REPORT OF THE COUNCIL ON MEDICAL EDUCATION

CME Report 1-I-11

Subject: Medical Student and Resident Involvement in Disaster Medicine and Public Health Preparedness Planning and Response (Resolution 311-A-10)

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Referred to: Reference Committee K (D. Robert McCaffree, MD, Chair)

Resolution 311-A-10, Medical Student Involvement in Disaster Medicine and Public Health Preparedness Planning and Response, introduced by the Medical Student Section and referred to the Board of Trustees, asked:

> That our American Medical Association (AMA) support skill-appropriate medical student involvement in pandemic disaster medicine and public health preparedness planning and response.

Testimony at Reference Committee C noted the complexity of the issue including the concern that some public health disasters or pandemics may cause such limitations in resources that medical student involvement may be precluded. Because the resolution calls for new AMA policy, the HOD referred Resolution 311-A-10 for further study with a report back at the 2011 Interim Meeting.

BACKGROUND

Natural disasters seem to be increasing in magnitude and frequency. This trend, as well as an influenza pandemic or a terrorist attack, would require a major medical response.[1] Examples of recent major disasters that involved major deployment of health care workers include the September 11, 2001 terrorist attack on the World Trade Center, Hurricane Katrina of 2005, the 2010 Haiti earthquake, the 2011 earthquake and tsunami in Japan, and the 2011 Joplin, Missouri tornado.

The Pandemic and All-Hazards Preparedness Act of 2006 and Homeland Security Presidential Directive 21 (October 2007), described a federal plan to invest $1.3 billion in the development of the medical and public health workforce to promote the discipline of disaster medicine.[1] The plan also called for coordinated efforts to develop public health and medical disaster preparedness and response curricula and training programs to be housed at a National Center for Disaster Medicine and Public Health (NCDMPH) at the Uniformed Services University of the Health Sciences. The Federal Education and Training Interagency Group (FETIG), authorized in 2009, is addressing these directives across federal departments and agencies as well as state and local government entities, the academic community, and the private sector in relation to public health emergency and disaster response. Efforts are also underway to improve medical education and interprofessional training of health care workers in all medical specialties in order to improve the public health and medical disaster response of our nation.

The Medical Reserve Corps (MRC), founded in 2002 by the federal government and headquartered in the Office of the US Surgeon General, is a national network of volunteers that supplement existing local emergency and public health resources. MRC units are community-based so as to locally organize and utilize licensed health and medical professionals to prepare for and respond to regional disasters. All health profession students can participate, as long as they have met MRC training and certification requirements. Medical students have participated as capable volunteers during times of disaster and emergency dating as far back as the 1918 influenza pandemic.[2] Currently, 591 of 966 (61%) of MRC units partner with US medical schools. Furthermore, at least one state's licensure rules provide medical students the opportunity to use their knowledge and skills under appropriate supervision in emergency responses.

Medical Education and Training

Acting on recommendations from AMA Council on Medical Education Report 15-A-09, the AMA House of Delegates directed the AMA to ask medical schools and residency programs to incorporate education and training in disaster medicine and public health preparedness into their curricula (Policy H-295-868, AMA Policy Database). Likewise, at its 2011 Annual Meeting, the American Osteopathic Association House of Delegates endorsed a resolution calling on osteopathic medical schools to incorporate disaster response courses in their curricula.

Medical school faculties are responsible for developing a curriculum on disaster preparedness, and some are finding ways to make room in their curricula for extra courses or to fit them in with community work with trained physicians (MD/DO). However, formal education in disaster medicine and disaster management for students is difficult to achieve given financial and time constraints.[3] Furthermore, it is challenging to develop curricula on a wide-ranging topic (multiple types of disasters) for different levels of education.

A report published by the Association of American Medical Colleges (AAMC) and the Centers for Disease Control and Prevention provides guidance to medical educators on how to prepare tomorrow's doctors, and recommends thoroughly educating students about public health and emergency services systems to ensure coordinated responses to weapons of mass destruction or other public health threats. The report recommends incorporating such education into all four years of medical school and identifies learning objectives to ensure that students gain adequate knowledge of the public health system, emergency management system, physicians' roles in emergency management response, and professional ethics.[4] The AAMC disaster management/response course is required by 77 US allopathic medical schools, and is offered as an elective course at 30 others. One hundred medical schools include biological/chemical terrorism in a required course and 23 in an elective course.[5]

The National Disaster Life Support Education Consortium™ (NDLSEC™), an unincorporated association jointly sponsored by the AMA and National Disaster Life Support Foundation, Inc. (NDLSF), provides knowledge and expertise for regular review and critique of the National Disaster Life Support™ (NDLS™) courses. The NDLSEC™ is comprised of a national coalition of medical and other health professional organizations, academic centers, medical centers, government partners, and corporations that seek to further refine the science of medical disaster education and management. Its goal is to establish nationally recognized, standardized, and multidisciplinary curricula to train health professionals to respond to disasters and public health emergencies in an effective and coordinated manner using an all-hazards approach. Although not formally endorsed by the government as the national standard, its programs are being incorporated into required and elective courses in various health professional schools, including some medical

schools. NDLS instructors currently reside in 43 states, and have already trained more than 80,000 health professionals, including medical students and residents.

FETIG is also gaining momentum with its efforts to standardize, promote, and deliver a core educational platform of public health, medical, and laboratory subject matter based on existing programs that have proven to work in domestic and foreign crises.[6] The curricula that FETIG seeks to promote will maintain an all-hazards approach to training for disasters, incorporating chemical, biological, radiological, nuclear and explosive, and naturally-occurring event education and training. To align core curricula consistent with the National Preparedness Guidelines and the National Response Framework, FETIG has established partnerships with both federal and non-federal members of the public health and medical disaster preparedness and response community, including the AMA-sponsored NDLSEC™. In addition, the AMA has agreed to publish NCDMPH and FETIG products in the AMA journal, *Disaster Medicine and Public Health Preparedness,* which helps to define the evidence-basis of disaster medicine.

Interprofessional Training and Team Skills

In addition to developing emergency and terrorism preparedness curricula, schools for all health professionals will need to equip their students with the skills to interact within multidisciplinary teams. A coordinated and multidisciplinary response to a terrorist attack or a natural disaster is essential in mitigating death and disease, while maintaining public order and the fundamental elements of the health care system.[7] Maximizing teamwork throughout inter-disciplinary education and practice will require agreements among all health professions regarding universally accepted language, definitions, emergency preparedness, competencies, learning objectives, skill sets, and methodologies that can be tested and verified within each discipline.[8]

Efforts to establish "definitional uniformity across professions with respect to education, training, and best practices" are underway. The AMA Center for Public Health Preparedness and Disaster Response has played a key role in convening major stakeholders in medicine, nursing, and the military; future efforts should reach out to other disciplines, particularly allied health, to help reach a critical mass of health care practitioners.[9]

In May 2011, the Interprofessional Education Collaborative (sponsored by the American Association of Colleges of Nursing, American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Dental Education Association, Association of American Medical Colleges, and the Association of Schools of Public Health) released its report, "Core Competencies for Inter-professional Collaborative Practice." The report recognizes that health care professionals and public health professionals work in collaboration with others on behalf of persons, families and communities in maintaining healthy environments, including responding to public emergencies. The report further recognizes that being able to work effectively as members of clinical teams as students is a fundamental part of health care education.[10]

To advance new models for interprofessional education within US academic health centers, the Carnegie Foundation for the Advancement of Teaching, in collaboration with the Josiah Macy Jr. Foundation, identified institutions that have demonstrated a strong commitment to fostering team-based learning among their health care profession students.[11] Institutions conducting interprofessional disaster preparedness training include:

- Duke University's deans of education and their colleagues with the University's graduate health professions programs (medicine, nursing, physician assistant, and physical therapy) have

been working for several years to promote shared learning among health professions students. The disaster preparedness course requires students to work in interprofessional teams to develop and implement coordinated responses to both manmade and natural disasters, such as biological terrorism and disease pandemics. Student evaluations of the preparedness course have indicated that they place a very high value on the opportunity to work side-by-side with other health professions students on high-intensity learning activities.

- New York University (NYU) School of Medicine and College of Nursing are collaborating on a new inter-professional project that features team-based learning and real and virtual case studies on common clinical problems. In 2010, the two schools launched a pilot program that paired up 15 medical and 15 nursing students. The students were presented with different types of health crises and collaborated around treatment plans for the patients featured in simulations. This pilot program gave students first-hand experience in situations that would be difficult to fully understand simply by listening to a lecture.

The US House of Representatives passed a bill on March 8, 2011 that would incorporate dentistry into the federal disaster response.[12] NYU's dental school has become a nationally-recognized training center for disaster response courses, and it is offering the NDLS™ courses to senior dental and dental hygiene students.

Emerging Education Technologies

Today's technology presents many opportunities for new educational formats and disaster training methodologies.

- "eLearning" includes a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via internet, intranet/extranet, audio- and videotape, satellite broadcast, interactive TV and CM-ROM. Online disaster management courses teach students about disaster preparedness as well as relief, homeland security, public safety management, and hazard mitigation.[13]

- "Gaming" uses cutting-edge computer technology and can be used to train up to 100 or more health care students simultaneously. NDLS is exploring gaming technology because training objectives are achieved more quickly and at lower cost, reducing logistics for training centers and allowing for interagency interface, while making training more engaging and safe. The US Air Force has developed gaming technology consisting of an immersive, avatar-based, virtual environment. This technology has many potential applications for medical reserve corps; expeditionary medical support groups; health and medical emergency response teams; and chemical, biological, radiological, nuclear, and high-yield explosives.[14]

- "Human patient simulation" is being incorporated into medical school curricula. One example is a component of the pre-clerkship course offered at the University of Pittsburgh. All third-year students participate in a curriculum on disaster preparedness, including preparation for a possible pandemic. Part of that disaster curriculum is a pandemic avian influenza hospital simulation exercise. This unique simulation exercise provides teams of medical students with an opportunity to treat overwhelming numbers of influenza patients in a mock hospital setting. When students assume the working roles of nurse, nursing assistant, and physician, they immediately gain insight into two subjects that are difficult to teach: 1) the potentially

overwhelming nature of an infectious pandemic; and 2) the vital importance of teamwork, cooperation, interdisciplinary respect, and leadership in health care endeavors.[15]

- Social media are also being integrated into emergency preparedness efforts. These new media have a vast audience (more than 40 million Americans). Networking sites such as Facebook can help individuals, communities, and agencies share emergency plans and establish emergency networks.[16]

Skills Needed to Participate as Volunteers for Disasters

A 2010 study conducted by the Department of Emergency Medicine at Northwestern University Feinberg School of Medicine showed that third- and fourth-year health profession (HP) students possess skills that may prove useful in a disaster response. Roles that would be appropriate for HP students during a disaster response include staffing emergency hotlines, providing prophylaxis or immunizations as part of a medical response in a biological event.[17]

The University of Toledo College of Medicine has utilized medical students as an additional resource in a campus H1N1 immunization campaign and mass casualty incident exercise. The university has learned it is important to identify, recruit, and support the necessary internal leadership to develop a methodology that embraces its health care students as valuable assets in disaster management in a feasible cost-effective manner.[3]

Medical students at the University of South Dakota are currently required to take the Core Disaster Life Support® course. During the 6 hours of hands-on training, students learn how to put on and take off positive airway pressure devices, treat shock, and give immunizations.[18]

Medical students can offer additional valuable surge resources, such as staffing telephone hotlines during a pandemic, or providing prophylaxis or immunizations as part of medical response in a biological event.[19] A recent survey of NDLSEC members suggested the following roles for students:

- patient counseling on-site and by phone;
- clerical and administrative assistance;
- support with research, communications, logistics, and intelligence;
- support at shelters and family information centers;
- help with basic setup of "care camps" or care facilities (use of social media);
- first aid and wound care;
- triage assistance and minimal nursing care;
- patient transport; and
- scene safety and security on site and at hospitals in the area mass inoculations (and in very limited instances to large scale events).

Medical Residency Training Guidelines

The Accreditation Council for Graduate Medical Education (ACGME) guidelines call for accredited institutions in local extreme emergent situations (e.g., a local event, such as a hospital-declared disaster for an epidemic) that affects resident education or the work environment to address the clinical duties of residents as spelled out in their institutional disaster plans (Institutional Requirements I.B.8). As guidance to developing disaster plans, the ACGME has published the following principles:

> Residents are, first and foremost, physicians, whether they are acting under normal circumstances or in extreme emergent situations. Residents must be expected to perform according to society's expectations of physicians as professionals and leaders in health care delivery, taking into account their degree of competence, their specialty training, and the context of the specific situation. Many residents at an advanced level of training may even be fully licensed in their state, and, therefore, they may be able to provide patient care independent of supervision.[20]
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> Residents are students. Residents should not be first-line responders without appropriate supervision given the clinical situation at hand and their level of training and competence. If a resident is working under a training certificate from a state licensing board, they must work under supervision. Resident performance in extreme emergent situations should not exceed expectations for their scope of competence as judged by program directors and other supervisors. Residents should not be expected to perform beyond the limits of self-confidence in their own abilities. In addition, a resident must not be expected to perform in any situations outside of the scope of their individual license. Expectations for performance under extreme circumstances must be qualified by the scope of licensure, which varies by state.[20]

The ACGME also advises teaching institutions to consider how a resident's involvement in local extreme emergent situations must take into account the following aspects of his/her multiple roles as a student, a physician, and an institutional employee:

- The nature of the health care and clinical work that a resident will be expected to deliver;
- Resident's level of post-graduate education specifically regarding specialty preparedness;
- Resident safety, considering their level of post-graduate training, associated professional judgment capacity, and the nature of the disaster at hand;
- Board certification eligibility during or after a prolonged extreme emergent situation;
- Reasonable expectations for duration of engagement in the extreme emergent situation; and
- Self-limitations according to the resident's maturity to act under significant stress or even duress. ACGME Policies and Procedures (II.H.2)[20]

Although the ACGME does not specifically address how residents' time, salary, and benefits should be calculated in emergency situations, it is important for programs and institutions to address these issues.

Medical Student Willingness vs. Ability to Respond to Disasters

Medical students represent a well-educated and energetic group whose large numbers and humanitarian mindset make them a valuable human resource in the event of a disaster. A study conducted by Katz, et al., showed that involvement in a disaster, e.g., the September 11, 2001 terrorist attacks, was associated with a reinforced desire to become a physician.[21]

In a 2008-2009 survey of medical students, respondents expressed willingness to participate in a disaster situation, but most believed themselves to be unprepared. For example, 96% were willing to respond to a natural disaster, 94% for pandemic influenza, and 84% for a radiological event, but only 17% believed that they had adequate education and training, and the majority of respondents did not know to whom they would report in such an event.[1] Another study following the September 11 terrorist attack showed that activities assigned to medical students, such as crisis hotline staffing, were associated with a higher emotional risk (e.g., anxiety, confusion) than fundraising in a hospital lobby, and that the level of support and supervision made available to

students, depending on where they work outside the safe confines of their medical school setting, may also be important.[21] These differential findings may indicate the need to carefully consider the type of activities assigned to medical students, and the need to specifically support medical students in the time of a disaster.

To be part of a coordinated response, it is the individual responsibility of all health care students and workers to be properly credentialed and assigned to a team before they can be deployed to a health care site. A recent survey showed that most (81.3%) medical students were willing to volunteer for a MRC in their community. However, only a small number (2.9%) of students were actually part of the MRC, and nearly 85% of students did not know to whom they should report in times of disaster. It is important to note that unlicensed health profession students can become a member of one of the 966 MRC units in the United States. However their subsequent participation in a disaster response would be subject to formal lines of supervision. For example, some medical schools have recently initiated formal MRC units on campus (e.g., University of Minnesota and University of Virginia), a model that can facilitate seamless organizational integration of medical students into disaster response.[1]

The US Department of Homeland Security, Federal Emergency Management Agency (FEMA)[22] and US Department of Health and Human Services, have actively been working on creation of a National Emergency Responder Credentialing system (NERC) that employs modern technology to credential specific types of emergency responders. The goal is to ensure an adequate and competent emergency response workforce that can respond across county and state lines during emergencies.

Some legal issues that have proven to be a large problem for emergency responders during a disaster include civil liability, criminal liability, workers' compensation, and the right to re-employment after a disaster. Prior credentialing of the responder may preclude some of these legal issues by either educating the responder about the laws or teaching the responder to stay within his/her scope of ability. Such information may also encourage more emergency responders to help during an emergency because the fear of legal ramifications will be diminished.[23]

DISCUSSION

Effective education in disaster medicine and public health preparedness is a much needed bridge between clinical medicine and public health. Rare and infrequent events present challenges within disaster medical education. Regardless of specialty, all physicians will be called upon to serve during a disaster. A robust, highly-skilled medical and public health workforce will be needed. Therefore, the importance of disaster training for students, residents, physicians, and other health care professionals is paramount, and the number of medical schools incorporating disaster medicine and public health preparedness into curricula is increasing.

Various organizations and universities have developed competencies for health professionals and other emergency responders. However, these competencies have not been integrated to meet the needs of all health professionals in a disaster. The AMA, in collaboration with the NDLSEC, is reviewing competencies to achieve consensus on an educational framework and competency set for incorporation into the NDLS training program. Learning objectives and evaluation tools are also being developed for a wide-range of health care professionals through the NDLSEC for future versions of the NDLS courses.[8]

Disaster Medicine also requires dynamic teamwork. Emerging disaster preparedness training models are creating opportunities for students and residents to practice inter-professional training. Most medical school faculties have little experience with multi-disciplinary teaching. It will be important to identify the incentives that encourage faculty to incorporate inter-professional education into core content areas, including disaster medicine.[10]

It is important to note that formal education in disaster medicine and management for students and residents, while ideal, is still difficult to achieve given financial and time constraints.[3] Although federal directives call for development of a medical and public health workforce to promote the discipline of disaster medicine, reaching a national standardization in medical school curriculum implementation will also require significant investment and partnership from multiple sources including the private sector.[1]

RECOMMENDATIONS

There is a need to support medical student and resident education and involvement in disaster medicine and public health preparedness planning to ensure that the United States has an adequate, well-trained, and deployable public health and medical disaster response workforce. The AMA, through its Center for Public Health Preparedness and Disaster Response, is working collaboratively with the National Disaster Life Support Education Consortium (NDLSEC) and other inter-professional organizations to bring substantive improvements to disaster medicine preparedness in the United States.

The Council on Medical Education recommends that the following recommendations be adopted in lieu of Resolution 311-A-10 and the remainder of this report be filed.

1. That our American Medical Association reaffirm AMA Policy H-295.868, Education in Disaster Medicine and Public Health Preparedness during Medical School and Residency Training and AMA Policy H-130.946, AMA Leadership in the Medical Response to Terrorism and Other Disasters. (Reaffirm HOD Policy)

2. That our AMA encourage all medical specialties, in collaboration with the National Disaster Life Support Educational Consortium (NDLSEC), to develop interdisciplinary and inter-professional training venues and curricula, including essential elements for national disaster preparedness for use by medical schools and residency programs to prepare physicians and other health professionals to respond in coordinated teams using the tools available to effectively manage disasters and public health emergencies. (Directive to Take Action)

3. That our AMA encourage medical schools and residency programs to use community-based disaster training and drills as appropriate to the region and community they serve as opportunities for medical students and residents to develop team skills outside the usual venues of teaching hospitals, ambulatory clinics, and physician offices. (Directive to Take Action)

4. That our AMA make medical students and residents aware of the context (including relevant legal issues) in which they could serve with appropriate training, credentialing, and supervision during a national disaster or emergency, e.g., non-governmental organizations, American Red Cross, Medical Reserve Corps, and other entities that could provide requisite supervision. (Directive to Take Action)

5. That our AMA work with the Federation of State Medical Boards to encourage state licensing authorities to include medical students and residents who are properly trained and credentialed

to be able to participate under appropriate supervision in a national disaster or emergency. (Directive to Take Action)

6. That our AMA encourage physicians, residents, and medical students to participate in disaster response activities through organized groups, such as the Medical Response Corps and American Red Cross, and not as spontaneous volunteers. (New HOD Policy)

7. That our AMA encourage teaching hospitals to develop and maintain a relocation plan to ensure that educational activities for faculty, medical students, and residents can be continued in times of national disaster and emergency. (Directive to Take Action)

Fiscal Note: Less than $5,000 of Staff time.

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