

Humanitarian Assistance and Disaster Relief Competencies and Training Pertinent to the Military Health System

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Abstract

Commensurate with the expansion of professional demands on U.S. military personnel in humanitarian assistance/disaster relief operations (HA/DR), the military medical community must be sufficiently well trained to address medical and public health needs in all-hazards disaster situations to include earthquakes, hurricanes, emerging infectious diseases, and complex crises. Despite a burgeoning demand for HA/DR expertise in the military health system, professional competencies and training requirements have yet to be codified in Department of Defense (DOD) doctrine. The principle objective of this research is to identify DOD training courses and educational opportunities that could be matched with disaster medicine and public health competencies. The search strategy identified 196 courses meeting inclusion criteria from across the service branches and the joint community of the DOD. The findings yield evidence of clear gaps in education and training opportunities, including a lack of topics dealing with core public health and medical HA/DR competencies. This gap potentially leaves the public health and medical workforce largely unprepared for the increasing role they are likely to perform in HA/DR missions.

Disaster frequency and severity continue to increase worldwide, and there has been commensurate global reliance on the U.S. military to support disaster relief operations (DiGiovanni, 2016; United Nations Office for the Coordination of Humanitarian Affairs, 2018). Though the Department of Defense (DOD) historically has engaged in less than 10% of international disaster response operations, as declared by the U.S. Agency for International Development's Office of Foreign Disaster Assistance, that overall number is increasing as are the number of domestic U.S. disaster response operations supported by the DOD under Defense Support to Civil Authority guidelines. The DOD has conducted more than 50 humanitarian assistance or disaster relief (HA/DR) missions of varying scale in the past 15 years alone (DiGiovanni, 2016). Modern defense force readiness relies heavily on complex standards for individual readiness and training to ensure mission success, while escalating demand for HA/DR missions requires an expansion of roles and capabilities within the military medical corps to meet the medical and public health needs of all-hazards disaster situations to include earthquakes, hurricanes, emerging infectious diseases, and complex crises. The DOD has evolved its policy, doctrine, and operational standards to enable more effective preplanned humanitarian assistance, defense support to civil authorities in domestic disaster response, and foreign disaster relief

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operations (Department of Defense [DOD], 2010, 2012, 2016, 2017). However, there has not been systematic standardization of competencies for disaster preparedness and response personnel, nor training directed at ensuring those competencies in the workforce across the DOD. This is particularly true for military medical personnel and the medical/public health competencies requisite in HA/DR operations.

Disaster medicine and public health competencies have been defined in the literature for civilian disaster/humanitarian planners, managers, and responders, though they are not codified in DOD doctrine, despite a burgeoning demand for them in the military (Blanchard, 2005; Feldmann-Jensen et al., 2017; Subbarao et al., 2008; Walsh et al., 2012).

This study was undertaken to assess what education and training opportunities currently exist within the DOD that may meet medical and public health competencies for personnel in the context of disaster preparedness and response, and how such competencies are or are not defined in DOD policy, doctrine, and real-world prece-

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dents. The goal is to help inform any future efforts intended to systematically address personnel requirements in the HA/DR mission set for the DOD.

Methods

A comprehensive review of education and training courses offered within the DOD was conducted via traditional literature mapping review methodology with the intent of synthesizing and qualifying an inventory of HA/DR relevant coursework. To date, there has not been a single point of reference for DOD education and training opportunities in this content area (Grant & Booth, 2009). Data collection for relevant training and education offerings was accomplished through open internet searches using Google and searches of the following databases conducted from 3 January to 27 February 2018:

- ◆ JKO (Joint Knowledge Online)
- ◆ AKO (Army Knowledge Online)
- ◆ GKO (Guard Knowledge Online)
- ◆ ADLS (Advanced Distributive Learning Service)
- ◆ AFMS KX (Air Force Medical Service Knowledge Exchange)
- ◆ Swank Health
- ◆ Health.mil
- ◆ Total Force Virtual Learning Center
- ◆ Uniformed Services University of the Health Sciences
- ◆ U.S. Army Public Health Command.

Broadly, inclusion criteria for references to courses and training were based on the following keywords, which guided the searches: *domestic* OR *international* AND *humanitarian* OR *disaster* OR *public health emergencies*; and *Department of Defense* OR *United States Army/Air Force/Navy* OR *military* AND *competencies* OR *training* OR *skills* OR *knowledge* OR *education*. A gray literature search was also conducted to identify existing relevant competencies published by governmental organizations and other professional organizations.

DOD policies and regulations, individual service-specific doctrine, as well as doctrinal publications from the Joint Chiefs of Staff were reviewed regarding the DOD's and, more specifically, military health professionals' prescribed roles in HA/DR. Role-specific training was sought using the same criteria as above from within DOD online training platforms. Informal phone and in-person interviews with medical personnel from the Army, Air Force, Air National Guard and Air Force Reserve Component, and Army National Guard were conducted to clarify course details when necessary.

Inclusion criteria were subsequently defined in order to capture course descriptions reporting competencies and knowledge, skills, or abilities for medical and public health professionals involved with or having potential to be involved with humanitarian assis-



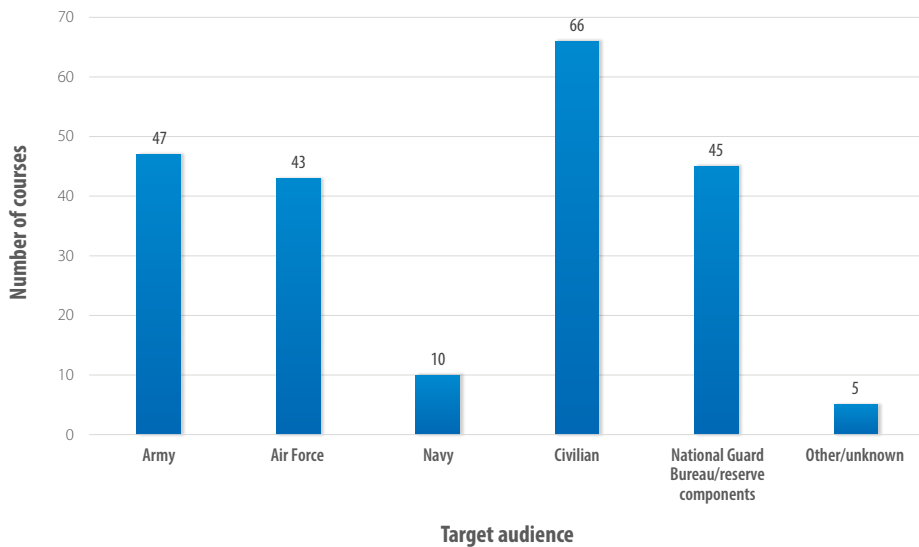


Figure 1. Courses by Target Audience. *Note:* Based on the available data, the figure may not account for all courses open to U.S. Navy audiences. Figure by Norma Quintanilla.

tance or disaster relief operations. Courses were further analyzed and coded according to the curricular content, the HA/DR role supported, and the intended target audience.

Jaimie Laib and Kandra Strauss-Riggs attempted to code courses by the predominant topic that a course addressed based upon course descriptions. Where a predominant topic was not able to be discerned for courses covering more than one subject, courses were coded under multiple content categories. Similarly, courses were coded for multiple target audiences when accommodating learners from a variety of roles. Course modality was also varied, with a selection of courses having an online prerequisite before attending a resident portion of the course. These courses were therefore coded as having both in-person and online modalities.

Coding of coursework across content, target audience, HA/DR roles, modality, and service categories, as well as any specified competencies, was intended to help define the depth and breadth of DOD curricula and any gaps relative to established civilian norms of HA/DR health and medical education and training.

Results

Three predominant themes are evident in the results of this survey: (1) there is no discernible overarching pattern or systematic approach to the curricula; (2) there are significant gaps in HA/DR competencies noted across existing curricula, at least



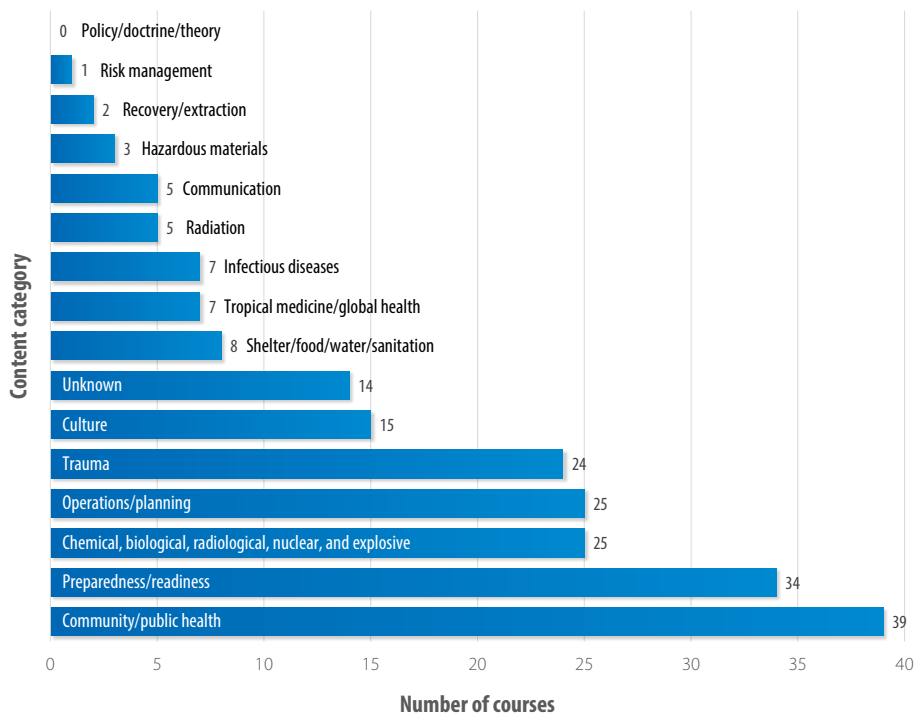


Figure 2. Course Content Categories. Note: The unknown category includes courses with insufficient information to categorize. Figure by Norma Quintanilla.

as defined in the civilian sector; and (3) there is no indication of a joint approach to curricula development and application.

The search strategy identified 196 courses meeting inclusion criteria from across the service branches, the joint community of the DOD, and DOD-sponsored academic institutions. Courses were identified from the following organizations: Army ($n = 47$), Air Force ($n = 43$), Navy ($n = 10$), Joint Knowledge Online ($n = 19$), DOD centers ($n = 10$), DOD-sponsored academic institutions ($n = 13$), Defense Health Agency ($n = 4$), and Defense Medical Readiness Training Institute ($n = 19$).

As shown in Figure 1 (on page 23), access to courses often depended on the specific service branch. Half of the courses were specific to an individual branch and not available to members from other services. Sixty-six courses were offered to DOD civilians, most of which were leadership related. A number of courses were open to all military branches, as well as civilians, including the Health Emergencies in Large Populations, Humanitarian Assistance Response Training, Transnational Security Cooperation, Comprehensive Crisis Management, and Hospital Incident Command System courses. The National Guard Bureau and Reserve components offer 45 HA/DR courses.

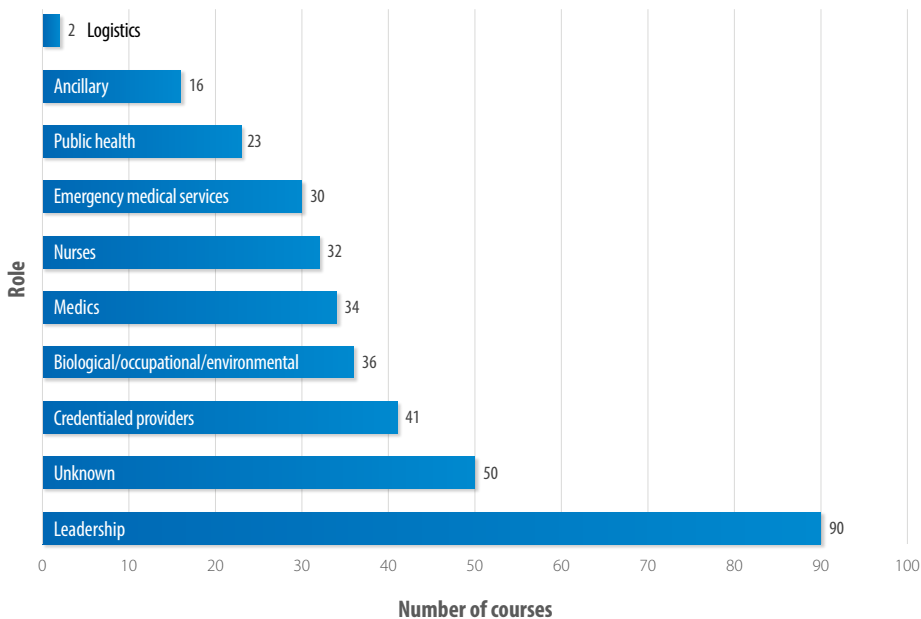


Figure 3. Courses by Role. Figure by Norma Quintanilla.

Figure 2 (on page 24) depicts the number of courses that include course content in each of 16 course content areas associated with a variety of HA/DR topics. The most prevalent content categories included community public health ($n = 39$), preparedness/readiness ($n = 34$), chemical/biological/radiological/nuclear/explosive (CBRNE) ($n = 25$), disaster operations/planning ($n = 25$), and trauma care ($n = 24$). All courses listed as CBRNE exclusively, as well as courses listing any of the components (e.g., chemical, biological, radiological, etc.) as topics, were included in the CBRNE categorization. Clinical and field-related courses associated with trauma and injury care represented the third-largest category of course content offered to medical professionals. The trauma category includes training such as the Tactical Combat Care Course, advanced trauma life support, and prehospital trauma life support. Although these skills are useful in many disaster settings, it is important to note that the military primarily uses such training for response to battlefield casualties and not discriminately for disasters in the civilian community. The category of preparedness/readiness encompasses a wide variety of topics, including humanitarian assistance response training, comprehensive crisis management, hospital/health-care incident command, the emergency preparedness response, stability operations, and emergency management.

When assessing the data by designated roles in HA/DR activities, the DOD largely focuses education and training toward developing military leaders across the continuum from individual unit-level leadership to executive-level commanders. Figure 3



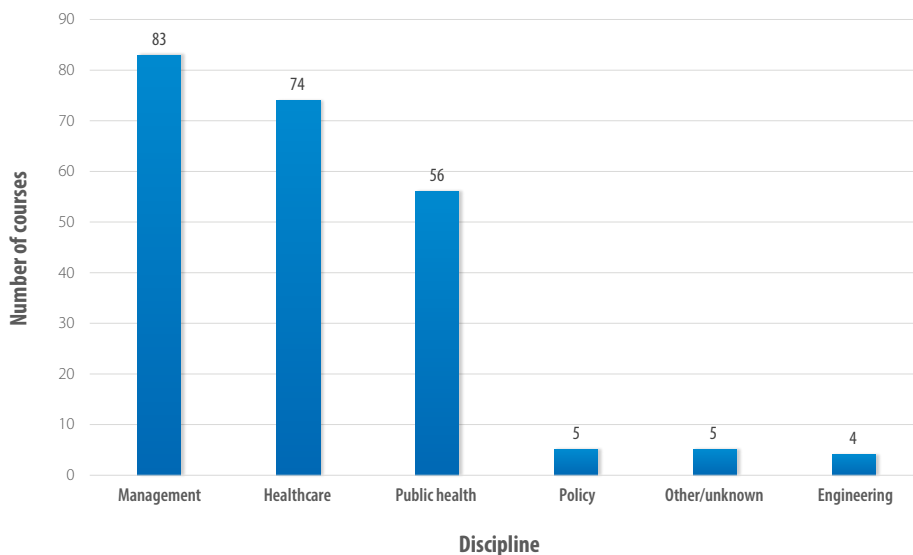


Figure 4. Courses by Discipline. Figure by Norma Quintanilla.

(on page 25) depicts the number of courses associated with particular HA/DR roles. One quarter of all courses were designed for those in leadership positions. Cumulatively, health-care professionals (credentialed providers, nurses, emergency medical system personnel, and medics) comprise the largest grouping of targeted roles ($n = 137$), though almost all courses with this student population in mind primarily address general clinical competencies. These competencies may be useful in HA/DR missions in some respects, but they do not explicitly reflect disaster health competencies as outlined in the civilian literature. Biomedical engineering, occupational health, and environmental health-targeted courses were categorized collectively ($n = 36$) as many of these courses overlapped the intended target group of professionals.

Figure 4 displays the number of courses as categorized by the professional discipline of the target audiences: management, health care, public health, policy, engineering, and unknown. The greatest number of courses open to all professions ($n = 83$) include, but are not limited to, Emergency Management, Radiation Event Management, Crisis Management, Hospital Incident Command, and Public Health Emergency Management. The health-care discipline categorization encompasses all aspects of medical service personnel ($n = 74$). The public health category includes professions related to food, water, sanitation, global health, and epidemiology ($n = 56$). Civil and biomedical engineering ($n = 4$) fall in the spectrum of medical response for the purposes of this survey because the military

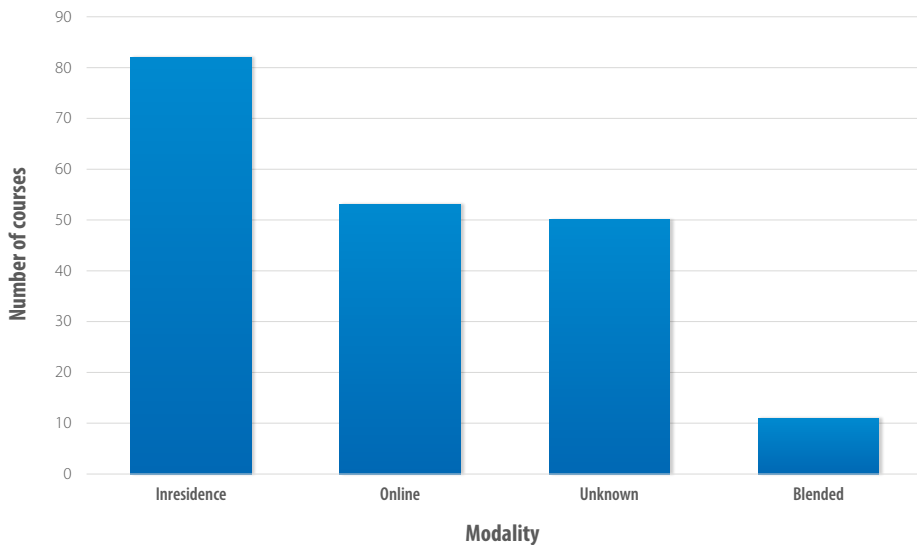


Figure 5. Courses by Modality. Figure by Norma Quintanilla.

often deploys these disciplines as part of a medical response contingent. There were few policy courses ($n = 5$).

Course modality and duration vary considerably, as shown in Figure 5. Courses were delivered in-person ($n = 82$), online ($n = 53$), or blended modes ($n = 11$). Fifty courses did not publicly specify a delivery mode (unknown). The duration of most in-person training ranged from days to months, with 25 courses greater than five days long. Content of online courses ranged from 30 minutes to over 80 hours. Just four of the online courses were longer than eight hours and 28 were between one and five hours.

The courses included in this review were not based upon disaster medicine and public health preparedness competencies, as defined by the course material. Just 11 were based on any defined and specific competency set, and those were largely clinical competencies such as the Tactical Combat Care Course, advanced trauma life support training, and prehospital trauma life support training. Of the courses in this review, 92 were knowledge-based only. Thirty-two were both knowledge- and competency-based. Eleven courses required a demonstration of skill or application of concepts during the in-person portion of the course (e.g., the Medical Readiness Management, Army Public Health Command Preventative Medicine/Public Health, and Humanitarian Assistance Response Training courses). Sixty-one of the reviewed courses did not publicly provide detail on whether or not a course was knowledge- or competency-based.



Discussion

The DOD has established itself as a prominent and responsible organization in support of disaster response and humanitarian assistance, both domestically and internationally. Decades of evolving U.S. whole-of-government strategy building toward more accurate, timely, and effective disaster response has led to mature policy within the DOD, defining roles and responsibilities across the services and various other subordinate agencies of the department (DOD, 2012, 2016, 2017). The ever-increasing health implications of all types of disasters, including complex crises and epidemic infectious disease outbreaks, emphasize the importance of effective preparedness and response capabilities within the military health sector (Centre for Research on the Epidemiology of Disasters, 2015; Moss & Michaud, 2013; Watterson & Kamradt-Scott, 2016). This demand, though not codified in DOD doctrine as a defined set of requirements for training, is being increasingly realized by the DOD, with the onus placed on U.S. military medical personnel.

The effective delivery of disaster medicine and public health services necessitates specialized understanding of the nuanced approach to such environments. It cannot be assumed that even well-educated, trained, and field-experienced military health professionals could readily and effectively translate their capabilities to a disaster scenario, whether domestic or international. In the civilian disaster and humanitarian response communities, the importance of HA/DR-specific training for persons involved in preparedness and response has been emphasized for more than 20 years (Alexander, 2003; Hoetmer & Drabek, 1991; Ingrassia et al., 2017). The disaster medicine and public health preparedness education community in the United States emerged in earnest following the events of 11 September 2001 and the 2005/2006 hurricane season, when the aftermath of Hurricane Katrina captured the Nation's attention. The Centers for Disease Control and Prevention and the Federal Emergency Management Agency promulgated grant programs at the time for health departments, universities, and other entities to develop training and education programs related to disaster preparedness and response (Mailey, 2005).

In the ensuing years, the public health and medical communities were concerned that courses had not been developed with these competencies in mind. Furthermore, courses had not adequately addressed adult-learning principles of meeting learners where they are, connecting to learners' prior experiences, and moving them toward independent training and education (Knowles, 1977). In response to these concerns, the public health and medical communities developed the core competencies for disaster medicine and public health preparedness as depicted in the table beginning on page 30 (Walsh et al., 2012). The impetus behind this set of competencies was the intention to reach the widest network of health professionals who may contribute to the health and well-being of communities in the midst of disaster. These 11 competencies represent the most fundamental and essential attributes that responders



involved in disaster health should manifest. Various medical specialties and professional organizations have subsequently developed complementary competency sets for specific groups of professionals in disaster response, but the 11 core competencies remain the foundation for all health responders (Walsh et al., 2012).

Similarly, domestic and international government agencies, organizations and universities have developed disaster-related education and training programs with complementary sets of competencies in support of this imperative (Algaali et al., 2015; Jacquet et al., 2014). At the level of the U.S. federal government, the Federal Emergency Management Agency leads an integrated national education program for emergency management professionals, as one large-scale example. However, questions have been broadly raised about the comprehensiveness and impact of education and training design, content, and provision to date (Daily et al., 2010; Kirsch et al., 2019; Williams et al., 2008).

Through a comprehensive review, this research documented the many training and educational opportunities across the DOD for HA/DR-relevant topics. The findings demonstrate several key points, which require consideration. Most importantly, the content and availability of the courses show no discernible pattern or underlying strategy directed toward professional development of HA/DR expertise in military health professionals. There is a relative dearth of courses for a mission set that is an important part of DOD activities, and much of the available course content is duplicative while also limited to a relatively narrow range of topics. Few courses are HA/DR-specific. Most of the courses identified serve other aspects of the DOD mission, principally the care of injured soldiers in combat and force health protection considerations. There is an abundance of CBRNE content relative to all other HA/DR relevant focus areas. While CBRNE is an important concern for domestic and overseas HA/DR operations, real-world precedent has repeatedly demonstrated that responses to natural geologic and climatic disasters are far more pertinent and frequent.

Specific HA/DR competencies defined in DOD doctrine for health professionals do not exist. Therefore, in order to evaluate the HA/DR relevance of content of DOD courses, course objectives, when available, were compared to civilian disaster health competencies to determine whether they addressed a specific purpose in advancing the professionalism of disaster medicine and public health. The DOD courses, however, also do not map to existing civilian core disaster health competencies, thus leaving gaps in DOD training, that if filled, would address many topics that have been identified as critical for disaster health response (Walsh et al., 2012).

Beyond the recognized civilian core competencies, there are additional activities that the military provides in HA/DR that would require training. These include medical and public health logistics, health systems infrastructure recovery, patient stabilization and movement, standardized communications regimens, and civilian-military healthcare coordination.

Additionally, target audiences for the largest percentage of DOD HA/DR relevant trainings are individuals in leadership roles and not HA/DR implementers. There is a significant gap in DOD doctrine focused on accurately identifying, educat-



Table.

Core Competencies and Subcompetencies for Disaster Medicine and Public Health

Core competency	Subcompetency
1.0 Demonstrate personal and family preparedness for disasters and public health emergencies	1.1 Prepare a personal/family disaster plan 1.2 Gather disaster supplies/equipment consistent with personal/family plan 1.3 Practice one's personal/family disaster plan annually 1.4 Describe methods for enhancing personal resilience, including physical and mental health and well-being, as part of disaster preparation and planning
2.0 Demonstrate knowledge of one's expected role(s) in organizational and community response plans activated during a disaster or public health emergency	2.1 Explain one's role within the incident management hierarchy and chain of command established within one's organization/agency in a disaster or public health emergency 2.2 Prepare a personal professional disaster plan consistent with one's overall agency, organizational, and/or jurisdictional plan 2.3 Explain mechanisms for reporting actual and potential health threats through the chain of command/authority established in a disaster or public health emergency 2.4 Practice one's personal professional disaster plan in regular exercises and drills
3.0 Demonstrate situational awareness of actual/potential health hazards before, during, and after a disaster or public health emergency	3.1 Identify general indicators and epidemiological clues that may signal the onset or exacerbation of a disaster or public health emergency 3.2 Describe measures to maintain situational awareness before, during, and after a disaster or public health emergency

Table by Norma Quintanilla.

ing, and training the full complement of requisite personnel in military medical and public health disaster response.

Finally, the current available training is mostly service specific and does not reflect a greater strategy or unity of effort. There is insufficient joint service training inclusive of varying implementing roles and adequate coverage of topics dealing with core public health and medical HA/DR competencies, as defined by established civilian norms. There is no clearly articulated DOD-wide, comprehensive view of health and medical



Table.
Core Competencies and Subcompetencies for Disaster Medicine and Public Health (continued)

Core competency	Subcompetency
<p>4.0 Communicate effectively with others in a disaster or public health emergency</p>	<p>4.1 Identify authoritative sources for information in a disaster or public health emergency</p> <p>4.2 Explain principles of crisis and emergency risk communication to meet the needs of all ages and populations in a disaster or public health emergency</p> <p>4.3 Identify strategies for appropriate sharing of information in a disaster or public health emergency</p> <p>4.4 Identify cultural issues and challenges in the development and dissemination of risk communication in a disaster or public health emergency</p>
<p>5.0 Demonstrate knowledge of personal safety measures that can be implemented in a disaster or public health emergency</p>	<p>5.1 Explain general health, safety, and security risks associated with disasters and public health emergencies</p> <p>5.2 Describe risk reduction measures that can be implemented to mitigate or prevent hazardous exposures in a disaster or public health emergency</p>
<p>6.0 Demonstrate knowledge of surge capacity assets, consistent with one's role in organizational, agency, and/or community response plans</p>	<p>6.1 Describe the potential impact of a mass casualty incident on access to and availability of clinical and public health resources in a disaster or public health emergency</p> <p>6.2 Identify existing surge capacity assets which could be deployed in a disaster or public health emergency</p>
<p>7.0 Demonstrate knowledge of principles and practices for the clinical management of all ages and populations affected by disasters and public health emergencies, in accordance with professional scope of practice</p>	<p>7.1 Discuss common physical and mental health consequences for all ages and populations affected by a disaster or public health emergency</p> <p>7.2 Explain the role of triage as a basis for prioritizing or rationing health care services for all ages and populations affected by a disaster or public health emergency</p> <p>7.3 Discuss basic lifesaving and support principles and procedures that can be utilized at a disaster scene</p>

Table by Norma Quintanilla.



Table.

Core Competencies and Subcompetencies for Disaster Medicine and Public Health (continued)

Core competency	Subcompetency
8.0 Demonstrate knowledge of public health principles and practices for the management of all ages and populations affected by disasters and public health emergencies	8.1 Discuss public health consequences frequently seen in disasters and public health emergencies 8.2 Identify all ages and populations with functional and access needs who may be more vulnerable to adverse health effects in a disaster or public health emergency 8.3 Identify strategies to address functional and access needs to mitigate adverse health effects of disasters and public health emergencies 8.4 Describe common public health interventions to protect the health of all ages and populations affected by a disaster or public health emergency
9.0 Demonstrate knowledge of ethical principles to protect the health and safety of all ages, populations, and communities affected by a disaster or public health emergency	9.1 Discuss ethical issues likely to be encountered in disasters and public health emergencies 9.2 Describe ethical issues and challenges associated with crisis standards of care in a disaster or public health emergency 9.3 Describe ethical issues and challenges associated with allocation of scarce resources implemented in a disaster or public health emergency
10.0 Demonstrate knowledge of legal principles to protect the health and safety of all ages, populations, and communities affected by a disaster or public health emergency	10.1 Describe legal and regulatory issues likely to be encountered in disasters and public health emergencies 10.2 Describe legal issues and challenges associated with crisis standards of care in a disaster or public health emergency 10.3 Describe legal issues and challenges associated with allocation of scarce resources implemented in a disaster or public health emergency 10.4 Describe legal statutes related to health care delivery that may be activated or modified under a state or federal declaration of disaster or public health emergency

Table by Norma Quintanilla.



Table.

Core Competencies and Subcompetencies for Disaster Medicine and Public Health (continued)

Core competency	Subcompetency
<p>11.0 Demonstrate knowledge of short- and long-term considerations for recovery of all ages, populations, and communities affected by a disaster or public health emergency</p>	<p>11.1 Describe clinical considerations for the recovery of all ages and populations affected by a disaster or public health emergency</p> <p>11.2 Discuss public health considerations for the recovery of all ages and populations affected by a disaster or public health emergency</p> <p>11.3 Identify strategies for increasing the resilience of individuals and communities affected by a disaster or public health emergency</p> <p>11.4 Discuss the importance of monitoring the mental and physical health impacts of disasters and public health emergencies on responders and their families</p>

Table by Norma Quintanilla.

HA/DR training requirements. As a result, education and training resources are not systematically applied to force development, potentially leaving the DOD public health and medical workforce largely unprepared for the role it is increasingly likely to perform in HA/DR missions.

Limitations

Publicly accessible data on DOD courses is limited, requiring researchers with active duty DOD credentials to access the information. Some courses are coded in multiple categories with regard to content, target audience, and course modality when no predominant category was evident. Due to restrictions in accessing data regarding U.S. Navy-hosted courses specifically, the overall number of Navy courses may be underrepresented in this analysis.

Conclusions

The DOD is frequently involved in HA/DR missions and the future is likely to present unanticipated events that will challenge the military health sector in predictable and unpredictable ways. It is imperative to more proactively prepare the force to meet this established and frequent mission.



This study has identified significant gaps in DOD HA/DR-related education and training curricula, in terms of content and target audiences. It also suggests that there has not been a systematic approach to developing training and education requirements for medical and public health aspects of the HA/DR mission. Building upon work in the civilian sector over the past nearly two decades, the DOD HA/DR public health and medical community can begin to apply civilian disaster medicine and public health preparedness core competencies to their training strategy and work to develop their own complementary competency set to address the unique requirements of the military health system in disaster response.

Education and training that effectively support a ready cadre of military health professionals, clinicians and nonclinicians alike, should be brought about through a systematic, capabilities-based analysis of the ultimate HA/DR joint requirements for the U.S. military health system. ❧

Disclaimer: The views expressed are solely those of the authors and do not reflect the official policy or position of the U.S. Public Health Service Commissioned Corps, Uniformed Services University, the Department of Defense, or the U.S. government.

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