

Brief for GSDR – 2016 Update

Building Resilience by Professionalisation of Healthcare Workers Through Technological Innovations

Moa M. Herrgard^{1, 2, 3}; MD Adrian Paul Jaravata Rabe^{2, 4, 5, 6}; MA Sharon Lo^{2, 7}; Dr. Luca Ragazzoni⁸; and Dr. Frederick M. Burkle, Jr.^{9, 10}*

Health Care Resilience

In 2015, there were 346 reported disasters resulting in 22,773 deaths, 98.6 million injuries and economic damage worth US\$ 66.5 Billion. [1] The frequency and intensity of disasters and other emergencies are increasing. [2] Emergencies can have extensive political, economic, social and public health impacts, with potential long-term consequences that financially drain many countries, hindering progress in building sustainable, resilient societies.

In order to adequately respond to the global need for Disaster Risk Reduction and Management (DRRM), the Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework) was developed and adopted at the Third United Nations (UN) World Conference on DRR. [3] Health system resilience is strongly promoted throughout this framework. The Sendai Framework recognises the need to establish disaster medicine (DM) health standards, provide training in the discipline of disasters medicine and thus enhance the capacity of health workers. (See Framework statements xxx, 30.i, 30.e, 33.c, 43)

This brief will explore how online disaster simulation exercises and courses, based upon a unified curriculum, can leverage increased global access to available technologies to be powerful training tools for health professionals to engage in DM.

International Standards and Professionalisation of DM

Health professionals are among the first responders during a crisis, providing emergency care while addressing short- and medium-term problems that arise from such an event. The knowledge and skills of these health care responders are essential in mitigating untoward health outcomes.

Medicine is a worldwide profession following unified methods and standards. However, the healthcare delivered within disaster and emergency settings are often not subject to these evidence-based standards. [4] Poor clinical and health management practices are a persistent problem in post-disaster evaluations. [6] The lack of international standards and competency-based training [7] strongly suggests a need to professionalise and formalise the field of DM. [8][12] Academia can have an important role in this science policy interface, supporting the establishment of DM health standards and training.[6] While this is a crucial task, it is not an easy one.

DM Training & Evidence-Based Curriculum Apart from first-responder emergency courses, there are few opportunities for formal and comprehensive DM training for healthcare personnel. A study among Italian medical students confirmed an awareness of DM but little to no curriculum coverage. [9] In the European Union, 78% of DM training programmes were

*The views and opinions expressed are the authors' and do not represent those of the Secretariat of the United Nations. Online publication or dissemination does not imply endorsement by the United Nations.

located in the United Kingdom, France, and Germany, mostly masters level, targeting emergency responders, and without external funding available to students. [10] In the United States, DM training focused mainly on pandemic influenza and hazards planning. [11]

The World Association for Disaster and Emergency Medicine (WADEM), American Medical Association's Center for Disaster Medicine and Public Health Preparedness and the North Atlantic Treaty Organisation all formulated frameworks for DM curricula. [12][13][14] These efforts were included in a systematic review on core competencies for DM. [15] The competencies taught in a DM curriculum need to be comprehensive and should include demonstrated knowledge of surge capacity, clinical management, ethical, and public health principles. [16] To be effective, the curriculum needs to incorporate hands-on field service and crisis simulations. [17][18][19]

DM training for health professionals answers the call of the Sendai Framework to fill this gap. However, to fully meet the Sendai Framework, DM needs to be included in the medical curriculum. Such a programme was piloted in Italy in 2011, with acceptable academic outcomes and feedback. [23]

These training programmes should be based on a globally defined DM curriculum, created by a centralised authority, utilizing the current evidence base that would be continually updated as DM science moves forward. Doing so will meet the explicitly stated goal of the Sendai Framework to rapidly disseminate information on DM science and technology, especially within the context of capacity building. Such a standard curriculum may be further adapted into national programmes customised to each country's needs. [25]

Harnessing Technologies for DM Capacity Building

DM needs to be its own distinct discipline, and one needs to build the capacity and capability of health professionals. Technological innovations that increase access to the internet represent unprecedented opportunities for DM training, allowing DM to reach greater numbers of people, even those in vulnerable communities.

Massive Open Online Courses (MOOCs) offer affordable and flexible training for students to learn at their own pace. They reach a great number of diverse participants globally, especially communities at high-risk for crisis and disasters, overcoming geographic and economic barriers. The courses are evidence-based, developed by academic institutions.

Additionally, the innovative tools of computerised disaster simulations have been developed that further enhance online learning. [26] Simulations increase the experience and efficacy of MOOCs through interactive methods, training students to adhere to best medical practices when faced with difficult situations in resource-poor settings. The simulation backend is based on real data extracted from national disaster reports.

Formal, Innovative Evidence-Based DM Training

Training DM Trainers

The International Federation for Medical Student Association (IFMSA) and CRIMEDIM (Research Center in Emergency and Disaster Medicine, Università del Piemonte Orientale, Novara, Italy) created an evidence-based best practice DM curriculum. The curriculum incorporated online and face-to-face learning, supplemented with online and reality-based simulations. Graduating students deliver peer-to-peer DM training in their local academic institutions. The 2016 training cohort had 10 participants from 4 different Italian

regions, chosen from 150 applicants. Mean pre- and post-test results in DM assessment were 5.95 ± 1.29 and 7.29 ± 1.76 out of 10, respectively, with a statistically significant improvement ($p < 0.05$). Ninety percent of students were satisfied with both curriculum and teaching methods. The course successfully increased participants' knowledge and skills in DM. Additionally, the course developed local peer-education faculty in each of the medical schools to ensure continuity of DM training.

Public Health and Disaster Online Course

In 2014, the Collaborating Centre for Oxford University and Chinese University Hong-Kong for Disaster and Medical Humanitarian Response (CCOUC) launched the free online course "Public Health Principles for Disaster and Medical Humanitarian Response". This project was designed to build DRRM literacy and bottom-up resilience. Consisting of 7 lessons, 4 quizzes and 1 assessment, students learned basic principles of disaster preparedness and response through a public health framework. Course content included the disaster cycle, international policy initiatives and 27 disaster case studies. Since its launch, this online course was completed by over 3,100 students from 133 countries. Medical students from across the world have formed a key constituency of course participants; however, NGO workers and students from non-medical disciplines also participated. From the first two cohorts, 95% of participants were satisfied with the course, 93% rated it similar or even better than other courses, with 33% considering this course as the "best ever taken".

Emergency & Foreign Medical Teams Training

International initiatives to establish global medical team training have so far had two phases. In 2010, initiatives focused on professionalisation and standards of Foreign Medical Teams (FMTs) under the umbrella of the WHO, the Global

Health Cluster and NGOs. This 2016, initiatives now focus on the role of both international and national Emergency Medical Teams (EMTs) in public health emergencies of international concern (PHEICs). They also place a role on academic centres in standardising training, creating a registry of permanent and collaborative global EMTs. These programmes include training of health workers. While training in specific DM skills and their adaptation to resource-poor settings is essential, it should also focus on the unique aspects of "culture, country, and team preparedness" (CCTP) [27]. These training components are as important as specific DM skills, and should be performed before, and continue throughout, the programme.

In FMT and EMT training, medical science is complemented by multidisciplinary inputs and skills. This was recognized by WHO when they deployed nine anthropologists to West Africa Ebola epidemic to better explain to the local population the otherwise disruptive work of FMTs. [28]

Conclusion

DM remains an underdeveloped specialty field requiring significant focus. A priority should be to professionalise this specialty, benchmarking it according to global health standards. Technological innovations and increased access to the internet enhance learning in DM, ensuring greater reach. Although training initiatives in this field are emerging with greater frequency, they tend to operate in silos. Ultimately, we need to have unified standards in DM in order to build the capacity of future health workers to be effective responders to humanitarian and disaster crises. These will contribute to increased resilience, and more robust and sustainable development at the community level. Provision of DM training for health care personnel can tangibly impact the sustainable development and resilience of a

prepared community that serves as a profound legacy for global health advancement.

References

- [1] EM-DAT (25th January 2016) : The OFDA/ CRED - International Disaster Database www.emdat.be Université catholique de Louvain Brussels – Belgium.
- [2] “Guha-Sapir D, Hoyois Ph. , Below. R. Annual Disaster Statistical Review 2014: The Numbers and Trends. Brussels: CRED; 2015. [3] UN Office for Disaster Risk Reduction. Sendai Framework for Disaster Risk Reduction 2015-2030. United Nations. URL: http://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf [Accessed 21 February 2016].
- [4] Burkle FM Jr. Future Humanitarian Crises: 21st Century Challenges to Surgical Practice and Policy. Davos, Switzerland. 11 Dec 2011. Available at: <http://www.slideshare.net/GRFDavos/burkle-future-crises-davos-talk-burkle>. Accessed 3 March 2016.
- [5] Burkle FM Jr. Accountability and Accreditation of Emergency Surgery Providers. Davos. Switzerland. 11 Dec 2011. Available at: http://search.aol.com/aol/search?s_it=webmail-searchbox&q=Burkle%20FM%20Jr.%20Accountability%20and%20Accreditation%20of%20Emergency%20Surgery%20Providers.%20Davos. Accessed 3 March 2016.
- [6] Burkle FM Jr., Clarke G, VanRooyen MJ: Challenges to the humanitarian community: The role of academia in advancing best practices and policy promotion. *Prehosp Disaster Med* 2009;24(1):s247-s25.
- [7] Djalali A, Ingrassia PL, Della Corte F, Foletti M, Ripoll Gallardo A, Ragazzoni L, Kaptan K, Lupescu O, Arculeo C, von Arnim G, Friedl T, Ashkenazi M, Heselmann D, Hreckovski B, Khorrman-Manesh A, Komadina R, Lechner K, Patru C, Burkle FM Jr., Fisher P. Identifying deficiencies in national and foreign medical team responses through expert opinion surveys: implications for education and training. *Prehosp Disaster Med*. 2014;29(4):1-5.
- [8] Kene M, Pack ME, Greenough PG, Burkle FM: Professionalization of humanitarian health assistance: Report of a survey on what humanitarian health workers tell us. *Prehosp Disaster Med* 2009;24(4):s210–nn.
- [9] Ragazzoni L, Ingrassia PL, Gugliotta G, Tengattini M, Franc JM, Corte FD. Italian medical students and disaster medicine: awareness and formative needs. *Am J Disaster Med*. 2013 Spring;8(2):127-36. doi: 10.5055/ajdm.2013.0119.
- [10] Ingrassia PL, Foletti M, Djalali A, Scarone P, Ragazzoni L, Della Corte F, Kaptan K, Lupescu O, Arculeo C, von Arnim G, Friedl T, Ashkenazi M, Heselmann D, Hreckovski B, Khorrman-Manesh A, Komadina R, Lechner K, Patru C, Burkle FM Jr., Fisher P. Education and training initiatives for crisis management in the European Union: a web-based analysis of available programs. *Prehosp Disaster Med*. 2014;29(2):1-12. [11] Smith J, Levy MJ, Hsu EB, Levy JL. Disaster curricula in medical education: pilot survey. *Prehosp Disaster Med*. 2012;27(5):492-494. [12] Archer F, Seynaeve G: International standards and guidelines for education and training to reduce the consequences of events that may threaten the health status of a community. *Prehosp Disaster Med* 2007;22(2): 120-130.
- [13] Subbarao I, Lyznicki JM, Hsu EB, et al. A Consensus-based Educational Framework and Competency Set for the Discipline of Disaster Medicine and Public Health Preparedness. *Disaster Med Public Health Preparedness*. 2008;2:57– 68.
- [14] Burkle Jr. FM, Lyznicki JM, James JJ. Crossdisciplinary competency and professionalization in disaster medicine and public health. *NATO Science for Peace and*

- Security Series - E: Human and Societal Dynamics. 72-83. [15] AR, Djalahi A, Foletti M, et al. Core Competencies in Disaster Management and Humanitarian Assistance: A Systematic Review. *Disaster Med Public Health Preparedness*. 2015;0:1-10.
- [16] Walsh L, Subbarao I, Gebbie K, et al. Core Competencies for Disaster Medicine and Public Health. *Disaster Med Public Health Preparedness*. 2012;6:44-52.
- [17] Bradt DA, Drummond CM: Professionalization of disaster medicine—an appraisal of criterion-referenced qualifications. *Prehosp Disaster Med* 2007;22(5):360–368.
- [18] Cranmer H, Chan J, Kayden S, Musani A, Gasquet P, Walker P, Burkle F, Johnson K. Development of an evaluation framework suitable for assessing humanitarian workforce competencies during crisis simulation exercises. *Prehosp Disaster Med*. 2014;29(1):1-6.
- [19] Franc-Law JM, Ingrassia PL, Ragazzoni L, Della Corte F. The effectiveness of training with an emergency department simulator on medical student performance in a simulated disaster. *CJEM* 2010;12(1):27-32.
- [20] Burkle Jr. FM. Conversations in Disaster Medicine and Public Health: The Profession. *Disaster Med Public Health Preparedness*. 2014;0:1-7.
- [21] Chen L, Evans D, Evans T, et al. *Working Together for Health*. World Health Organisation. Switzerland. 2006.
- [22] Walsh L, Subbarao I, Gebbie K, et al. Core Competencies for Disaster Medicine and Public Health. *Disaster Med Public Health Preparedness*. 2012;6:44-52.
- [23] Ingrassia PL, Ragazzoni L, Tengattini M, Careno L, Della Corte F. Nationwide program of education for undergraduates in the field of disaster medicine: development of a core curriculum centered on blended learning and simulation tools. *Prehosp Disaster Med*. 2014;29(5):1-8.
- [24] Walker P, Hein K, Russ C, Bertleff G, and Caspersz D. A Blueprint For Professionalizing Humanitarian Assistance. *Health Affairs*. 2010;29(12): 2223–2230.
- [25] FitzGerald GJ, Aitken P, Arbon P, Archer F, Cooper D, Leggat P, Myers C, Robertson A, Tarrant M, Davis ER: A national framework for disaster health education in Australia. *Prehosp Disast Med* 2010;25(1):4-11.
- [26] Nationwide Program of Education for Undergraduates in the Field of Disaster Medicine: Development of a Core Curriculum Centered on Blended Learning and Simulation Tools. *Prehosp Disaster Med*. 2014 August;29(05):1-8.
- [27] : Burkle FM Jr. Personal communication. “Components of CCPT in NGOs.” Email 3/5/2016. [28] Abromowitz S. Ten things that anthropologists can do to fight the West Africa Ebola epidemic. *Ebola Fieldnotes*. Available at: <http://somatosphere.net/2014/09/ten-things-that-anthropologists-can-do-to-fight-thewest-african-ebolaepidemic.html>. Published September 26, 2014. Accessed November 21, 2014.