the WHO established plans for reform based on lessons learned from the Ebola response, including establishment of a contingency fund to support rapid response to outbreaks. The WHO also acknowledged a need to improve international coordination mechanisms to speed response operations.

One of the issues when identifying approaches to improving response operations for a health emergency is the delineation between response and preparedness activities. Unlike many natural disasters, health emergencies often develop over time, with no specific trigger for activation of response operations. In some cases, delays in identifying and containing a crisis can result in exponential growth of an outbreak. In the 2014 West Africa Ebola outbreak, the WHO did not declare the situation a public health emergency until August, at which point the outbreak began to expand out of control (Figure 2). Médicins Sans Frontières reported that the delays in international response resulted in thousands of lives lost.

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Figure 2. Total Suspected, Probable, and Confirmed Cases of Ebola Virus

The IHR procedure for declaration of a Public Health Emergency of International Concern should help drive response, but the declaration came too slow in the case of the West Africa outbreak. The decision process used by the WHO (see Appendix D) relies on subjective judgment on the part of the WHO Director-General and a committee of experts. Clarifying criteria and establishing more quantifiable thresholds for decision points could add more fidelity to the process. Integration of disease risk modeling and predictive modeling into the decision-making process could improve disease forecasting, developing early warning systems using historical and real-time data. Risk maps based on a combination of meteorological and health records have been used for diseases such as leprosy, pneumonia, and smallpox, offering predictions with a two- to three-month lead time for response. Advancements in surveillance systems, mapping capabilities, and data collection and manipulation technology have improved the potential effectiveness of early-warning systems.\(^{72}\)

Controlling Spread of Infectious Diseases

Participants highlighted efforts to control the spread of the 2014 West Africa Ebola outbreak as an example relevant to potential efforts that could apply towards control of the outbreak in the exercise scenario. Following the outbreak of Ebola in West Africa, the CDC, the WHO, and other international organizations collaborated to control the spread of the disease, with screening at entry and exit points identified as one of the control strategies. Participants discussed challenges that screening poses, such as how to effectively identify a nonspecific illness or detect travelers who might require follow-up. Participants stated that existing tools to detect illness at entry points are poor, especially if the disease has nonspecific symptoms. The CDC worked with in-country partners to institute enhanced exit screening processes for impacted countries; however, these processes did produce clear impacts. None of the passengers who were denied travel due to fever or other symptoms, or had reported exposure, have since been diagnosed with Ebola, whereas two passengers who were not symptomatic during the exit screening and travel later became ill with Ebola after arrival.\(^\text{73}\) Travel history can help identify passengers during entry screening if there is geographic containment of the outbreak, but a country would need to implement rapid response and containment measures to control the spread of the disease. Participants suggested that the lack of an effective capability to detect disease at borders underscored the importance of intervention at the local level before the disease can spread widely.

Containment relies on early detection, early response, and effective communication. Quarantine, however, has a cost to local communities and results in political ramifications that the government must consider. While participants did not discuss quarantine methods or issues in depth, Banyan Analytics developed a brief information paper for participants on the use of quarantine and isolation to prevent the spread of disease; it can be found in Appendix B.

Request for U.S. Assistance

Process to Request U.S. Assistance

Participants discussed in depth the process for requesting U.S. assistance and identified understanding of this process as a common gap not only for other nations’ governments, but also among U.S. agencies. Some participants noted their lack of understanding regarding the details of the process and benefited from the explanation provided by the subject matter experts present. Without this sort of explanation, however, participants suggested, government leaders could face challenges with implementing the process.

Multiple factors would contribute to the decision for the United States to fulfill a request for assistance from an affected nation. The U.S. Government generally requires a disaster declaration from the impacted nation before giving approval to provide support; however, this step relies on the impacted nation to make a timely declaration. The United States needs the host government to have made a declaration in order to open up the legal authorities and funding to provide response. A WHO Public Health Emergency of International Concern declaration could also influence this decision. The initial steps require an assessment of the current situation and the local capacity to respond to the situation. The U.S. Government would want to see the statistics for the impacted areas, and if the situation overwhelms the affected nation’s capability to respond, the assessment will be sent to the USAID OFDA office in Washington.\(^\text{74}\) Conducting these assessments and gaining the necessary information, however, is a challenge itself. The ambassador uses this information to coordinate with White House staff to determine the need for support.

The leader of the impacted nation would serve as the main point of contact for the U.S. Government.


The U.S. Ambassador, or Chief of Mission, would serve as the representative of the United States to the host nation and the point of contact for the local government to submit requests for U.S. resources. The Ambassador would also work to ensure diplomatic protections for U.S. response organizations. Once the local government provides the Ambassador with a request for assistance, the Ambassador would work with USAID OFDA to conduct assessments to determine whether the United States would provide support. After receiving approval from the President to provide support, the Ambassador would continue to coordinate requests with USAID and manage the in-country U.S. disaster response. The Ambassador would maintain visibility over all the assets in the country and provide this information to the local government. Since USAID OFDA’s primary location is Washington, DC, the agency relies on the Ambassador’s knowledge of the impacted country to determine whether to fulfill requests for support.

In most disasters, USAID OFDA serves as the lead federal agency and coordinates the in-country resources for U.S. Government response overseas. USAID OFDA coordinates with the local government, which serves as the lead for the overall response, and with other international response organizations through the UN cluster system. As part of the international coordination mechanism, USAID OFDA works with other donors to identify resources and ensure there is no duplication of effort. Once the U.S. Government decides to provide support, USAID OFDA deploys a Disaster Assistance Response Team to help assess the situation on the ground. The team helps identify gaps in the response that the United States can support, usually co-locating with the Ambassador to allow for close coordination with regard to requests for assistance from the impacted nation. After receiving a request, USAID OFDA works to identify an agency that can supply the needed resource or capability. If civilian organizations cannot fulfill the request, USAID OFDA may then request support from the U.S. military.

Participants agreed that the use of the military generally is a last resort, where no civilian organization can fulfill the request. The request would not begin as a request for military support unless it is a military-to-military request based on a longstanding relationship. Aside from these rare situations, the request would follow the same path from the affected nation’s government to USAID OFDA through the Ambassador.

**Assessments to Determine the Scope and Scale of Required Support**

The U.S. Government uses information gained through assessments that identify gaps in the response to determine the type and amount of support required to fulfill a request for assistance from the impacted nation. The U.S. would generally rely on the affected nation’s government to provide the information about the disaster, such as the number of infected individuals or the number of new cases each day. Participants agreed that an approach should be to gather this sort of information with general assessments in order to conduct a limited push of needed resources, and then conduct more detailed assessments to identify more specific needs. Participants suggested that the U.S. Government should outline its information needs to the impacted nation’s government to help shape assessments. Participants also noted that both the affected nation’s government and the U.S. Government should understand that information will always be incomplete and that they must work with the available data to make decisions.

The impacted country may not have a strong surveillance system or may lack the capacity to conduct the necessary assessments. In the scenario, Asiana recognized its limitations in capacity and realized that geographically it could not cover the entire country. The government also lacked...
an effective public health system, so leadership did not know what information to gather or how to collect it. Participants stated that the U.S. Government could also provide support to help determine the status of the situation. The CDC supports regional surveillance networks and also works closely with the WHO to support initial response prior to a disaster declaration. Through these networks, the CDC can provide assistance with early situational assessments, surveillance, monitoring, and reporting. The CDC and USAID OFDA can also both provide technical assistance for assessments following a disaster declaration and approval to provide support. Since USAID did not have an in-country presence in the scenario, they would coordinate closely with in-country partners (including the WHO, the Ambassador, the local government, and NGOs) to gather situational awareness information. If the U.S. Government provided better guidance on the information needed, the affected nation’s government could also help identify the in-country organizations to be part of the assessment team. Participants also suggested examining new technology to identify faster and more cost-effective means of data gathering.

U.S. Pacific Command (USPACOM) also conducts its own assessments. Participants agreed that governments should complete these sorts of assessments during steady-state operations, since time may be limited during a crisis. USPACOM conducts assessments in advance to examine how events will impact the strategic environment and includes the information in its plans. USPACOM’s area of responsibility (AOR) covers a large, diverse region comprising 36 countries with varied levels of socioeconomic development that face a heavy burden from both natural and man-made disasters, so USPACOM must plan for supporting partner nations in many operating environments. Participants stated that 30 out of 36 countries in the USPACOM AOR have assessments completed, but these assessments may be outdated. USPACOM uses this information to help plan how to best allocate resources within its AOR and how to best help maintain stability in the region, but recent budget uncertainty has interfered with USPACOM’S ability to execute long-term plans.

Participant comments.

Research and Analysis: Using Capabilities-Based Analysis to Inform Decision-Making for Disaster Response

Response organizations at every level use assessments in all parts of the disaster relief cycle, and the importance of situational awareness pre-disaster can help identify potential and specific informational needs. Developing an approach to a more comprehensive analysis to identify capabilities gaps prior to an event will provide the U.S. Government with greater awareness of the resources that might be needed during a health emergency.

Capabilities-based planning is a standardized approach originally used by the U.S. military to manage risk, set specific preparedness goals, make investments, and evaluate preparedness results using intelligence, strategic studies, and experiences to describe future threats. Other sectors, including homeland security and public health, have since adopted the approach to develop long-term strategies for preparedness. In this planning process, needs assessments conducted in the preparedness phase prior to an emergency will inventory the existing capabilities, identify shortfalls, and provide insight on capability improvements. For the purposes of its own regional planning, the U.S. Government can identify capability sets that could be used for response within the Asia-Pacific based on regional demographics, geography, culture, and existing systems, formulating an organizational architecture for response specific to the region.

Based on the assessment, the U.S. Government can estimate the impact of capability gaps, describe the effects on partner nations, prioritize gaps, and identify potential investment opportunities to close the gaps. This approach helped USAID develop programs to identify information-sharing gaps to integrate coordination efforts with all involved agencies prior to an event in the crisis area. The success of previous programs instituted by USAID for HIV/AIDS, malaria, tuberculosis, and pandemic influenza prevention validates future commitment to public health capacity building. Building local capacity will shift priorities before a disaster, improving the effectiveness of the response.

Information gained from analysis conducted prior to an event can also help drive decision-making for resource allocation in preparation for and response to a disaster. Because USPACOM assessments, conducted country by country, do not cover all nations in the USPACOM AOR and may include outdated information, to better inform its allocation process, USPACOM needs a systematic and comprehensive approach to define capability gaps, identify investments to close these gaps, and measure the performance of those investments. Conducting the assessment at a regional level can identify overarching priorities for capability development within the USPACOM AOR and can then be accompanied by individual national assessments to identify specific resource needs of partner nations. These needs can then inform the types of support a nation in the USPACOM AOR may need when responding to a disaster.

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Coordination Mechanisms

Host Nation Role

To ensure sovereignty, the host nation must maintain its role and position of authority during a crisis. The government of the impacted nation manages the response and all responding organizations, including donor nations, NGOs, and IGOs. The impacted nation determines its needs and requests support if the situation extends beyond the local capacity. Once the host nation makes a request, it can coordinate between the responding organizations to ensure that the support provided by each is complementary and does not result in duplication of effort. Within this structure, donor nations such as the United States do not provide specific types of support unless the host nation requests it. In some cases, the host nation may need to decline an offer from a donor nation in order to maintain focus on its priorities. Some participants noted the impression, from a foreign perspective, that the United States does not hold a main role as a decision-maker and should better recognize the role of the host nation.

Within the scenario, the government of Asiana formed a committee to serve as the decision-making body regarding the response, suggesting courses of action and improvements for the response to the outbreak. The host nation maintained a central role in this committee and served as the lead for the response at all levels, down to the response on the ground. This structure shared characteristics with the coordination mechanism used in Mali during the 2014 West Africa Ebola outbreak, which involved a coordinating committee chaired by the Minister of Health, an interministerial committee chaired by the Minister of Health, and regional and local committees chaired by regional governors and prefects. However, some nations may have difficulty conducting all of the coordination on their own. During the 2014 West Africa Ebola outbreak, for example, the Liberian government had difficulty coordinating the whole response, since the government did not have a national disaster agency to manage the incident.

As an initial action during the 2014 West Africa Ebola outbreak, the Liberian government established a national task force, led by the deputy of the Ministry of Health and Social Welfare, to oversee the management of response activities. The CDC deployed teams, including emergency management specialists, to help coordinate the response and to institute incident management system principles to enhance the response structure. Areas where implementing those principles would improve response included establishing a more manageable span of control for the Ministry of Health and Social Welfare, identifying a deputy national coordinator with the authority to make decisions in the absence of the national coordinator, and establishing a single point of contact for logistical and administrative support.

United Nations Office for the Coordination of Humanitarian Affairs

UN OCHA can support an impacted nation by helping coordinate and organize the international organizations and donor nations contributing to the response. If a response requires wider international involvement, UN OCHA helps establish the reporting and appeals process for obtaining resources and financial assistance. The impacted nation would generally not provide a request to only one donor unless it is a request for a specific resource provided only by that donor. Instead, the request can be sent through a coordinating entity such as UN OCHA to reach out to all donors in order to identify a supplier. UN OCHA coordinates this process through its Cluster System.

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84 Participant comments.
Research and Analysis: UN Cluster System Overview

The UN Cluster system would work in support of the host government to bring together the different organizations and donor nations. The UN activates clusters based on the needs of the situation, and a UN agency serves as the lead for these functional groups (Table 2). The Cluster system functions to bring similar resources together but does not maintain any command and control or management functions for those resources. The UN would also coordinate with foreign militaries through a civilian-military coordinator to ensure integration of these entities into the overall international coordination mechanism. UN OCHA serves as a coordinator between clusters and provides operational guidance for cluster activities. The cluster mechanism works in support of the national mechanism that the local government leads, providing a point of contact and accountability for humanitarian assistance provided by international humanitarian organizations within the impacted nation.88

Table 2. UN Clusters and Lead Agencies

<table>
<thead>
<tr>
<th>CLUSTER FUNCTION</th>
<th>LEAD AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition</td>
<td>UNICEF</td>
</tr>
<tr>
<td>Health</td>
<td>WHO</td>
</tr>
<tr>
<td>Water, sanitation, &amp; hygiene</td>
<td>UNICEF</td>
</tr>
<tr>
<td>Emergency shelter</td>
<td>UN High Commissioner for Refugees with the International Federation of Red Cross and Red Crescent Societies</td>
</tr>
<tr>
<td>Camp coordination &amp; management</td>
<td>UN High Commissioner for Refugees with the International Organization for Migration</td>
</tr>
<tr>
<td>Protection</td>
<td>UN High Commissioner for Refugees</td>
</tr>
<tr>
<td>Early recovery</td>
<td>UN Development Programme</td>
</tr>
<tr>
<td>Logistics</td>
<td>World Food Programme</td>
</tr>
<tr>
<td>Emergency telecommunication</td>
<td>World Food Programme</td>
</tr>
<tr>
<td>Food security</td>
<td>Food and Agriculture Organization of the United Nations with the World Food Programme</td>
</tr>
<tr>
<td>Education</td>
<td>UNICEF with Save the Children</td>
</tr>
</tbody>
</table>

Coordination for international response organizations and donor nations is important to ensure reconciliation of their different approaches and agendas toward a coordinated and focused response. If the host country does not have the capacity to conduct the coordination of response organizations on its own, this system can help provide this function. Participants noted, however, that there seems to be a global gap related to international emergency management coordination, since there is no international coordinating agency with regional components. During the Ebola outbreak in Liberia, the country lacked an effective coordination mechanism and UN OCHA helped to establish the Cluster system to support the response, but participants stated that the system developed too slowly. Participants stated that, since the outbreak evolved over a longer period than do most crises, the establishment of the coordination mechanism did not follow the normal framework. As a result, response organizations experienced some delays and confusion during the response. These issues compounded the problem by leading to greater food shortages and migration of people within the affected area. Participants suggested that rather than focusing on the Cluster system itself, the response would have benefitted from focusing on developing a scalable and dynamic coordination system.89

Coordination of U.S. Assets

USAID OFDA serves as the lead Federal agency for coordination of U.S. support for foreign disaster response. USAID OFDA works with the host nation to identify needs and fill requests using resources from other U.S. agencies and/or the U.S. military. During a health crisis such as an Ebola outbreak, another U.S. agency such as the CDC may serve as the technical lead agency for the response, but USAID OFDA remains the main coordinating agency for U.S. response. USAID OFDA uses liaisons to work closely with the local government, using this relationship to identify the best sources of support and the most appropriate capabilities to fill gaps in the response.90 Developing and maintaining relationships with the host nation help to better identify these needs. USAID OFDA needs to know and interact with the local point of contact. Similarly, the local government should have an understanding of who serves as the focal point within the U.S. Government. The Ambassador would serve as this point of contact, and USAID OFDA would likely co-locate with the Ambassador to take advantage of that relationship.91

As with domestic disaster response, the U.S. military works in support of civil authorities. The military will fulfill requests for assistance if USAID OFDA identified it as the necessary provider. The military serves as the last option, so it must provide a unique capability to respond. The U.S. military will work in support of the local civilian authorities, but USAID OFDA will coordinate its activities.92 Participants recommended a better understanding of the relationship between the military and civilian authorities during a foreign disaster response. Some participants suggested that military personnel take the Joint Humanitarian Operations Course offered by USAID OFDA to gain an understanding of the interface between USAID, the Department of State, and the U.S. military.93

Coordination Challenges for International Disaster Response

Participants identified a number of challenges to effective coordination of international disaster response operations. While international standards exist and some countries have bilateral agreements in place for disaster response, health disasters can pose

89 Participant comments.
91 Participant comments.
93 USAID OFDA provides extensive training to DoD staff through the Joint Humanitarian Operations Course, which was developed to teach key U.S. military personnel how the U.S. Government responds to international disasters. Of the 70 foreign disasters USAID responds to on average every year, about 10 percent involve support from DoD. USAID may request U.S. military assistance to meet a specific need, such as deploying helicopters to transport emergency relief commodities within a disaster-stricken area (http://www.usaid.gov/partnership-opportunities/us-government-and-military).
different challenges from natural disasters. Health disasters can involve a complex series of priorities that can develop over an extended period or grow in number quickly. An outbreak of a disease also introduces different types of response organizations, some of which may not have a regular disaster response role. Participants noted that a health crisis also requires forward-thinking decision-making to keep the crisis from escalating, as opposed to responding to needs as they arise. An infectious disease outbreak may also have shifting geographic priorities, with the response moving based on where the outbreak lies.

Participants also noted issues that can arise from uncertainty and lack of information regarding the situation on the ground. Lack of situational awareness can be a challenge in any disaster, regardless of whether the response involves domestic or international partners. A health disaster places a large reliance on epidemiological data to determine where support is needed and how much impact the response may have. Gathering of accurate information can be impeded by a lack of local capacity to conduct the necessary epidemiological investigations. The media can also contribute to misinformation in an uncertain environment.

Language and terminology become an issue for international response. In an international setting, domestic response principles based upon the National Incident Management System (NIMS) and the Incident Command System (ICS) may not apply. Many Asian nations do not follow similar systems and do not understand the ICS used by U.S. response organizations. Local culture, political sensitivities, and relationships can further complicate understanding and implementing an effective incident command system.

Coordination systems also require lines of communication to interface across organizations for identifying resources and support. A large-scale response involves many levels of communication, and a centralized coordination mechanism helps maintain the flow of information. Organizations can improve coordination by establishing and maintaining open lines of communication prior to an event and throughout the response. Participants suggested that organizations should have a framework for how to communicate, clarifying formal and informal lines of communication and synchronizing efforts across all organizations.

Participants identified the lack of clear frameworks for international response as a major gap for coordination of disaster response and relief. While a detailed discussion of existing mutual aid agreements between nations did not take place, participants highlighted the U.S. and Canada bilateral agreements for emergency response as examples for applying mutual aid in international response. Participants suggested establishing bilateral or regional response frameworks that countries sign as a means for ensuring capacity to respond to any type of disaster. Participants noted that such agreements could be particularly helpful for more isolated U.S. territories such as American Samoa and Guam, since their closest neighbors are other countries.
Research and Analysis: Establishing International Mutual Assistance Agreements

Mutual aid agreements establish a framework for provision of emergency assistance across jurisdictional boundaries in the event of a disaster. Such agreements outline expectations, establish responsibilities, and set legal authorities to increase the speed of response by reducing bureaucratic barriers. Within the United States, mutual aid agreements exist among and between all levels of government. The Emergency Management Assistance Compact, for example, serves as the legal foundation for movement of resources across state borders during governor-declared states of emergency and has been signed into law by all 50 states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands.94

The United States and Canada developed a number of agreements to facilitate mutual assistance for disaster response, communications, and recovery activities. The two governments adopted laws to support many of these agreements. For example, U.S. Public Law 101-11 authorizes the Secretary of Agriculture and the Secretary of the Interior to enter into agreements with foreign fire organizations for wildfire response. The United States, Canada, and the United Kingdom also maintain a trilateral memorandum of understanding for search and rescue that applies in responses to maritime or aeronautical incidents, allowing the participating organizations to enter or fly over the territory of another country to provide emergency assistance. Some multilateral tools also exist such as the memorandum of understanding under the North Atlantic Treaty Organization’s Euro-Atlantic Partnership Council that allows civil cross-border transport and transit of relief personnel and material in response to a disaster.95

While mutual assistance agreements between nations can improve access to resources, establishment of such agreements is not a simple process. The negotiation process, similar to negotiating contracts, takes time, money, and staff to complete. Further complications arise when establishing agreements between one or more governments, each with their own legal requirements. The United States may consider developing bilateral or multilateral agreements with partners within the Asia-Pacific, but the investment of time and resources for developing individual agreements would be heavy. Instead, the United States could advocate within regional forums the development of regional mutual assistance agreements that outline the relationships and responsibilities of signatories. A regional agreement could increase the speed at which both U.S. territories within the Asia-Pacific and partner nations can access needed resources following a disaster and clarify financial responsibilities.


Some participants suggested examining domestic response mechanisms to identify ways to improve coordination for international response. In the United States, following NIMS and ICS as doctrinal frameworks for response and the standardization of this organization allow a clear understanding of roles and responsibilities for all responding entities to a domestic incident. Participants noted that other nations in the Asia-Pacific region have begun to look at the U.S. domestic models to develop methods for organizing and coordinating their own response systems. Outreach through programs such as the National Guard’s State Partnership Program have introduced these concepts to foreign partners and helped to familiarize them with the U.S. system. While participants agreed that systems do not necessarily need to follow the ICS model, an established framework for decision-making and coordination would improve the effectiveness of an international response.

Research and Analysis: Framework for International Response

In the case of domestic emergencies in the United States, the ICS, the NIMS, and the NRF have proven to be effective response frameworks that seem to address many of the similar challenges posed by international emergencies: too many individuals reporting to too few supervisors; different emergency response organizational structures; a lack of coordinated planning; unclear lines of authority; and many other challenges.96

However, international emergencies requiring a coordinated response from not only multiple government agencies within one country, but also from multiple organizations beyond government and from more than one country, have tested the effectiveness of simply scaling frameworks like ICS, NIMS, and NRF at the multinational and multi-organizational levels. In addition, the greater the complexity of a disaster, the more challenging it is to simply apply such models. A 2014 Banyan Analytics case study that examined the U.S. interagency response to the 2011 triple disaster in Japan revealed that adapting existing coordination mechanisms to meet international response needs actually posed challenges that made coordination and response particularly difficult:

During the response in Japan, the U.S. Government augmented its foreign response efforts by drawing on domestic disaster response capabilities and certain organizing principles within the existing NRF… This extension of the NRF [to a complex international disaster] was problematic: there was a significant disconnect between domestic response agencies that do not usually deploy personnel overseas … and the foreign response community since these agencies were not familiar with each other’s plans, procedures, or policies.97

It would be beneficial for countries in the Asia-Pacific to adopt models similar to ICS and NIMS for the purpose of emergency response on a domestic level. However, multinational approaches to emergency response (bilateral, regional, and global) may require a separate effort that adequately meets the unique challenges posed by disasters that demand an international response.


In 2013, Banyan Analytics hosted an emergency preparedness conference in Washington, D.C., that underscored a general lack of coordination in international disaster response and resulted in many of the participants supporting the idea of an International Response Framework for the U.S. Government to address issues such as planning and coordination mechanisms, budgets and funding, foreign governmental engagement, preparedness, training, exercising, and measuring effectiveness.\(^9\) Some of the concepts explored in Banyan Analytics’ “Coordinating the U.S. Response to Foreign Disasters: Concept and Considerations for a Framework”\(^9^9\) could be further explored and developed to address coordination challenges among countries in the Asia-Pacific.

Participants noted that many of the challenges with coordination could be overcome by better education on the mechanisms and processes for international disaster response. Policy makers, government leaders, and key decision-makers need to have an understanding of how the different responding entities organize and interact. The responders also need an understanding of how they fit into the response and how to integrate with other organizations on the ground, especially when military forces are supporting civilian authorities. Participants agreed that the exercise highlighted the importance of understanding these relationships for effective response, and observing how the process would work helped them gain a better understanding of the complexities involved. Participants felt that outlining the roles and responsibilities of the different organizations helped clarify how the response can be brought together when involving a variety of partners. Participants noted that response organizations also encounter many of these challenges during domestic response, and having better education and training on coordination, command, and control issues could improve both domestic and international response operations.

Some participants identified a need to further analyze these systems using a more systematic approach. International disaster response is complex, and a health crisis adds further complexity. A systems thinking approach could help to visualize the complexities of the system and determine how to get from the current mechanism to a more desirable end state. Participants suggested that this sort of analysis would require the development of metrics to determine the effectiveness of the system.

**Relationship Building**

Participants identified limited local capacity as a challenge that many nations within the Asia-Pacific region face. The host government holds a central role in the response for key functions like coordination and information gathering, but may not have the capacity or capability to conduct these functions effectively. Participants stated that having key leaders with an established relationship could ensure trust and confidence during a time of crisis. Since disease outbreaks may evolve slowly over time, the time before the situation reaches crisis levels can provide a great opportunity for leaders to meet and develop a working relationship. However, participants suggested that the importance of this interface should drive relationship building during times of stability rather than during the onset of a crisis. Establishing a line of communication and defining the process with partners prior to a disaster can ensure smooth implementation of those processes once a disaster strikes. Since a large number of donors, including private groups that do not fall within the main donor category, conduct development work in developing nations, these countries have difficulty coordinating and communicating with all the donors as well as identifying which donors offer the needed services in a time of crisis. Establishing links prior to an event can ensure that this information is readily available to the host nation and help to organize the response.
The U.S. Government, particularly the U.S. military, bases responsibilities on the position and not on the individual, so when someone departs, the job function is not impacted. Participants stated that culture in the Asia-Pacific, on the other hand, is based largely on personality and character. These cultures base trust on the person, not the position, so the relationship must be built on an individual level. While this approach does not follow how most of the U.S. Government operates, some programs have had success in this area.

Research and Analysis: The State Partnership Program

The State Partnership Program, instituted by the National Guard, links states’ National Guards with armed forces of other nations for mutual cooperation and capability development. In 1993, the National Guard established the first state partnerships. By 2014, nearly all 54 states and territories had partnerships under the program with more than 71 nations around the world and completing 739 events across all six geographic combatant commands in 2013 alone. Administered by the National Guard Bureau, the program aims to meet U.S. foreign policy objectives through support of U.S. security cooperation missions.100 As a domestic force, the National Guard maintains defense support of civil authorities as a primary mission, and this focus allows for not only military-to-military engagement but also civilian-military and whole-of-community engagement. The State Partnership Program currently holds only eight partnerships within the USPACOM AOR (Table 3), but National Guard planners hope that recent assignments of bilateral affairs officers by the National Guard to the Asia-Pacific will better integrate USPACOM into local planning.101

Table 3. State Partnerships in the USPACOM AOR

<table>
<thead>
<tr>
<th>STATE NATIONAL GUARD</th>
<th>PARTNER NATION</th>
<th>YEAR ESTABLISHED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>Mongolia</td>
<td>2003</td>
</tr>
<tr>
<td>Hawaii, Guam</td>
<td>The Philippines</td>
<td>2000</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Indonesia</td>
<td>2006</td>
</tr>
<tr>
<td>Idaho</td>
<td>Cambodia</td>
<td>2009</td>
</tr>
<tr>
<td>Nevada</td>
<td>Tonga</td>
<td>2014</td>
</tr>
<tr>
<td>Oregon</td>
<td>Bangladesh</td>
<td>2008</td>
</tr>
<tr>
<td>Oregon</td>
<td>Viet Nam</td>
<td>2012</td>
</tr>
<tr>
<td>Washington</td>
<td>Thailand</td>
<td>2002</td>
</tr>
</tbody>
</table>

100 The National Guard State Partnership Program, Annual Report, Fiscal Year 2013.
Participants identified the USPACOM J9, also known as the Pacific Outreach Directorate, as a key actor for building relationships with partner nations in the Asia-Pacific. The geographic combatant commands established J9 directorates to promote coordination and outreach with external partners such as U.S. Government agencies, the private sector, and legislatures. The USPACOM Pacific Outreach All-Hazards mission, or J91, began to collaborate with the Pacific Disaster Center in 2015. The J91, in partnership with the Pacific Disaster Center, intended to improve disaster risk reduction capacities and improve information-sharing capabilities with partners in the Asia-Pacific.

The Office of the Surgeon General for USPACOM also conducts outreach with counterparts throughout the USPACOM AOR. The Surgeon General builds relationships with military medical personnel of partner nations to partner on humanitarian assistance and disaster response operations and conduct joint exercises to improve medical capabilities within the region. The office uses these interactions daily to develop its role as a partner for regional disaster and humanitarian response.

Participants also stated that while formal relationships built through meetings of senior military leaders in the region are important, USPACOM should also examine how to improve the informal processes for developing relationships with the local government. Participants noted that developing relationships with civilian organizations in addition to the military could also improve the effectiveness of response, and toward this end the DoD would need to invest more in the use of foreign affairs offices in this role. Participants stated that organizations should determine how they integrate into a response and focus investment on building relationships that can improve that integration. These relationships and other regional partnerships help lay the groundwork for collaboration and cooperation, establishing the lines of communication necessary to gain information quickly as a disaster emerges.

Capacity Building

During the Ebola outbreak in Liberia, response organizations recognized their lack of situational awareness, but did not have networks established to gather all the necessary information to properly gauge the true extent of the crisis. Personnel had to be sent to remote areas to gather data, slowing the response. Developing local networks and surveillance capabilities could improve the speed of the response by providing quick access to information on the outbreak. Shifting activities prior to a disaster can improve the speed of an effective response but requires the development of local capacity to respond.

Participants agreed that building local capacity for response is key to improving regional response capabilities. Building relationships can also serve to help improve local capabilities while also ensuring the ability to work together during a time of crisis. Participants cited the response to Typhoon Haiyan as a successful example of this collaboration. Participants stated that since military forces from the United States and the Philippines exercised often together and had previous experience working together for disaster response, they had the relationships established to allow for effective integration of military capability in the response to the storm.

Preparedness and response activities in response to a crisis help local capacity in the long term for response to future incidents. Participants suggested that the current activities for Ebola response in West Africa and the Global Health Security Agenda could support this type of capability development. Efforts in West Africa supported by the United States included the training of 2,000 Liberians to work in Ebola treatment units and the medical training of over 3,000 health care workers in Liberia. Some

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long-term efforts for rebuilding health systems, expanding viral surveillance networks, and improving preparedness and response capabilities enacted in response to the Ebola outbreak also fell under the commitments identified in the Global Health Security Agenda.\textsuperscript{105} The Agenda, adopted in February 2014, outlines nine objectives that the United States aims to achieve in partnership with other nations, international organizations, and private-sector partners to detect infectious disease threats early, prevent or reduce outbreaks, and rapidly respond to health threats.\textsuperscript{106} When examining how to best engage with other nations, participants suggested focusing on local capacity building to lessen the need for external resources and develop partners within the region that can provide support to their neighbors in the future.


Research and Analysis: U.S. Public Health Investments in the Asia-Pacific

The U.S. Government has invested greatly in the Freely Associated States and U.S. territories within the Asia-Pacific to build capacity. The CDC has provided grants to the Freely Associated States to support disease prevention and public health emergency preparedness. The Department of Health and Human Services also provided personnel and outbreak response training to Freely Associated States.\textsuperscript{107} Territorial health departments and Freely Associated States receive public health emergency preparedness funding from the CDC to use for building public health emergency response capabilities. The CDC also identified 15 public health capabilities and established national standards to provide guidance for public health strategic planning.\textsuperscript{108}

USAID has also worked with nations in Asia for many years so that they might depend less on the United States and other donor nations for support. USAID institutes programs for disease prevention, case management training, and laboratory capacity building, among other public health initiatives. These programs focus on building capacity for responding to HIV/AIDS, malaria, tuberculosis, and pandemic influenza.\textsuperscript{109} For health preparedness, many nations in the Asia-Pacific enhanced their surveillance systems to prepare for pandemic influenza. Nations, including the United States, considered this activity particularly important due to the travel patterns to and from China throughout the Asia-Pacific.\textsuperscript{110}

\textsuperscript{107} Cathy Wasem, Tai-Ho Chen, and Bill Gallo, “Investments, Activities and Opportunities for Collaboration in the Freely Associated States,” U.S. Department of Health and Human Services presentation, 5 April 2013, \url{http://slideplayer.com/slide/2742731/}.

\textsuperscript{108} CDC, Office of Public Health Preparedness and Response, “Funding and Guidance for State and Local Health Departments,” 10 April 2015, \url{http://www.cdc.gov/php/coopagreement.htm}.

\textsuperscript{109} USAID, “Global Health.”

USPACOM also supports capacity building within its AOR, mainly through military-to-military rapid response training and laboratory capacity building. USPACOM takes an all-hazards approach, and it partners with the Defense Threat Reduction Agency to provide equipment and personnel for developing partner nation capacities for disaster response and disease control. USPACOM has worked with nations to develop influenza surveillance systems and response capabilities for chemical, biological, radiological, and nuclear incidents.  

Participants underscored the importance of maintaining commitments for public health capacity building in partner nations. Participants noted past successes as means to validate further investment in partner capacity building. For example, graduates of the Kenyan Field Epidemiology Training Program deployed to Liberia to help gather epidemiological data, serving as an important regional capability in Africa. Participants recommended leveraging existing frameworks such as the Global Health Security Agenda for driving investments while identifying other avenues to expand local capacities and maintain investments.

**Use of U.S. Military Capabilities for Health Emergency Response**

**Concerns, Perception, and Expectations for Use of U.S. Military Resources**

Participants highlighted concerns regarding provision of support by the U.S. military during a disaster. Some participants stated that more extended military presence could cause problems related to the perception of local populations regarding the military presence. Participants said it is important to maintain the message that the U.S. military is present during a disaster strictly to help the local civilian authorities. Working with local populations and ensuring effective public messaging prior to deployment could help ease concerns of host nation residents about the presence of foreign military forces.

Participants also noted how appearance can impact local perceptions of U.S. military forces. U.S. Army Civil Affairs personnel work to identify new approaches for engaging with the civilian population. For example, a participant cited an example of a humanitarian mission in Haiti where the U.S. military supported restoration of the banking system in-country. Rather than wear his uniform, the lead military individual wore a normal business suit, since his full-time job was in the banking industry. Portraying himself as a banker rather than a soldier gave him credibility with the local banking industry. Participants noted, however, that not wearing a uniform when responding as part of a military force can have negative international ramifications. Participants cited the issues that arose after Russian troops deployed in the Crimea without wearing identifying markings such as badges or flags, an action that some believed to be illegal and in violation of modern conventions on warfare.

Participants also noted the legal implications that must be addressed for U.S. military response to a foreign disaster. The host nation must invite the U.S. military into the country to support disaster response. Once invited, the Ambassador would help obtain diplomatic clearance for each individual and unit supporting the response. The U.S. military generally supports humanitarian assistance and disaster relief within a permissive environment, or else other considerations would arise to change the mission from a humanitarian mission to a military one. Since the original message for the humanitarian mission would state that the United States was present to help, changing the nature of that mission could cause confusion. The host nation would need to decide whether the nature of the mission should change, so participants stated that if the environment was no longer permissive, the U.S. military might need to pause operations while decisions were made. Some participants felt that deviations from a strictly humanitarian mission may not be best for such a situation and recommended using other forces such as ASEAN military forces or a UN peacekeeping force.
Participants noted many issues related to expectations for the scope and scale of U.S. support in a health crisis, citing that many nations may now view the U.S. response to the 2014 West Africa Ebola outbreak as precedent-setting for the level of response to be given in a health emergency. Participants highlighted the importance of activities such as needs assessments to determine the level of support, so if the United States provides less support than in a past disaster, the decision-makers can explain why they decided to reduce the amount of support. The United States should also work with the host nation to clearly define expectations and identify gaps so that the support provided is realistic and targeted to reduce the need to scale back once the response is under way.

**Appropriate Type and Level of Support**

Participants engaged in an in-depth discussion regarding the types of support the U.S. military can and should provide during a health emergency as well as the scale of support for international response. Participants stated that discussions regarding the role of the U.S. military in humanitarian assistance and disaster relief operations have been ongoing and led to questions about whether the military should be used as a labor force in these sorts of operations. These issues lead to a cost-versus-benefit question for involvement of the U.S. military, further analysis of which is needed. Some participants felt that using the military for humanitarian assistance and disaster relief missions and response to health emergencies could be excessive, so the U.S. Government should outline limitations for support to the host nation and explain why the U.S. military would not provide certain types of support.

Once the United States agrees to provide requested support to an impacted nation and identifies the U.S. military as a source of support, the U.S. Government negotiates a memorandum outlining the needs and resources with the host nation government so that the host nation’s leadership maintains awareness of the sort of support the U.S. military will provide and the timeframe for response. The negotiation period occurs while the U.S. Government conducts its call for proposals to support the response needs, and if civilian agencies cannot fill those gaps, USAID OFDA may ask the military to provide the needed resources. For a health emergency, participants stated, USPACOM would not serve in a lead role for medical response but rather fill needs related to logistics and infrastructure support. However, experience with the Ebola outbreak in West Africa showed that the nature of the situation may require flexibility for the types of support provided. Participants stated that civilian agencies and contractors did not respond to requests for proposals due to fears related to Ebola, leading the U.S. military to fulfill roles they do not normally conduct in humanitarian assistance and disaster relief missions. The U.S. military still kept its requirement to provide a unique capability in this situation due to the lack of civilian or private-sector support for those missions.

Participants noted similarities between the situation outlined in the exercise and the situation experienced in Liberia for the Ebola outbreak. Based on this experience, participants identified the first priorities for response as controlling the outbreak, identifying patients, and monitoring and tracking cases. USAID OFDA would most likely look to the NGO community and UN partner agencies to conduct epidemiological work and information management. The U.S. military would provide support in areas where civilian authorities lack capabilities.

USPACOM has capabilities to provide laboratory assistance and public health assistance to conduct needs assessment and rapid response. During the U.S. military response to the Ebola outbreak in Liberia, the U.S. Navy established a mobile laboratory near a WHO clinic that helped speed diagnoses of patients, reducing the required time (formerly two to five days) to three to five hours. The U.S. Navy provided the mobile facilities as well as the personnel to support Ebola virus detection in blood samples from the nearby clinic. Participants

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stated that public health support, if provided, would more likely be a joint mission with the Public Health Service. USPACOM can also provide both small and large medical facilities, supporting over 100 beds if necessary. Participants noted, however, that medical ships would not work for a disease such as Ebola due to its contagious nature.

Most participants agreed that USPACOM most likely would not provide direct patient care services, medical and public health training, or safe-burial support during an Ebola outbreak. While USPACOM does have medical capabilities, participants stated that other organizations such as NGOs would be more likely sources to fulfill this capability. Participants acknowledged, however, that if the civilian organizations did not have the resources to meet the levels of support required for an outbreak, the request could be sent to the military despite these not being unique military capabilities.

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**Research and Analysis: Expanding the Role of U.S. Military in Health Emergencies**

As military involvement by the U.S. military and foreign militaries in disaster response and relief operations becomes more common, the question arises as to what role militaries should play in disaster response. Governments tend to view the use of military assets as a last resort, but recent trends show an increase in reliance on military resources despite clear understanding of the lack of cost-effectiveness of such support. The U.S. military has many capabilities that can be brought to bear for disaster response and relief support. When examining the role of the U.S. military in response to a health emergency, however, many participants felt that the role of the U.S. military should be limited to capabilities that civilian organizations and NGOs could not as easily fill, such as large-scale logistics and transport capabilities. However, the U.S. military has historically provided medical assistance and may be considered for such a role.

The U.S. military conducts medical humanitarian missions for the joint benefit of U.S. military personnel and partner nations. Permanent authority for funding a general humanitarian program came in 1987 under Title 10, Chapter 20, Sec. 401, placing medical, dental, and veterinary care provided in rural areas of a country as an authorized type of humanitarian assistance. Under this authority, U.S. military medical personnel have conducted joint training exercises with partner nation medical personnel around the world, providing medical and dental care for rural communities. U.S. Southern Command alone has conducted more than 295 medical readiness training exercises in conjunction with partner nations in Central America.

The U.S. military has provided direct patient care when supporting responses to natural disasters in foreign countries. In the wake of the 2010 earthquake in Haiti, the U.S. military provided hospital beds, including the hospital ship USNS Comfort, and treated nearly 10,000 patients. Though U.S. military personnel did not treat any patients during the 2014 West Africa Ebola outbreak, the U.S.

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113 Participant comments.


military helped to expand treatment capacity through training of over 1,500 medical personnel and support staff.\textsuperscript{118} Supporting this training was crucial to expanding capacity for response, since, prior to this incident, only Médicins Sans Frontières had the Ebola-specific clinical capacity to respond to the crisis. The U.S. military focused on providing infection control training to clinical and support staff, rather than advanced medical training.\textsuperscript{119}

Given the history of engagement in medical assistance for training purposes and in humanitarian assistance and disaster relief operations, there is precedent for involvement of U.S. military medical professionals in the provision of treatment during a health emergency. The requirement of U.S. military assistance in this role would depend on the capacity of civilian organizations, but, if overwhelmed, the U.S. military has the proven capability to provide medical services in austere and crisis conditions.

\textsuperscript{119} U.S. Africa Command, “Support to USAID,” \url{http://www.africom.mil/operation-united-assistance/support-to-usaid}.

Participants also highlighted infrastructure support the U.S. military could provide. For the response to the 2014 West Africa Ebola outbreak, the U.S. military built clinics in affected nations to help expand the medical capacity. In Liberia, the DoD established a 25-bed hospital in the capital of Monrovia as well as ten Ebola treatment units throughout the country.\textsuperscript{120} Participants also noted that the U.S. military could provide infrastructure support for nonmedical needs, such as improving airport and seaport capacities.

Some of the more likely roles for USPACOM involve large-scale logistics and transportation support. USPACOM can provide both airlift and sealift to support wholesale logistics. The U.S. military has considerable airlift and sealift capabilities, with large fixed-wing cargo aircraft serving as the primary means of transportation during humanitarian assistance and disaster relief operations. For areas with impermissible landing zones, rotary-wing aircraft can serve as transport. Sea-based platforms can support both types of aircraft. DoD can also provide distribution and supply-chain management capabilities through the Defense Security Cooperation Agency, the Defense Logistics Agency, and U.S. Transportation Command.\textsuperscript{121}

\textsuperscript{121} Jennifer D. P. Moroney, et al., “Lessons from Department of Defense Disaster Relief Efforts in the Asia-Pacific Region.”
Perspective on the U.S. Response to the 2014 West Africa Ebola Outbreak

The following narrative is based on comments from a U.S. Government official involved in the response to the 2014 West Africa Ebola outbreak.

One of the big questions for U.S. support in West Africa was what the role of the U.S. military would be in the response. By the time U.S. officials arrived in Liberia, the outbreak had begun to grow faster, and the U.S. Government felt that the U.S. military must respond, but they did not have a clear need identified. Priorities for the response included the rapid development of a functioning public health system, and officials expected the military to be involved in this activity. Since Liberia had a small military with little medical expertise, there was no use for military-to-military support. Instead, USAID OFDA requested rotary-wing airlift to transport personnel into the field to gather information on the situation, but DoD declined the request since it did not view it as a unique military capability. Following two months of negotiations, the U.S. Government determined that the U.S. military would not provide patient care due to risk to U.S. forces but would provide training for local providers. In addition to this work, the U.S. military built clinics and eventually provided lift support as well.

Overall, responding to the Ebola outbreak in West Africa posed a new problem for the humanitarian community and thus presented many challenges. The response took time to develop and implement but eventually reached a point where the impacted nations began to contain the outbreak. As of early 2015, most nations had entered a transition phase. Since speed of the response is critical in a developing outbreak, all partners need to be ready to respond and understand that the situation may require U.S. military involvement.

Push Versus Pull Strategy

Participants identified the general approach for international humanitarian assistance and disaster relief operations within the U.S. military as a “last in, first out” approach. The U.S. military equips and trains for military missions, and that remains its primary function, but the U.S. Government must also remain cognizant of the perceptions that may accompany this type of language. Some participants voiced concern that local governments may view this sort of language as contradictory to U.S. commitments for support during a disaster. Participants also noted that the response to the Ebola outbreak in West Africa did not fit the normal mold for U.S. military response, since the military did not fulfill a unique capability, responded before some other organizations, and did not leave as quickly.

Participants stated that USPACOM usually enters humanitarian assistance and disaster relief operations with a small footprint until it can obtain a clearer understanding of the situation. Once assessments identify needed capabilities, USPACOM moves forces closer for staging. Some participants noted that this approach can cause issues by limiting the effectiveness of forward-leaning, rapid-response capabilities. Participants suggested that plans at USPACOM should include considerations for these types of capabilities, examining time-distance relationships, needs assessments, and local perceptions for support requirements. Participants also suggested that pre-positioning certain resources could help improve response times and local perceptions of U.S. commitments for support.
Research and Analysis: Push vs. Pull—Which Strategy Is Appropriate for Response in the Asia-Pacific?

Provision of resources during an emergency can be described in market terms of “push” and “pull.” “Push” refers to sending resources forward that are likely to be needed and then subsequently identifying the need for those resources within response operations. “Pull” refers to a strategy of first identifying and then obtaining needed capabilities, bringing in resources as needed. Domestically, the U.S. shifted towards a “push” strategy for response, following the Federal Emergency Management Agency’s forward-leaning approach of “Go Big, Go Early, Go Fast, Be Smart.”

The Federal Government maintains a forward-leaning posture for disaster response, pre-staging resources in anticipation of requests. The Post-Katrina Emergency Management Reform Act granted this authority, allowing the President to “provide accelerated federal support in the absence of a specific request.” For domestic response, this approach has proven useful for rapid deployment of needed resources and personnel following a disaster. In preparation for Hurricane Sandy in 2012, the President made a pre-disaster declaration that allowed for pre-positioning of critical supplies and personnel. This pre-positioning of resources allowed for a rapid surge in the response within 48 hours of landfall.

Some also advocate a similar approach to international humanitarian response. Following the 2010 Haiti earthquake, a former senior White House official urged the Obama Administration to push resources in anticipation of needs to avoid delays caused by communication and coordination issues as well as distance and transport challenges. Concerns about the speed of response, especially in a health emergency when faced with a growing outbreak, highlight a potential need for a forward-leaning approach.

Adopting a “push” strategy for international response, however, also creates issues, particularly in the area of costs, maintaining host nation sovereignty, and overwhelming the host nation’s ability to receive and coordinate supplies. A report by the members of the Naval Postgraduate School highlighted the cost issues associated with the U.S. Navy’s push of resources to Japan following the 2011 Tohoku earthquake. The U.S. Navy sent supplies with the understanding that it could receive reimbursement through the Overseas Humanitarian, Disaster, and Civic Aid program; however, the Navy could receive reimbursement only for items specifically requested by the government of Japan. The U.S. Navy then had to pay, from its own operating budget, the costs associated with pushing the other items. Given the cost of lift for resources in the Asia-Pacific, pre-staging of resources without a specific request could prove cost-prohibitive for U.S. military components.

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126 Dana Herbert, James A. Prosser, and Rachele A. Wharton, A Cost Analysis of the Department of the Navy Humanitarian Assistance and Disaster Response to the 2011 Tohoku Earthquake and Tsunami, MBA Professional Report, Naval Postgraduate School, Monterey, CA, June 2012.
Mission Evolution

As the situation on the ground changes during a health crisis, decision-makers would need to identify new courses of action to address changing needs and priorities. For U.S. military humanitarian assistance and disaster relief operations, the responsible geographic combatant command typically establishes a joint task force with a commander tasked by the geographic combatant commander. For the Asia-Pacific, the USPACOM Commander would give the joint task force commander a defined mission, and the joint task force commander could not deviate outside the limitations and constraints of the mission. If the mission needs to adapt based on changes to the situation, the joint task force commander must go through the chain of command so that the USPACOM Commander can coordinate with USAID OFDA. The host nation can also request a change to the mission, which the U.S. Government would need to approve to alter its support.

Any changes in the U.S. military mission would need to come from USAID OFDA after coordination of the request from the impacted nation with the UN and other supporting nations and organizations. Participants defined changes in the DoD mission as mission evolution—starting with common types of DoD support and expanding the mission as the situation dictates. Participants cautioned, however, to avoid mission creep, which is defined as a gradual shift in objectives that often results in an unplanned, long-term commitment. The mission does not need to shift based on every need that arises, and participants agreed that too many alterations can cause confusion, so responding organizations need to follow the proper procedures to avoid problems related to mission creep.

Situations can change rapidly and unexpectedly during a health crisis, and military forces may have their mission adjusted based on the local needs. Following the 2011 Tohoku earthquake, the Japanese Ground Self-Defense Forces deployed to support local authorities with the response. Deployed forces could not bring remains of victims to the proper location for burial, so they had to dispose of remains on the spot even though that function is not one of their roles for disaster response.

Transition Back to Steady-State

While discussion did not cover details about the transition back to steady-state operations, participants highlighted the importance of this activity for ensuring that the U.S. military does not leave a gap in capability after departing. USPACOM addresses some of these needs through its medical diplomacy and J9 outreach activities prior to an event, but responding organizations also need to focus on how to scale down a response. Participants stated that the military should remain in-country only for a short time, so planners need to determine how to transition the roles fulfilled by the military to other organizations.

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128 Joint Publication 3-29, Foreign Humanitarian Assistance.
129 Participant comments.
Research and Analysis: Developing an Exit Strategy

DoD doctrine indicates that planning for a transition of U.S. military functions to other organizations should occur as early as possible. This doctrine outlines a phased approach for transition planning that includes an assessment of the functions conducted by the U.S. military forces, observation of those functions by the organization(s) that will adopt the role once the U.S. military terminates activities, integration of the organization(s) into the functional tasks, and finally the handover of activities to the designated organization(s). However, doctrine does not define clear criteria for when termination or transition should occur, indicating that transition criteria may be based on events, measures of effectiveness, availability of resources, or a specific date.\textsuperscript{130}

Criteria for transition during health crises can focus largely on infection rates, allowing for a more quantifiable definition than in many disasters. The U.S. military provided significant support for the response to the 2014 West Africa Ebola outbreak and began to draw down forces as Ebola cases declined. The U.S. Government identified a specific date for the departure of the last American troops, though the U.S. Government did assign a contingent of 100 DoD personnel to remain as part of a continued presence in West Africa for public health support. The U.S. Government recognized a decline in need for large-scale U.S. support, with infection rates dropping by 80\% from peak rates, but also highlighted the need to transition to providing more long-term support.\textsuperscript{131}

Protection of U.S. Forces

Arming Orders

When considering force protection requirements, decision-makers would need to identify necessary rules for use of force by the U.S. military. The Chairman of the Joint Chiefs of Staff standing rules of engagement establish guidance for use of force for mission accomplishment and self-defense for most U.S. military operations. The overall policy states that unit commanders always retain the right to exercise unit self-defense in response to a hostile act or demonstrated hostile intent.\textsuperscript{132} A high-level discussion would determine whether any changes to the Chairman’s standing rules of engagement would need to occur for the given situation.

The host nation would hold primary responsibility for protecting all incoming support organizations, including the U.S. military, so the local government would be responsible for security of U.S. forces. Participants stated that the U.S. military forces would not be armed in that situation. However, participants noted that the limited capacity of the local authorities may mean they could provide security only to certain limits. If the local authorities could no longer provide the necessary security to U.S. forces, then the geographic combatant commander would need to reassess the situation.

In the exercise scenario, the country of Asiana began to experience issues with civil disturbance as the outbreak continued to grow. If the situation grew to the point where U.S. forces could face harm, the U.S. military would need to call for an operational pause to determine the risk. Participants stated that the political support for the humanitarian assistance and disaster relief operations might disappear if any U.S. forces were injured or became ill, so decision-makers would need to carefully consider force protection requirements. The geographic combatant...

\textsuperscript{130} Joint Publication 3-29, \textit{Foreign Humanitarian Assistance}.
\textsuperscript{132} Chairman of the Joint Chiefs of Staff Instruction 3121.01B, \textit{Standing Rules of Engagement/Standing Rules for the Use of Force for U.S. Forces}, 13 June 2005.
commander would work with the Ambassador to change arming orders if necessary.

Participants noted that remaining unarmed may not mean that U.S. forces would not carry weapons, but rather that they would not have visible weapons. Some participants noted instances where U.S. military forces kept weapons in boxes instead of carrying them while responding in another country. Participants discussed issues that could arise if the arming orders changed to allow the military to be openly armed. Participants said that armed U.S. military forces could no longer work with certain NGOs, since some view it as breaking international law, which could affect their NGO status. The impact on the relationship would depend on the organization, since each organization has its own policies in place to ensure its impartiality under international guidelines.

U.S. Military Involvement in Security

The local government maintains responsibility for the overall security within the country. Civil disturbance events can arise due to a health crisis, and the local government would be responsible for counteracting any civil disobedience. Foreign military forces are not likely to undertake any of these security missions for many reasons, including international laws and impacts on local perception. The U.S. military would not want to be viewed as an invading or occupying force when providing humanitarian support.

Participants discussed, however, that the nature of the operation could change based on the need to maintain stability within the impacted country and the region. Civil disruption can destabilize a nation, especially when that nation already faces a crisis. Participants noted that a similar situation arose in Liberia during the 2014 Ebola outbreak, where employment of the military provided a stabilizing presence even when those soldiers did not fill security roles. Since the United States would not want a failed state, a high-level discussion within the U.S. Government involving the Secretary of Defense and President would need to occur to determine whether the U.S. military would transition from humanitarian to military support operations. Participants cautioned that the U.S. Government must still respect the sovereignty of the impacted nation.

Personal Protective Equipment

Force protection during a health emergency expands beyond normal security of forces, including protecting personnel from infection. Transmission of the Ebola virus occurs only by fluids, but the virus can survive for a few hours in a moist environment, allowing for transmission through contact with a previously contaminated surface or object. During the U.S. response to the 2014 West Africa Ebola outbreak, the U.S. military did provide any direct care for Ebola patients. While most participants agreed that this role would mostly likely fall to an NGO, some suggested a possible role in providing patient care if civilian organizations became overwhelmed. Given the possibility of exposure during a health emergency, participants suggested that consideration should be given to how to protect military personnel while in the field, not only from diseases such as Ebola but also more easily transmissible diseases such as many respiratory viruses.

Personal protective equipment (PPE), discussed further in Appendix C, is equipment intended to minimize exposure to external hazards. The WHO and CDC adopted new guidelines for PPE in the case of Ebola, changing recommendations based on lessons learned in the 2014 West Africa outbreak. The DoD follows the standard medical practice for use of PPE and alters PPE guidelines based on international standards. The DoD distributed PPE guidance to all three Surgeons General and to all DoD components. All medical treatment facilities for the operational forces also received training for the updated PPE guidance.

Participants stated, however, that the actual supply of appropriate PPE may not be enough. The nature of the Ebola virus led to shortages of PPE during the 2014 West Africa Ebola outbreak. Clinics used hundreds of suits each day, with an estimated 300,000 suits needed each month for the outbreak. Though manufacturers increased their production rates, organizations and medical facilities had difficulty obtaining resupply through the uncoordinated supply chains. The military does not stockpile the suits used for Ebola protection, and the mission-oriented protective posture (MOPP) gear used by military personnel would not be suitable for use in Ebola response operations. Participants stated that providing PPE for military personnel in that type of environment could be difficult and fiscally straining. The DoD would procure gear for use by military personnel, but USAID would also work to identify PPE sources for U.S. responders.

Risk Communication

Risk Communication Resources

Participants discussed a number of existing risk communication resources to guide and support risk communication during a disaster as well as resources specific to health emergencies. The WHO offers risk communication resources for media communication and behavioral and social communication in outbreak response. The WHO also identified risk communication as a core capacity, outlining the recommended components for the development of this capacity, including identification of risk communication partners; development of risk communication plans, policies, and procedures; and maintenance of accessible information for the media and the public. ASPED identified three functional areas for risk communication: health emergency communications, operation communications, and behavior change communications. ASPED established the components of each of these risk communication functions and suggested strategic actions for capability-building to meet these risk communications needs.

UN OCHA conducts communications as a critical component of its operations to raise and maintain public awareness of disasters requiring humanitarian response and of impacted populations. UN OCHA developed a communications handbook for its Communications Officers and OCHA staff to provide guidance on information networks, communications tools available to UN OCHA staff, and media engagement. UN OCHA also includes social media monitoring as part of its communications plan and proposed hashtag standards for monitoring Twitter during an emergency.

The DoD has set doctrine and policy for risk communications with the understanding that each situation is different and that the message is tied to the situation. The U.S. military needs to use an approach that clearly explains what the military is doing and why it is providing a certain capability for the situation. DoD guidance on strategic communication includes nine principles to characterize effective strategic communications: leadership-driven, credible, understanding, dialogue, unity of effort, pervasive, results-based, responsive, and continuous. The Commander’s Handbook for Strategic Communication and Communication Strategy provides further guidance for the military, identifying the guiding policies and doctrine for strategic communication and the current strategic communication practices within the U.S. joint force.

140 U.S. Joint Forces Command, Joint Warfighting Center, Commander’s Handbook for Strategic Communication and
Besides this guidance, the U.S. military has programs in place to keep troops and their families informed. Participants highlighted the family days that the National Guard holds to allow families to see what their loved ones do for a living and build an understanding relationship between the families and the National Guard. The National Guard also conducts outreach with employers. The DoD conducts town hall meetings with family members, and commanders hold pre-deployment meetings to answer questions and provide information. All services have family member representatives who serve as lines of communication with the unit commanders. The DoD developed and improved many of the methods used to maintain communication with families over the course of the wars in Afghanistan and Iraq, applying these lessons learned to ensure that families and troops remained informed and could voice concerns. Every command has a public affairs officer trained in these approaches.

**Curbing Fear Mongering**

Effective public messaging and media engagement can help ensure clear representation of the risk posed in a health crisis. The media misrepresented the risk during the 2014 West Africa Ebola outbreak, leading people to believe that the risk for exposure was higher than in actuality. Of hundreds of American aid workers supporting the response to the outbreak, a total of five contracted Ebola in West Africa and returned to the United States for treatment. None of the over 2,000 U.S. military personnel involved in the response became infected. Yet in the United States, the media focused on whether the disease could spread there. Many individuals, including one of the U.S. doctors who contracted Ebola while working with Médecins Sans Frontières in West Africa, blamed the media for stirring fear in the United States rather than relaying facts about the disease and educating the public.

Participants suggested that developing a clear plan could help maintain a consistent and accurate message to the public regarding the actual level of risk, to get in front of the media message and avoid a fabricated crisis. Participants recognized that there would be fears due to the nature of the disease, but educating the public on the disease could ensure that the public does not react negatively to the situation. Plans should include multiple methods to reach the public, including radio announcements, posters, and reaching out to community leaders. In a situation with high degrees of fear, building trust with the audience is important. Working in an international environment adds challenges, and U.S. responders must consider sociocultural sensitivities in their approaches to communicating with the populations of the impacted nation.

The local government can work to build public trust by participating in public events and visiting clinics. Working with the media to produce honest reporting can encourage honesty from the public in return. Initial fears in West Africa led to a lack of reporting when individuals fell ill. The government in Japan, on the other hand, shared information quickly and accurately, which led residents to be honest about potential exposures—they identified three suspected Ebola cases.

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146 Participant comments.
Research and Analysis: Risk Perception During the 2014 West Africa Ebola Outbreak

Risk perception defines the ways in which people characterize and evaluate threats. In the age of social media, the U.S. Government found it had limited control over risk perception during the 2014 West Africa Ebola outbreak, and a perceived crisis was created in the United States. The expansive reach of social and mass media provided an ideal environment for the propagation of false information. The media emphasized the potential effects of the life-threatening disease without providing the same caliber of stress on disease prevention and the low likelihood of infection.

During a Congressional hearing on the Ebola outbreak, Representatives questioned the CDC Director and pressed for travel bans, against the CDC’s recommendation. The White House noted that Ebola was “not highly contagious like the flu” and agreed that it was unlikely an Ebola outbreak would occur in the United States, given our health care infrastructure. States, however, instituted procedures to forcibly quarantine healthcare workers returning from West Africa. The Defense Secretary approved a 21-day quarantine of military personnel serving in Ebola-stricken areas. Contradictory messages from the federal and state governments created confusion that contributed to public fears of the disease.

The CDC delivered public information mostly through its website, whereas the 24-hour news networks announced nonstop coverage of the “Ebola crisis.” To increase CDC outreach capabilities, communication experts suggested building two-way communication to exchange information between individuals, groups, and institutions where interaction to address and acknowledge concerns can exist.

Both misinformation and lack of information contributed to public fears in the United States regarding Ebola. Implementing an effective strategy to handle communication among the public, media outlets, opinion leaders, and doctors could improve risk perception for future outbreaks. European experts from a 36-month collaborative project developed a framework model aimed at local health organizations. The model provides practical approaches that organizations can adapt to specific situations and use as a communication guide. Effective risk communication involves all stakeholders, especially the general public. Experts emphasized the importance of “listening

to the public” and acknowledging that the existence of fear is rational in order to build trust. The framework also suggests building interactive communication through the media before the crisis. If there is no strategy in place during an outbreak, there is a greater risk of public distrust in authorities and spread of misinformation from the onset. Without the appropriate means to control public understanding of risks prior to a health emergency, well-intended policies, outreach, and prevention programs may become ineffective.

Social Mobilization

The WHO identified community engagement and social mobilization as response priorities for countries with widespread and intense transmission during the 2014 West Africa Ebola outbreak. The WHO recognized social mobilization as a means to promote the adoption of Ebola prevention strategies and increase education on the disease. For the 2014 West Africa outbreak, the United Nations Children’s Fund served as the lead agency for social mobilization activities. These activities also supported other response efforts such as safe burial and case management. For example, traditional burial rituals often involved cleaning and touching the body, but the WHO recommended cremation for safety. Since the two methods conflicted, some people avoided reporting deaths in order to conduct their traditional burial practices. Social mobilization task forces developed lists of community groups and religious leaders that promoted safe and culturally acceptable burial practices for Ebola victims and engaged with communities to overcome the cultural barriers that limited reporting of deaths.\(^{157}\)

Participants agreed on the importance of obtaining and maintaining support of the local community, religious leaders, and traditional healers. The local community may have different understandings of the disease based on their culture and history, so engaging with traditional healers can help ensure that the community understands how to identify and treat infected individuals. Community engagement efforts can also help ensure that infected individuals report to clinics for treatment. The local government would lead these efforts with the support of civilian organizations, so there would not likely be a military role beyond coordination through civil affairs officers.

Public Messaging

Past disasters often highlighted the importance of clear, accurate communications, but messaging can be difficult due to incomplete information during a time of crisis. International response operations can further complicate the process if messaging developed by the impacted nation differs from messaging developed by external partners. For example, following the disaster at the Fukushima Daiichi nuclear power plant, the U.S. Government issued evacuation guidance to Americans that set a distance of more than four times the recommendations of the Japanese government. The U.S. Government recommended a 50-mile evacuation zone consistent with Nuclear Regulatory Commission guidelines, whereas the Japanese government recommended that residents within 12 miles of the plant evacuate. The conflicting evacuation guidance led many to question the information presented to the public by the Japanese government.\(^{158}\) Donor nations, NGOs, and international organizations must coordinate messaging with the host nation to ensure distribution of a unified message and avoid conflicting information.

Public information provided by both the host nation and response partners needs to support the leadership role of the host nation’s government, making it


clear that all partners are present to support the host nation’s government. This message is true for civilian organizations, donor nation governments, and foreign militaries. The host nation’s government can also play a role in shaping local perceptions by sending a message of gratitude for external response organizations, reinforcing a positive perception of foreign organizations and militaries. This sort of messaging can improve morale of responders and help humanize foreign troops to the local populations.\textsuperscript{159}

Effective public messaging also relies on having the appropriate spokesperson. The individual should be someone that the public can understand and will trust. Though the Secretary of Homeland Security assigned Vice Admiral Thad Allen to lead search-and-rescue and recovery efforts following Hurricane Katrina, Lieutenant General Russel Honoré, commander of Joint Task Force Katrina and lead for DoD operations, became the face of the response to the hurricane. Lieutenant General Honoré, a Louisiana native, brought a level of trust and credibility that other leaders lacked due to his presence and personality, highlighted by a poll of 1,200 Americans who voted him the most effective leader in the Katrina relief operations.\textsuperscript{160} Choosing the right spokesperson for a disaster can reassure the local population that someone is there to help.

Participants identified a variety of audiences, communications methods, and talking points to provide information to the public based on the exercise scenario. Participants highlighted the importance of reaching out to local communities with messaging. Messages requesting the cooperation of the public should focus on specific activities that the local community can do to support the response. Participants suggested that messaging the people of Asiana about U.S. military involvement in the response to an Ebola outbreak should highlight the fact that Asiana’s government invited the U.S. military and that U.S. presence is temporary. Participants suggested that these messages would help reassure the public regarding U.S. military involvement and clarify their role and mission while in-country. The message would need to be translated into their native language, and participants suggested that a local celebrity or trusted news person deliver it to ensure credibility.

The U.S. Government and DoD would need to develop messaging for U.S. citizens to explain U.S. military involvement in the Asiana Ebola response efforts. The U.S. Government must ensure that the public understands the role of the U.S. military and that the U.S. military provides unique capabilities and serves as part of an interagency team led by USAID OFDA. The U.S. Government would also need to inform the public of the precautions taken to ensure the health and safety of U.S. troops. The DoD would also need to develop messages about the role of the U.S. military for Congress to validate funding requests. This message would need to clarify how support of the response impacts U.S. health and security interests.

Similar messages on the role of the U.S. military could be targeted toward the international community to clarify how the U.S. military integrates with international partners. The intent of this messaging would be to portray the legitimacy and legality of foreign military involvement with the international community. This messaging should align with messages provided by the local government to local populations as well as the international community.

When providing communications to deployed forces, DoD would want to provide information on their mission (the purpose, duration, etc.), inform troops about the rules of engagement, define how to interact with the local community, and provide guidance on how to protect themselves while deployed. This education would occur through the mobilization processes, and unit commanders could also be given talking points to answer any questions. The DoD could also provide troops with individual cards with this type of information so they can have a reference while in the field.

\textsuperscript{159} Participant comments.

Balancing Hope and Reality

Participants stated that risk communication must maintain a balance between a hopeful message and the reality of the situation. The message must be accurate and honest, but some participants also noted that sometimes the situation needs amplification to build interest for international support. Despite a desire to build interest, participants still cautioned against creating a crisis where one does not exist. The government should aim to communicate need while maintaining an image of hope. Participants noted that some messages could fill the need for rational and factual communication while other messages, particularly those sent to the local communities, should relay hope. Messages should inform the local population about what their government and response organizations are doing to help.
Outcomes

Summary of Challenges

Coordination and Communication:
International participation in disaster response involves a diverse set of actors including all levels of government, donor nations, NGOs, IGOs, and the private sector. Health emergencies add further complexity by requiring involvement from organizations and agencies that might not normally participate in international disaster response activities. Coordination mechanisms exist for ensuring the appropriate use of these resources, with the host nation playing a central role in in-country coordination of disaster response resources. However, many nations in the Asia-Pacific may face challenges managing this coordination due to limited capacity or poor governance structures. Additionally, a lack of frameworks and agreements for international disaster response can slow access to resources and hamper coordination among international partners.

Effective communication among response organizations is key to disaster response, aiding responders with sharing of situational awareness information and avoiding duplication of effort. Use of common language becomes an issue for international response, since responding organizations might face foreign language barriers as well as differing terminology. Standardizing terminology, using plain language, and integrating communications platforms can help to ensure that all participants can communicate during international disaster response operations.

Focusing on Public Health Preparedness:
Most nations invested in public health initiatives in preparation for pandemic influenza. These investments, as well as investments into public health infrastructure for certain endemic diseases such as malaria, predominantly focused on surveillance and laboratory capacity. Governments can adapt these investments to address other health issues based on local risks. Some nations in the Asia-Pacific, however, have faced challenges building the capacity needed to respond to health threats and maintaining existing investments using limited resources. Discussion highlighted the importance of engaging with partner nations in the Asia-Pacific to help build public health capabilities and increase local capacity to respond.

Health emergencies can often develop slowly over time with no clear threshold at which an outbreak reaches crisis levels. Exponential growth of cases during an outbreak can quickly overwhelm local capacity, and the existing international response system is too slow to keep pace with such a crisis. Shifting activities to the preparedness phase can help ensure the local capacity to recognize and respond to an outbreak rapidly, containing the health threat before it reaches crisis levels. Preparedness activities can identify local and regional gaps in capabilities,
allowing more informed decision-making. Understanding local response capacity can also contribute to defining criteria for what constitutes an emergency by identifying clearer thresholds for when the impacted nation would be overwhelmed and allowing for possible movement of resources and support prior to reaching those thresholds.

**Defining Support Requirements and Roles:** Conducting needs assessments is a time-consuming process that delays the ability to respond quickly to a disaster. Nations with limited capacity to conduct the assessments face further challenges and must rely on other organizations for support. Better engagement prior to a disaster can set a foundation for faster assessments, establishing the relationships and networks necessary to gain an understanding of needs prior to a disaster and gather situational awareness quickly after a disaster.

Once a nation identifies and requests needed support from external partners, responding organizations must determine which requirements they can fulfill and what resources to use to fulfill them. The U.S. military is one organization that can provide support and has the capacity and capability to fill a number of requirements for a health emergency. The U.S. military may support activities when there is no civilian agency that can do so, but differing opinions exist on what defines a “unique capability” for the U.S. military to provide in the context of a health emergency. The U.S. military may not be limited to the typical types of support that it provides for other types of natural disasters.

**Maintaining Regional Stability During a Health Crisis:** The U.S. aims to ensure the safety and security of U.S. citizens working within an impacted country. In situations where the impacted nation experiences cases of civil disorder, the U.S. must consider how best to protect responding personnel and whether response operations can continue in such a circumstance. Further consideration must be given to a situation where the government of the impacted nation faces destabilizing elements. A crisis in one country, particularly one that destabilizes the government, will have regional impacts that could threaten U.S. assets and interests. Transitioning from humanitarian to military operations, however, has political implications and requires involvement from high-level decision-makers.

**Establishing Proactive, Flexible Risk Communication Strategies:** Conducting effective risk communication to different audiences is a difficult process that requires understanding the language, culture, and informational needs of each group, particularly in a health emergency when organizations must also consider the health literacy of the audience. Risk communication strategies must also identify appropriate spokespersons and methods of disseminating information that work for each audience. Governments and response organizations need to coordinate messaging to ensure that public messages are accurate and appropriate, especially during health emergencies, when public fears of health risks are often high.
Research and Analysis: Applying Lessons Learned From Domestic Response to Health Emergency Response in the Asia-Pacific

Many of the issues encountered during provision of humanitarian assistance and disaster response internationally are similar to challenges faced for domestic disaster response. Some challenges, such as coordination and communication, occur in both international and domestic disasters across all types of hazards. A health emergency adds more complexity, however, in that many of the key actors and the functions they fill may be different than in response to other disasters.

Whole Community Approach: The Federal Emergency Management Agency adopted the “Whole Community” approach with the understanding that response to complex, catastrophic disasters requires the participation of a variety of partners at all levels of the response. The Whole Community approach moves beyond government-centric emergency management principles and focuses on engagement with individuals, communities, NGOs, and the private sector. The Whole Community principles of partner engagement and resilience building apply to disease outbreaks, where social mobilization plays a large role in ensuring that individuals report new cases and seek appropriate treatment. The WHO identified social mobilization as one of the priorities for response to the 2014 West Africa Ebola outbreak and credited outreach efforts with helping contain the spread of the virus.

Recognizing the necessity to include all partners in preparedness programs, the Asia-Pacific Economic Cooperation proposed adopting a “Whole-of-Society” approach for health preparedness in its “Healthy Asia-Pacific 2020” initiative. The Asia-Pacific region includes a large, culturally diverse population with varying geographies and demographics. Any approach using Whole Community emergency management must be adaptable to fit the local population while integrating with a larger regional system.

Capabilities-Based Planning: Derived from military planning processes, capabilities-based planning allows for the identification of programmatic needs and allocation of resources based on capability gaps. The U.S. public health system uses capabilities-based planning to identify gaps in preparedness, determine priorities for capabilities development, and build long-term strategic plans. The CDC produced guidance identifying 15 public health preparedness capabilities, establishing a national standard for planning at state and local levels. These capabilities fell into six domains: biosurveillance, community resilience, countermeasures and mitigation, incident management, information management, and surge management. The U.S. Government can adapt existing capabilities-based planning methodologies to public health in the Asia-Pacific, helping to define the role the U.S. Government might play in response to a health emergency within the region by identifying gaps in regional capabilities. Such analysis can set strategic priorities for U.S. investment in public health capacity building within the region and drive decisions on allocation of resources during a time of crisis.

Action Items

- Engage regional forums such as ASEAN, NGOs, and private-sector partners on coordination of international disaster response
- Educate on the process for requesting and using U.S. assets, including military assets, in international disaster response
- Develop regional response agreements and an international coordination framework to allow for more rapid delivery of resources
- Continue further expansion of outreach programs in the Asia-Pacific to establish relationships and build partner capacity
- Develop a framework for joint risk communication with partner nations in the Asia-Pacific

Areas for Further Research

- Determine metrics for global public health preparedness to guide investment in existing and new systems
- Develop indicators and triggers for health crises
- Develop an effective funding mechanism for international disaster response
- Conduct a cost-benefit analysis of using U.S. military assets in international health emergencies
- Conduct analysis to determine the impacts of using or altering standing rules of engagement
- Analyze disease outbreak impacts on local and regional stability in the Asia-Pacific
Appendix A: Participant List

Andrew Bates
Alaka’ina Foundation

William Brady
Assistant Dean, Research & Academic Services
School of Global Studies
Thammasat University, Thailand

James Burke
Associate Director for Course Development
National Disaster Preparedness Training Center

Melissa Burns
Cubic Applications, Inc.
Pacific Outreach Directorate
U.S. Pacific Command

Michael Butel, DVM, MPH
U.S. Army Public Health Command
Liaison to U.S. Pacific Command

Lucien Campillo
Camber Corporation
PEID/HD/DSCA Functional Planner

Deon V. Canyon, PhD, DBA, MPH, FACTM
Associate Professor
Office of Public Health Studies
University of Hawaii at Mānoa

Tai-Ho Chen, MD
Commander, U.S. Public Health Service
Centers for Disease Control and Prevention

Ambassador Curtis S. Chin
Managing Director
RiverPeak Group LLC

Rear Admiral Colin G. Chinn, MC, U.S. Navy
Command Surgeon
U.S. Pacific Command

Nick Cosmas
Young Leader Program
Pacific Forum Center for Strategic and International Studies

Chelsea Crabtree
Nursing student
Hawaii Pacific University
Ruth David, PhD  
CEO  
Analytic Services Inc.

Andrea Dos Santos  
Epidemiology/Biosurveillance Specialist  
Pacific Disaster Center

Jake Engle  
Security Forces Client Representative to  
Pacific Air Forces  
ANSER Contractor

Janalyn Ferreira  
Nursing student  
Hawaii Pacific University

Brian Fila  
Senior Military Analyst  
Cubic, Inc.

Natalie J. Freeman  
Senior Development Advisor to U.S. Pacific Command  
U.S. Agency for International Development

Maki Fukami, PhD  
Co-Founder & President  
International Institute of Global Resilience

Major Elizabeth A. Erickson, USAF, MC  
Chief, Strategic Health Engagement Operations  
Surgeon’s Office  
U.S. Pacific Command

Mike Flesher, MD  
Certified emergency physician  
UN Office for the Coordination of Humanitarian Affairs (volunteer)

Nicole Forrester  
CEO  
Pacific Resources for Education and Learning

Col. Stanley Garcia (J5)  
Hawaii National Guard

Lieutenant General Wallace “Chip” Gregson,  
U.S. Marine Corps (ret)  
Chair  
Banyan Analytics

Elin Gursky, ScD, MSc, IDHA  
Distinguished Analyst and Corporate Fellow  
Banyan Analytics

David Hamon  
Director  
Banyan Analytics

Jeff Hensel  
Booz Allen Hamilton

Stephen S. Hillenbrand, GS-12, DAFC  
MC-CBRN Program Analyst  
Office of the Command Surgeon  
Pacific Air Forces

Peter J. S. Hirai, Certified Emergency Manager  
Deputy Director  
Honolulu Department of Emergency Management

Epel Ilon  
Former Government Official  
Federated States of Micronesia
Jamie M. Ka’auamo, U.S. Air Force, MSC  
Chief, Medical Plans and Operations  
Deputy Command Surgeon  
Special Operations Command, Pacific

Sae Lee  
Young Leaders Program  
Pacific Forum Center for Strategic and International Studies

Hoce Kalkas  
University of North Carolina at Chapel Hill

Paul Lenser  
Chief, Medical Operations & Plans  
Joint POW/MIA Accounting Command

Major Akiko Kitayama  
Ground Self-Defense Force, Japan  
Associate Professor  
Department of National Defense Studies  
School of Defense Sciences  
National Defense Academy, Japan

Nancy D. Lewis, PhD  
Director, Research Program  
East-West Center

Lieutenant Commander Matthew “Hammer” Krauz, U.S. Navy  
Crisis Response Branch  
U.S. Pacific Command

Captain Bjorn Listerud  
Medical Plans and Operations  
Special Operations Command, Pacific

John Lacio, DAFC  
MC-CBRNE Program Analyst/  
Unit Security Manager  
Pacific Air Forces

Gen Arthur Logan  
Hawaii National Guard

Mara Langevin  
Cubic Applications Inc.  
Center for Excellence in Disaster Management and Humanitarian Assistance

Michael Manville  
TCMSE Senior Medic  
Special Operations Command Pacific

Doug Mayne, CEM  
Administrator  
Hawaii Emergency Management Agency

John B. McCombs, MS, MHA, MA, DMS  
J57/1 CWMD and CBRN Defense Division  
Strategic Plans and Policy Directorate  
U.S. Pacific Command

Jonatan A. Lassa, PhD  
Research Fellow  
Centre for Non-Traditional Security Studies  
S. Rajaratnam School of International Studies  
Nanyang Technological University

James Murphy  
Liaison Officer to U.S. Pacific Command  
Joint Requirements Office  
ANSER Contractor
Dale A. Nelson, APA-C, CPT, SP  
Deputy Command Surgeon  
Medical Directorate  
Joint POW/MIA Accounting Command

Elizabeth Nathaniel  
Analyst  
Banyan Analytics

Joseph Pak  
National Disaster Preparedness Training Center

Major Ed Park  
Pacific Outreach Directorate  
U.S. Pacific Command

Sarah Y. Park, MD, FAAP  
State Epidemiologist  
Chief, Disease Outbreak Control Division  
Hawaii Department of Health

Lieutenant Colonel Thomas “Whit” Parker, U.S. Marine Corps  
Crisis Response Branch  
U.S. Pacific Command

Wesley D. Palmer, MD  
Lieutenant Colonel, U.S. Air Force, MC, FS  
Deputy, Medical Readiness and Engagements Division  
Pacific Air Forces

SFC(P) Eliot W. Payton  
PAC Medical Section NCOIC  
Joint POW/MIA Accounting Command

Charles Pimentel, PA, MBA  
Director, Government Operations  
CG1 Health Management Consulting

Lloyd Puckett  
CBRN Analyst  
Center for Excellence in Disaster Management and Humanitarian Assistance

Ted Ralston  
University of Hawaii  
National Disaster Preparedness Training Center  
Program Development

Nicole Rosendaal  
Junior Researcher / Project Manager  
Amsterdam Institute for Global Health and Development

Lieutenant Colonel Walter R. Ross, Jr.  
Deputy State Surgeon  
Office of the State Surgeon  
Hawaii Army National Guard

Elayne Saejung  
Course Development Program Manager  
National Disaster Preparedness Training Center

Karl Semancik  
Executive Vice President  
Joint Operations  
ANSER

Cecili K Sessions, MD, MPH, FAAP  
Lieutenant Colonel, U.S. Air Force, MC  
Pediatrics & Preventive Medicine  
International Health Specialist  
Pacific Air Forces

Lieutenant Colonel Eltressa Spencer  
Deputy Branch Chief  
Lead Defense Support of Civil Authorities Planner  
U.S. Pacific Command
Colby Stanton  
Director  
Pacific Area Office  
Federal Emergency Management Agency

Yuki Tatsumi  
Senior Associate  
East Asia Program  
The Stimson Center

Commander Enrique S. Torres, MSC, U.S. Navy  
Deputy Force Medical/Force Health Protection Officer  
U.S. Marine Corps Forces Pacific

John Towles  
Military Affairs Liaison  
Office of Congresswoman Tulsi Gabbard

Linh Tran  
Nursing student  
Hawaii Pacific University

Alan K. Ueoka  
Colonel, U.S. Army, MSC  
Deputy Command Surgeon  
U.S. Pacific Command

Joe Uson  
Homeland Defense Program  
Joint Operations Center  
U.S. Pacific Command

René Van Slate  
USAID/Office of U.S. Foreign Disaster Assistance  
Lead Humanitarian Assistance Advisor to  
U.S. Pacific Command

Frances Veasey, MS, PMP  
Deputy Director  
Banyan Analytics

Brig Gen Edwin A. “Skip” Vincent, U.S. Air Force (ret)  
Chairman  
Soft Power Solutions, LLC

Lieutenant Colonel Scott Watkins  
Chief  
Functional Plans Branch  
U.S. Pacific Command

Eric Weiner  
Senior Associate Analyst  
Banyan Analytics

Master Sergeant Lamarcus Williams, U.S. Air Force  
Integrated Defense  
Pacific Air Forces

Shane Wright  
Executive Director  
Asian Disaster Preparedness Center
Appendix B: Quarantine and Isolation as Tools of Disease Prevention

Background

As the understanding of contagion—including theories that it is caused by miasmas, sin, or one’s personal constitution—has evolved over the centuries, so too have the struggles of public health officials and medical practitioners to prevent the spread of illness into larger populations and to reduce morbidity and mortality and prevent epidemics. The invention of the microscope in the 17th century facilitated the identification and classification of bacteria. More than 150 years later, John Snow, credited as the “father of modern epidemiology,” demonstrated the association between death and the consumption of infected water, thus establishing the basis of the science that would provide insights into exposures, risk factors, and the incidence of illness in populations. Variolation, or inoculation against smallpox, was being employed in America as early as 1721, laying the foundation of our modern pharmaceutical industry, which has since produced a wide spectrum of preventative agents against diseases that previously decimated populations: measles, scarlet fever, rubella, tetanus, and many others.

Still critical in the prevention of disease spread, however, are the tools of quarantine and isolation to protect potentially exposed and at-risk populations. While their use has raised concerns about temporary restrictions on personal liberty, the ultimate goal of all public health measures, including required vaccinations for school entry and employment, is to improve the health of populations and reduce illness and death. As such, quarantine and isolation remain important strategies in the face of epidemics, especially when vaccines and effective medical countermeasures are not available.
Key Terminology

Several terms describe the spectrum of strategies that can be applied to separate ill or exposed persons to prevent them from potentially infecting a larger population: quarantine, isolation, cordon sanitaire, and cohorting.

Quarantine

“The practice of quarantine” began in Venice in the Middle Ages “to protect coastal cities” from merchants and sailors who could bring plague to their shores. The word *quarantine* is derived from Italian, *quaranta giorni*, meaning “forty days,” and refers to the length of time that ships arriving in Venice “from infected ports were required to sit at anchor” before landing people.167 Today, the CDC defines quarantine as “the separation of an individual or group reasonably believed to have been exposed to a quarantinable communicable disease, but who is not yet ill (not presenting signs or symptoms), from others who have not been so exposed, to prevent the possible spread of the quarantinable communicable disease.”168

Isolation

Isolation is “the separation of an individual or group … reasonably believed to be infected with a quarantinable communicable disease from those not infected to prevent spread of the quarantinable communicable disease. An individual could be reasonably believed to be infected if he or she displays the signs and symptoms of the quarantinable communicable disease of concern and there is some reason to believe that an exposure had occurred.”169

Cordon Sanitaire

*Cordon sanitaire* is French and translates as “sanitary border”; it is defined as “a guarded line preventing anyone from leaving an area infected by a disease and thus spreading it.”170 Cordons were “common in the medieval era” as a means to enclose areas infected by the plague to allow the outbreak to run its course.171 Cordons sanitaires were imposed by the governments of Sierra Leone, Liberia, and Guinea to contain a 1995 outbreak of Ebola and have once again been attempted in response to the 2014 Ebola outbreak in West Africa.172

Cohorting

Cohorting is “the practice of grouping patients infected or colonized with the same infectious agent together to confine their care to one area and prevent contact with susceptible patients … During outbreaks, healthcare personnel may be assigned to a cohort of patients to further limit opportunities for transmission.”173

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169 Ibid.


Historical Perspectives in America

The use of quarantine in America can be traced to 1648, when Boston established “a strict quarantine … for all ships arriving from the West Indies”—“in response to epidemics of yellow fever in Barbados, Cuba, and the Yucatan.” American quarantine practices remained sporadic and localized until repeated outbreaks of yellow fever and cholera prompted federal involvement in the late 19th century. Federal oversight increased with the nationalization of the quarantine system and the authorities granted to the U.S. Public Health Service and later to the agency now known as the CDC.

The discovery of new disease control techniques such as antibiotics and vaccinations in the mid-20th century led the CDC to decrease its reliance on quarantine to manage the spread of disease. In the 1970s, the CDC reduced the number of quarantine stations at U.S. ports of entry as its focus shifted from routine inspection to enhanced foreign surveillance to adapt to changing international traffic. However, the 2003 SARS epidemic reminded the CDC that science and surveillance alone cannot manage or contain every outbreak, and it responded by increasing the number of quarantine stations.

Use of Quarantine in Modern Times—Lessons from Ebola

The most recent Ebola outbreak in West Africa has swung the pendulum back to center once again by highlighting the importance of both enhanced foreign surveillance and proper quarantine techniques. As a viral hemorrhagic fever, Ebola is on the U.S. Government’s list of quarantinable diseases, but the reality of imposing quarantine on civilian populations is complicated by fear, misinformation, and a lack of harmonization among agencies.

“Transmission arises from contact with bodily fluids of a person who is symptomatic … an asymptomatic person is not contagious.” The governors of a number of states imposed 21-day quarantines on health care workers returning to the United States from West Africa because they felt that isolating anyone with a remote chance of carrying the Ebola virus was the safest course of action. The CDC Interim U.S. Guidance for Monitoring and Movement of Persons with Potential Ebola Virus Exposure recognize that “state and local authorities have primary jurisdiction for isolation and other public health orders within their borders” and that they “may make decisions … that impose a greater level of restriction than recommended by federal guidance.” The CDC does not recommend mandatory 21-day quarantines for health care workers returning to the Unites States from West Africa; “healthcare workers who have no direct patient contact and no entry into active patient management areas … are not considered to have an elevated risk of exposure to Ebola.”

175 “History of Quarantine.”
177 “History of Quarantine.”
Defense Department guidance, however, requires that all department personnel deployed to CDC-defined Ebola outbreak areas be subject to ongoing monitoring for exposure to the Ebola virus while deployed and for 21 days after.\textsuperscript{183} “Military personnel moved out of theater due to elevated exposure risk” face mandatory quarantine for 21 days at a Defense Department facility.\textsuperscript{184} When asked about the discrepancies between quarantine rules used by the military, health care workers, and states, President Obama replied that we should not expect civilians to be guided by the same rules as the military because the military are “under more circumscribed conditions.” When civilian volunteers return from outbreak areas we want to ensure that “they are not at risk themselves or at risk of spreading the disease.”\textsuperscript{185}

The whole-of-government approach to health security and the perceived inconsistencies in the application of quarantine in the United States during the Ebola outbreak have revealed some discrepancies that may merit further review to help the U.S. Government prepare for the next big global health emergency.


\textsuperscript{184} Ibid., p. 4.

\textsuperscript{185} President Barack Obama, remarks on Ebola, White House, 28 October 2014, \url{http://www.whitehouse.gov/the-press-office/2014/10/28/remarks-president-ebola}. 
Appendix C: Types and Use of Personal Protective Equipment in Healthcare Settings

Background

The use of PPE in healthcare settings came under increased scrutiny and rigor with the emergence of human immunodeficiency virus—which causes acquired immune deficiency syndrome (AIDS)—in the 1980s. The use of gloves, gowns, and surgical masks—routine in isolation wards and specialized hospital units—was expanded across the healthcare delivery environment through the implementation of “universal precautions.” In 1983, the CDC published guidelines calling for “blood and body fluid precautions when a patient was known or suspected to be infected with bloodborne pathogens.” Four years later the CDC issued updated guidance to recommend that “blood and body fluid precautions be consistently used for all patients regardless of their bloodborne infection status” (emphasis added). The expansion of these precautions to all patients is referred to as “Universal Blood and Body Fluid Precautions” or “Universal Precautions.”

Disease Dangers for Healthcare Workforce

Despite heightened awareness associated with the risk of emergent, novel, and resistant organisms, the toll on healthcare workers over the past two decades has been significant. SARS is one of several zoonotic diseases that have endangered healthcare workers in recent years. During the 2003 SARS outbreak, 37% to 63% of suspected “cases in highly affected countries” were among healthcare workers. H5N1, a highly pathogenic bird flu virus that first infected humans in 1997, has a mortality rate as high as 60%. Correctly wearing protective clothing such as “face masks, goggles, gloves and boots” is recommended for healthcare workers and first responders who may be at risk of contracting the virus when treating infected patients.
The H1N1 flu virus in 2009 precipitated the first pandemic in 40 years and remained a threat to healthcare workers until a vaccine was developed. H1N1’s unique combination of swine, avian, and human genes represented a new variant of the flu virus that was easily transmitted through the respiratory route and against which most health workers had “little or no immune protection.” It is therefore critical that healthcare workers practice basic infection control by receiving the proper hygiene education and training as well as ensured access to protective equipment.

Middle East respiratory syndrome is caused by a virus that can infect humans and animals, and in 2012 it spread primarily in the Middle East through close human contact and killed 30% of those infected. Healthcare workers are at risk and have been instructed by the CDC to wear protective equipment including gloves, gowns, eye protection, and respiratory protection (N95 or better).

Personal Protective Equipment Overview

The Ebola outbreak in West Africa has seen disproportionate mortality among healthcare workers (and others) who have had direct contact with the blood and body fluids of infected patients. The CDC has responded by updating its infection control guidance to provide detailed instructions to healthcare workers regarding safe donning and doffing of PPE. American healthcare workers responding to the Ebola outbreak in West Africa wear PPE to guard against transmission of the virus “through direct contact with the blood or body fluids of a person who is sick with Ebola.” “Direct contact means that body fluids … from an infected person (alive or dead) have touched someone’s eyes, nose, or mouth or an open cut, wound, or abrasion.” The most recent CDC guidance on PPE for U.S. healthcare workers caring for patients with Ebola recommends no skin exposure and includes the following equipment.

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199 The U.S. Occupational Safety and Health Administration defines personal protective equipment as “equipment worn to minimize exposure to serious workplace injuries and illnesses… that may result from contact with chemical, radiological, physical, electrical, mechanical, or other” hazards. https://www.osha.gov/SLTC/personalprotectiveequipment/.


201 Ebola, “Q&As on Transmission.”

202 On 20 October 2014, the CDC updated its 1 August 2014 guidance by adding coveralls and single-use, disposable hoods. Goggles are no longer recommended because they may not provide complete skin coverage in comparison to a single-use, disposable full-face shield. Additionally, goggles are not disposable and may fog after extended use, and healthcare workers may be tempted to manipulate them with contaminated gloved hands: “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola,” 20 October 2014, http://www.cdc.gov/media/releases/2014/fs1020-ebola-personal-protective-equipment.html.
Appendix C: Types and Use of Personal Protective Equipment in Healthcare Settings

CDC GUIDANCE ON PPE FOR HEALTHCARE WORKERS

“Double gloves.”\textsuperscript{203}

“Boot covers that are waterproof and go to at least mid-calf or leg covers.”\textsuperscript{204}

“Single-use fluid resistant or impermeable gown that extends to at least mid-calf or coverall without integrated hood.”\textsuperscript{205}

Respirator, including either “a powered air-purifying respirator (PAPR) or an N95 or higher respirator.”\textsuperscript{206}

“PAPR with a full face shield, helmet, or headpiece” (“a self-contained filter and blower unit integrated inside the helmet is preferred”). “Any reusable helmet or headpiece must be covered with a single-use (disposable) hood that extends to the shoulders and fully covers the neck.”\textsuperscript{207}

“N95 Respirator: Single-use (disposable) N95 respirator in combination with single-use (disposable) surgical hood extending to shoulders and single-use (disposable) full face shield. If N95 respirators are used instead of PAPRs, careful observation is required to ensure healthcare workers are not inadvertently touching their faces under the face shield during patient care.”\textsuperscript{208, 209}

“Single-use, disposable full-face shield.”\textsuperscript{210}

“Surgical hoods to ensure complete coverage of the head and neck.”\textsuperscript{211}

“Apron that is waterproof and covers the torso to the level of the mid-calf (and that covers the top of the boots or boot covers) should be used if Ebola patients have vomiting or diarrhea.”\textsuperscript{212}

Mission-Oriented Protective Posture

Like the PPE used by healthcare workers, unique military equipment is designed to protect forces from harmful exposures. MOPP clothing is worn by warfighters for protection against chemical, biological, radiological, and nuclear agents.\textsuperscript{213} There are five MOPP levels ranging from MOPP 0 to MOPP IV; Level IV offers the highest degree of chemical or biological protection, with protective butyl gloves, footwear, and a military-unique gas mask.\textsuperscript{214}

\textsuperscript{203} “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola.”

\textsuperscript{204} “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola.”

\textsuperscript{205} “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola.”

\textsuperscript{206} CDC, “Guidance on Personal Protective Equipment to Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing),” 20 October 2014, \texttt{http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html}.

\textsuperscript{207} CDC, “Guidance on Personal Protective Equipment to Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing).”

\textsuperscript{208} CDC, “Guidance on Personal Protective Equipment to Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing).”

\textsuperscript{209} In addition to concerns regarding health care workers from health, hospital, and occupational and worker safety agencies, the risks of bioterrorism prompted guidance regarding the wearing, fit testing, and disposal of respiratory protection such as N95 masks.

\textsuperscript{210} “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola.”

\textsuperscript{211} “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola.”

\textsuperscript{212} “CDC Tightened Guidance for U.S. Healthcare Workers on Personal Protective Equipment for Ebola.”


# PPE Principles

## CDC GUIDANCE ON PPE DONNING AND DOFFING

### Training
The CDC highlights “repeated training” as the first principle in its updated guidance. Facilities need to ensure that all healthcare providers repeatedly practice the steps of donning and doffing PPE.

The CDC recommends a trained monitor to actively observe and supervise each worker donning and doffing PPE to ensure proper technique and to disinfect visibly contaminated PPE.

### Donning
“PPE must be donned correctly in proper order before entry into the patient care area and not be later modified while in the patient care area. The donning activities must be directly observed by a trained observer.”

### During Patient Care
“PPE must remain in place and be worn correctly for the duration of exposure to potentially contaminated areas. PPE should not be adjusted during patient care.”

“Healthcare workers should perform frequent disinfection of gloved hands using an” alcohol-based hand rub, “particularly after handling body fluids.”

“If during patient care a partial or total breach in PPE” (for example, “gloves separate from sleeves leaving exposed skin, a tear develops in an outer glove, a needlestick” occurs), “the healthcare worker must move immediately to the doffing area to assess the exposure. Implement the facility exposure plan, if indicated by assessment.”

### Doffing
“The removal of used PPE is a high-risk process that requires a structured procedure, a trained observer, and a designated area for removal to ensure protection.”

“PPE must be removed slowly and deliberately in the correct sequence to reduce the possibility of self-contamination or other exposure to Ebola virus.”

“A stepwise process should be developed and used during training and daily practice.”

### Disposal
“To reduce exposure among staff to potentially contaminated textiles (cloth products) while laundering, discard all linens, nonfluid-impermeable pillows or mattresses, and textile privacy curtains into the waste stream and [dispose] of appropriately.”

“Disposable materials (any single-use PPE, cleaning cloths, wipes, single-use microfiber cloths, linens, food service) and linens, privacy curtains, and other textiles … should be placed in leakproof containment … To minimize contamination of the exterior of the waste bag, place the bag in a rigid waste receptacle designed for this use. Incineration or autoclaving as a waste treatment process is effective in eliminating viral infectivity and provides waste minimization. If disposal requires transport offsite then this should be done in accordance with the U.S. Department of Transportation’s … Hazardous Materials Regulations” (49 Code of Federal Regulations, Parts 171-180).

“Any item transported offsite for disposal that is contaminated or suspected of being contaminated with a Category A infectious substance [regulated by the Hazardous Materials Regulations] must be packaged and transported in accordance with the” regulations. “This includes medical equipment, sharps, linens, used healthcare products such as soiled absorbent pads or dressings, kidney-shaped emesis pans, portable toilets; and used PPE (gowns, masks, gloves, goggles, face shields, respirators, boots, etc.) or byproducts of cleaning contaminated or suspected of being contaminated with a Category A infectious substance.”

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215 CDC, “Guidance on Personal Protective Equipment to Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On (Donning) and Removing (Doffing).”

Civilian PPE or military MOPP clothing is protective only to the degree that it is correctly worn and removed. Regardless of the designated equipment, healthcare workers must follow basic principles to ensure safe and effective use, which begins with rigorous and repeated training under appropriate supervision, particularly in the proper donning and doffing of PPE as well as proper maintenance during patient care.

**Protective Equipment Training**

To augment the capacity of deployed U.S. forces during a health emergency, the use of a country’s indigenous military may be leveraged through the offer of protective equipment (should such equipment resources be made available through DoD or the State Department). Many countries and international NGOs do not have PPE or the capacity to manufacture it. In December 2014, the Japan International Cooperation Agency pledged 700,000 sets of PPE to the governments of Liberia, Sierra Leone, Guinea, and Mali as well as the WHO.²¹⁷

Planning for a coordinated global response to a future health emergency must consider PPE and all its ramifications to ensure the safety of healthcare workers and military responders. Should these resources be made available, it may become a responsibility of U.S. deployed military not only to provide PPE but also to ensure appropriate training in its donning, doffing, and disposal. Translator services may be needed if only limited English is spoken. Lectures and demonstrations should be offered to ensure that the PPE resources will be correctly used. This process can build an esprit de corps across U.S. and foreign militaries and lead to further joint discussion regarding other aspects of the disease response and containment mission such as disposal of contaminated PPE and strategies for resupply.

Appendix D: WHO Decision Instrument
Appendix D: WHO Decision Instrument

Events detected by national surveillance system

A case of any of the following diseases is unusual or unexpected and may have serious public health impact and thus shall be notified:
- Smallpox
- Poliomyelitis due to wild-type poliovirus
- Human influenza caused by a new subtype
- Severe acute respiratory syndrome

Any event that is a potential international public health concern, including those of unknown causes or sources and those involving other events or diseases than those listed in the box on the left and the box on the right shall lead to use of the algorithm.

An event involving the following diseases shall always lead to use of the algorithm because they have demonstrated the ability to cause serious public health impact and to spread rapidly internationally:
- Cholera
- Pneumonic plague
- Yellow fever
- Viral hemorrhagic fevers (Ebola, Lassa and Marburg)
- West Nile fever
- Other diseases that are of special national or regional concern, e.g., dengue fever, Rift Valley fever, and meningococcal disease.

Is the public health impact of the event serious?

Yes

Is the event unusual or unexpected?

Yes

Is there a significant risk for international spread?

Yes

Is there a significant risk for international travel or trade restrictions?

Yes

Event Shall Be Notified to WHO under IHR

No

No

No

No

No

Not notified at this stage. Reassess when more information becomes available.

## Appendix E: Acronym List

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>AHA Centre</td>
<td>ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management</td>
</tr>
<tr>
<td>AIDS</td>
<td>acquired immune deficiency syndrome</td>
</tr>
<tr>
<td>AOR</td>
<td>area of responsibility</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>ASPED</td>
<td>Asia-Pacific Strategy for Emerging Diseases</td>
</tr>
<tr>
<td>CBRN</td>
<td>chemical, biological, radiological, and nuclear</td>
</tr>
<tr>
<td>CBRNE</td>
<td>chemical, biological, radiological, nuclear, and high explosive</td>
</tr>
<tr>
<td>CDC (U.S.)</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>DoD (U.S.)</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>FEMA (U.S.)</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>HIV</td>
<td>human immunodeficiency virus</td>
</tr>
<tr>
<td>ICS</td>
<td>Incident Command System</td>
</tr>
<tr>
<td>IGO</td>
<td>intergovernmental organization</td>
</tr>
<tr>
<td>IHR</td>
<td>International Health Regulations</td>
</tr>
<tr>
<td>MOPP</td>
<td>mission-oriented protective posture</td>
</tr>
<tr>
<td>NGO</td>
<td>nongovernmental organization</td>
</tr>
<tr>
<td>NIMS</td>
<td>National Incident Management System</td>
</tr>
<tr>
<td>NRF</td>
<td>National Response Framework</td>
</tr>
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</table>
OCHA (UN) Office for the Coordination of Humanitarian Affairs
OFDA Office of Foreign Disaster Affairs
PAPR powered air-purifying respirator
PPE personal protective equipment
SARS severe acute respiratory syndrome
SPP State Partnership Program
UNICEF United Nations Children’s Fund
USAID U.S. Agency for International Development
USNS U.S. Naval Ship
USPACOM U.S. Pacific Command
WHO World Health Organization