**Data Supplement 2. Full summaries and critical analysis of the top-scoring 18 disaster medicine articles of 2016.**

**Agua-Agum J, Allegranzi B, Ariyarajah A, et al. After Ebola in West Africa - unpredictable risks, preventable epidemics. N Engl J Med 2016;375:587-96.**

*A high-level review of the 2013-16 Ebola Viral Disease Outbreak reveals that effective management of the next outbreak will require committing resources to both strengthen national health systems and sustain investment in the next generation of vaccines, drugs, and diagnostics.*

**Summary:** Between December 2013 and April 2016, the largest epidemic of Ebola virus disease (EVD) to date generated more than 28,000 cases and more than 11,000 deaths in the large, mobile populations of Guinea, Liberia, and Sierra Leone. Members of the WHO’s Ebola Response team review the natural history of the epidemic, effects of interventions, and critical recommendations to prepare for future outbreaks. Empirical evidence from the outbreak is limited, but the effect of rapid patient isolation and hospitalization from a series of small outbreaks suggests this approach aids outbreak control. In a comparison of the effects of six outbreaks that occurred before the introduction of Rapid Isolation and Treatment of Ebola (RITE) teams and six that occurred afterward, the time between the first new case in remote areas and the notification of health authorities was reduced by nearly half, the proportion of patients isolated increased from 28% to 81%, survival improved from 13% to 50%, the case reproduction number fell below unity (the replacement rate), outbreaks became shorter(median duration declined from 53 to 25 days), and the number of generations of cases dropped from a median of four to two. The authors suggest that an investment in African health care systems is critical to prepare for the next outbreak.

**Comment:** This comprehensive review highlights the WHO Ebola Response Team’s perspective on the history, interventions, and future preparations for the next EVD outbreak. The summary effectively captures overarching themes and should be mandatory reading for clinicians interested in disaster medicine**.**

*Eric Goralnick, MD*

**Birnbaum ML, Daily EK, O'Rourke AP, Kushner J. Research and evaluations of the health aspects of disasters, part VI: interventional research and the disaster logic model. Prehosp Disaster Med 2016;31:181-94**.

*The Disaster Logic Model (DLM) can provide a framework to guide research efforts that study the effects, outcomes, costs, and impacts of disaster interventions.*

**Summary:** There are relatively few publications in the peer-reviewed literature that critically and rigorously evaluate the outcomes that result from differing disaster health interventions. Among the limited number of studies that do offer data on the consequences that follow specific interventions, there is generally no common structure among them, and it is therefore difficult or impossible to aggregate data or to make comparisons between studies. In this lengthy and theoretical piece, the authors offer a possible solution to this challenge, proposing use of a Disaster Logic Model (DLM). The DLM, like all logic models, looks at disaster interventions as production functions, describing the theoretical relationships among investment, activities, and results. The DLM starts by looking at the status of a societal system, or its components. Needs are then identified within the system following a disaster, which require a strategic plan to meet those needs. The goals and objectives that form the strategic plan are translated into action as individual interventions. Each intervention can then be observed to have specific effects and impacts, which are the outputs of the production function. The authors assert that by encouraging researchers to explicitly focus their efforts on characterizing the system they are studying, its needs following a disaster, and the effects and impacts of the individual interventions made during disaster response, the DLM will allow better comparison of data across studies and support better analysis on the value of differing interventions. Acknowledging that prospective, randomized, controlled trials in disaster are not practical or generally possible, the authors note that multiple studies reporting data from multiple events will be required to create a body of evidence that appropriately informs the development of common standards for disaster response and evidence-based best practice recommendations. Using the DLM, they suggest, is one way to better amass data from multiple future studies.

**Comment:** This is a lengthy article that goes into great detail about the theory of evaluation, as well as the theory behind logic models in general. While the theoretical discussions within the article are impressive, they risk alienating the audience who is simply trying to conduct better disaster research but who is not interested in such details. Readers who persevere to reach the authors’ take-home message at the end of the article should appreciate its simplicity: we need higher-quality data on the value of our interventions in disasters if we are to improve our response. One way to gather better data is to utilize the (ultimately) basic structure of the DLM.

*Paul Biddinger, MD*

**Birnbaum ML, Daily EK, O'Rourke AP. Research and evaluations of the health aspects of disasters, part VII: the relief/recovery framework. Prehosp Disaster Med 2016;31:195-210.**

*This article describes a detailed process to initiate and evaluate interventional research studies in the disaster field.*

**Summary:** This article is one of a series that lays out research design and evaluation during disasters. This article covers interventional research studies. A framework was developed and described in detail in this article. The steps a society takes from pre-event to resetting of the new level of function in the society were delineated in The Relief/Recovery Framework. The authors then identify major variables that are required to move between steps in the Framework. The process variables identified step through the implementation of an intervention during a disaster in logical manner allowing for standardized research studies.

**Comment:** The field of disaster research has many challenges. One of the major problems is how to bring structured reproducible research to an environment where changes are being implemented at a rapid pace in unique situations. This article lays out a framework and process to follow that can be applied in many events and is structured enough to provide some consistency. The article could use some streamlining, but it is organized well. Overall, the article lays out a possible way forward for interventional disaster research.

*Ira Nemeth, MD, FACEP, FAEMS*

**Brolin Ribacke KJ, Saulnier DD, Eriksson A, von Schreeb J. Effects of the West Africa Ebola Virus disease on health-care utilization - a systematic review. Front Public Health 2016;4:222.**

*A review of the literature indicates non-Ebola related increases in morbidity and mortality in West Africa due to both a decrease in services available and a decrease in utilization of these services.*

**Summary:** A systematic review was performed of the literature to assess the impact of the Ebola virus disease (EVD) outbreak in West Africa on indirect health effects, with the goal of helping with health system strengthening and developing resilience for withstanding future shocks. The literature review included multiple databases and gray literature, using keywords with variations in terms for: Ebola, health, health systems, health facility, and illness/disease. Populations studied included those living in Guinea, Liberia, or Sierra Leone, and affected areas of Nigeria, Senegal, and Mali. Indirect effects refer to changes in health outcomes caused by the effect of the West Africa EVD outbreak on the health systems, including increased maternal morbidity and mortality, a reduction in HIV-infected patients receiving antiretroviral treatment, an increase in malaria cases due to termination of intermittent preventative treatment programs, fewer children being treated for diarrhea and acute respiratory infections, and hospital in-patient admittance and essential surgery. Exclusion criteria included reporting information only on the direct effects of EVD, if mental health was the outcome under study, or if the publication was a commentary article. The search produced 3354 articles. 2788 articles were excluded during title screening and 442 after abstract screening. 117 articles were read in full, and 22 studies were included in the final review. Eleven studies investigated how EVD impacted reproductive maternal and pediatric issues, 10 focused on HIV/AIDS, tuberculosis, or malaria, and 4 reported other outcomes of changes in patient admissions and surgery and causes of death. Article review indicated significant decreased utilization of reproductive health services, including Caesarean sections and facility-based deliveries as well as antenatal and postnatal services. There was a decrease in hospital visits for children under 5 and a drop-in vaccination rates in children. Modeling studies indicated increased rates of measles were likely. Maternal case fatality rates were higher than normal. There was a decrease in preventative HIV services delivered in West Africa. Treatment rates for malaria based on distributed medications dropped as well during the EVD outbreak. There was a noted decrease in rates and total numbers of hospital admissions for non-EVD reasons as well as dramatic drops in the number of major surgeries performed. Of note there was a surgical site in Sierra Leone where 25% of the surgeons died due to EVD.

**Comment:** This was a strong systematic review of health systems effects in a region where most of the published literature addressed direct effects of the Ebola outbreak, despite assumed impact on the rest of the system. A major limitation of the review performed was excluding non-English literature, given that Guinea is primarily French speaking. Additionally, excluding the effects on mental health likely diminished the full impact of EVD on health systems in West Africa. The review of the captured literature helps reinforce the fact that caring for EVD patients put a strain on providing routine care in the area to the detriment of the affected communities who were not infected but had other significant medial needs. This highlights the need to create a plan to provide this type of care during public health emergencies, in this and other potentially affected regions. It also indicates the need for better tracking and reporting of this type of data during similar public health events.

*Ritu Sarin, MD*

**Caspers C, Smith SW, Seth R, Femia R, Goldfrank LR. Observation services linked with an urgent care center in the absence of an emergency department: an innovative mechanism to initiate efficient health care delivery in the aftermath of a natural disaster. Disaster Med Public Health Prep 2016;10:405-10.**

*This article demonstrates the usefulness and diverse population base that can be cared for by an ED Observation Unit in the absence of an ED through a retrospective review of such a model created after the destruction of the ED at NYU Langone Medical Center during hurricane Sandy.*

**Summary:** In this retrospective cohort study, the authors review the patients seen by an Emergency Department Observation Unit (EDOS) stood up following the creation of an Urgent Care Center (UCC) to re-establish acute care services after the emergency department of the NYU Langone Medical Center by Hurricane Sandy. The UCC, despite not having 911 designation and not being an ED, did receive urgent cases via taxicabs and private ambulances. The EDOS was created and operated in the absence of an emergency department and was protocol-driven, utilizing protocols from the American College of Emergency Physicians. The EDOS inclusion criteria were patients seen in the UCC requiring further management of their condition while the decision to admit or not was being made. 100% of the charts were captured over the 18 months the ED was closed. They evaluated UCC volume, Emergency Severity Index score on arrival, patient age, gender, diagnosis, disposition from UCC, clinical protocol used, length of stay in EDOS, and disposition from EDOS. The results revealed good utilization of the EDOS for a large number of diverse conditions in the absence of a functioning emergency department.

**Comment:** This article demonstrates a novel way to continue acute services and utilize an observation unit effectively in the absence of an emergency department. This has implications for use in disaster scenarios where such a situation arises. A system such as this can fill that important gap between outpatient and inpatient services in the post-acute phase of a disaster.

*Gregory Ciottone, MD*

**Garbern SC, Ebbeling LG, Bartels SA. A systematic review of health outcomes among disaster and humanitarian responders. Prehosp Disaster Med 2016;31:635-42.**

*This study is a meta-analysis of research on the physical and mental health effects to the responders to major disasters. It concludes that responders’ health, both mental and physical, needs to be better assessed after disaster work.*

**Summary:** Disaster response carries significant risks to the responders as well as the victims. Thus, analysis consisted of two reviewers’ assessment of 2,849 abstracts and 66 articles on the health sequelae of responding to various types of disasters. They found that post-traumatic stress disorder (PTSD) and depression were common in responders after disaster events, and that physical health problems were reported but much less studied (57 of the 66 full articles were solely devoted to mental health issues). PTSD had a reported prevalence of up to 34% in some studies, and depression was found in up to 53% of responders. Physical health problems included both acute injury and chronic disability resulting from disaster response activities. The authors conclude that there is a need for better post-disaster health surveillance of responders, for both physical and mental issues.

**Comment:** While this study faces the typical issues in any meta-analysis (completion, comparison, and strength of conclusion), it highlights a critical issue that has indeed been only poorly addressed. Disaster responders, whether government or civilian, do suffer bad outcomes from their work, and this is not limited to merely acute injuries at a scene or site. It is critical to screen and follow disaster responders (pre- and post-event) to make sure that their health and safety are preserved and supported as best as possible.

*Jonathan L. Burstein, MD, FACEP, FAEMS*

**Healthcare Ready. Access denied: delivery of critical healthcare products and personnel to disaster sites: HealthCare Ready; 2016.** <https://www.healthcareready.org/system/cms/files/1466/files/original/HCR_Access_Denied_Report.pdf>

*This report offers a review of emergency site access challenges experienced by the private sector, as well as summaries of programs and legislation by state. Potential solutions and program recommendations are provided.*

**Summary:** The provision of medications, medical supplies, and healthcare services must continue to function and serve the public throughout an emergency. However, these assets are largely provided by the private sector, and balancing safety and security with the need for access to a disaster site during a crisis can be challenging. This document, commissioned and funded by the U.S. Department of Health and Human Services, aims to describe the challenges of emergency site access, as well as provide a review and analysis of existing solutions. A comprehensive review was undertaken of all existing state statutes and regulations pertaining to entry, re-entry, transportation, and delivery of essential goods and services during a disaster. Surveys were collected from 120 emergency managers, public health officials, and private sector stakeholders; 25 detailed interviews were conducted. In addition, disaster declarations were analyzed for language relating to private sector or healthcare operations during a disaster. Examples of approaches and programs are provided state-by-state, including summaries of high performing programs and legislation. Finally, recommendations on establishing and running an access program are provided.

**Comment:** This document serves as a resource for jurisdictions and agencies developing plans for emergency site access during crisis scenarios. While the methods used lack scientific rigor, the discussion is comprehensive. The state-by-state summary in the Appendix gives context to the issues raised in the document. Appendix B presents summaries of model programs and legislation and would be useful to any jurisdiction developing an access program. The recommendations are succinct and practical. Overall, this document serves as a comprehensive resource documenting issues surrounding a common concern in crisis situations.

*Scott Goldberg, MD, MPH, FACEP, FAEMS*

**Heid AR, Christman Z, Pruchno R, Cartwright FP, Wilson-Genderson M. Vulnerable, but why? post-traumatic stress symptoms in older adults exposed to Hurricane Sandy. Disaster Med Public Health Prep 2016;10:362-70.**

*Post-traumatic stress disorder (PTSD) symptoms were much more likely in elderly persons affected by Hurricane Sandy who had lower levels of income, positive affect, employment, and other factors that may allow for targeted interventions to increase pre-event resilience and promote post-event recovery.*

**Summary:** This study evaluated whether elders experiencing higher PTSD-related symptoms exhibit pre-hurricane vulnerability from a physical or mental health standpoint, as well as evaluate the impact of the event exposures. A pre-existing database of elders was used to perform telephone surveys and individuals with clinically significant PTSD symptoms were paired by gender, impact of the hurricane, and geography with individuals without significant PTSD symptoms. Forty-four pairs were analyzed, and statistically significant associations were found between pre-storm social support, employment, income, mental health conditions, affect, functional ability, pain, and chronic medical conditions between the groups suggesting at-risk characteristics that could be targeted to improve resilience and enhance recovery.

**Comment:** This novel use of controls allows a better picture of key factors contributing to PTSD in the elderly population. Limitations include the size of the cohorts, the large age range of the cohorts, the number of variables (and potential for other variables not surveyed) and their analysis, and the elapsed time prior to survey (in some cases more than two years after the hurricane). PTSD is a significant issue post-disaster and this study may help target populations both for resilience-building (increasing social support, for example) as well as post-incident interventions and support. Future research should focus on defining other contributing variables, determining whether the predictors hold across the broad age range in the study, and define and investigate potential interventions.

*John Hick, MD*

**Heldenberg E, Givon A, Simon D, Bass A, Almogy G, Peleg K. Civilian casualties of terror-related explosions: the impact of vascular trauma on treatment and prognosis. J Trauma Acute Care Surg 2016;81:435-40.**

*Vascular casualties from Improvised Explosive Devices (IEDs) cause more complex casualties who have a poorer prognosis. This has implications for the triage of victims with such injuries and selection of receiving hospitals.*

**Summary:** Improvised Explosive Devices (IEDs) are commonly used in terror attacks because of their ease of manufacture, low cost, and ability to cause injury and death. The authors in this study conducted a retrospective analysis of all patients registered in the Israeli Trauma Registry between September 2000 and December 2005 to compare injuries and other data from patients without vascular trauma (VT) from IEDs and those with VT. The authors found that, by almost all measures, patients with VT after IED detonation were sicker and required more resources in their care than patients without VT. Patients with VT had a higher injury severity score, higher need for operative intervention, higher rates of intensive care unit admission, and higher mortality. In addition, patients with VT had higher rates of trauma room resuscitations in the emergency department and greater rates of lengthy hospitalization, defined as a hospital stay of greater than 15 days. The authors conclude that the increased morbidity and mortality observed among VT patients, as well as their greater rates of resource utilization mean that systems for primary and secondary triage should strongly consider VT as a factor in patient distribution among hospitals.

**Comment:** This is the first article to critically examine the differences in patients with and without VT in civilian casualties following an IED detonation. The large sample size of the study (1,261 patients) as well as the comprehensive clinical data collected in the Israeli Trauma Registry make the study’s conclusions compelling about the differences between patients with VT and without VT following IED events. It remains to be seen, however, how EMS responders can best apply this knowledge when triaging patients in the field or while distributing patients among hospitals with very differing levels of trauma and/or vascular surgery capabilities during an event.

*Paul Biddinger, MD*

**Jacobs LM, Jr. The Hartford Consensus IV: a call for increased national resilience. Conn Med 2016;80:239-44.**

*This article is a summary and call to action for response to active shooter and intentional mass casualty events. It discusses training and implementation of a plan to increase the ability of bystanders and professional rescuers to respond to such events, focusing most notably on hemorrhage control.*

**Summary:** The article summarizes the conclusion of a group of disaster responders and researchers at a consensus conference on response to active shooter events. They conclude that the United States must be made more resilient to cope with these events. Their discussion covers issues such as who responds, how they can respond safely (the red/yellow/green zone concept applied to active shooter scenes), and what basic first aid steps may be of most use. A substantial portion of the article is devoted to a discussion of who should be trained (e.g., the general population as well as specific responder categories) and how that training should be disseminated. Most of their focus (as befits the group’s makeup and the nature of the event) is focused on hemorrhage control as a life-saving intervention. As the author explicitly notes, it is a civilian version of military buddy-aid.

**Comment:** This is obviously a very narrow focus, and as a polemic the article does not contain rigorous data or analysis. Nevertheless, it is unfortunately clear that our society will be facing many more mass shootings and other such events, and it is indeed important that we be prepared. The specific clinical suggestions are focused mainly at the level of the basic emergency medical technician. There are some gaps in the authors’ suggestions — most notably, since all Americans must go to high school, why not use high school health classes to teach CPR and bleeding control? Overall, this framework is a good starting point for the discussion of how to be more prepared as a society.

*Jonathan L. Burstein, MD, FACEP, FAEMS*

**Nomura S, Blangiardo M, Tsubokura M, et al. Post-nuclear disaster evacuation and survival amongst elderly people in Fukushima: a comparative analysis between evacuees and non-evacuees. Prev Med 2016;82:77-82.**

*Elderly residents of care facilities evacuated after a disaster experienced a three-fold increase in mortality compared to baseline mortality in a control group. This potential impact should be considered in evacuation decision-making.*

**Summary:** The impact of evacuation on the elderly is an important consideration for disaster planners. This study compared mortality rates of seven elderly care facilities 20-40 kilometers from the Fukushima reactor between facilities that evacuated and those that did not (1,215 persons – 715 evacuated and 500 that were not). Medical records of the patients were used to determine mortality. Random effect Cox proportional hazards and comparative statistical methods were used to evaluate impact of evacuation. Experiencing the disaster was not significantly associated with a higher mortality (1.1 hazard ratio) but initial evacuation from the facility was strongly associated (3.4) with mortality in the five months following the disaster compared to non-evacuees. Subsequent evacuation/patient movement did not further increase mortality (overall 1.8-fold mortality increase for all evacuations).

**Comment:** Several prior articles have found an association between evacuation of long-term care facilities and increased mortality. However, prior work was not able to separate potential effects of the stress of the disaster (or in other cases, conditions in the facility resulting from the disaster) compared to the effect of the evacuation itself on the residents and their care. This study used a control group from an adjacent area not under an evacuation order and found a more than three-fold increase in mortality for initial evacuation (but no substantial effect of subsequent movement of the patients – perhaps suggesting better preparation/execution of scheduled evacuations or improved tolerance of subsequent moves). Limitations are a higher level of care requirements of those in the evacuated group, but this contrasts with a higher baseline mortality in the control group facilities. Overall, this article provides the strongest evidence, yet that emergency evacuation of the elderly is a major health hazard and the risk versus benefit should be carefully considered. Further research is needed to determine why subsequent evacuations did not have the same impact on mortality.

*John Hick, MD*

**Rozenfeld M, Givon A, Shenhar G, Renert L, Peleg K. A new paradigm of injuries from terrorist explosions as a function of explosion setting type. Ann Surg 2016;263:1228-34.**

*This article is a retrospective review of terrorist-related blast injuries from the Israeli national trauma registry over the time period of the second intifada 2000-2005, comparing injury patterns with the setting of the blast, specifically inside buildings, near buildings, inside buses, near buses, and in open spaces.*

**Summary:** This retrospective review of trauma cases during the second intifada (2000-2005) in Israel sought to compare the setting of the explosion to the severity of wounds in the victims. The intent is to allow hospitals to better predict the resources that may be required to treat victims of terrorist blasts based on the setting of the event. The data demonstrated more severe injuries when the explosion occurred either inside a building or inside a bus. Lowest severity of injuries was found in the explosions near buses, and the lowest volume of injuries occurred in the open space explosions. The highest volume of injuries was found in the explosions near buildings, supporting the idea that the blast wave reflected off the building wall and onto a larger number of victims.

**Comment:** This is a simple, yet elegant examination of blast injury patterns based on setting of the explosion. The results of this study allow for a great deal of predictive capability concerning injury severity scores and resource utilization in blast events with known settings. This may lead to setting of explosions becoming one of the important pieces of information to be relayed early from the scene to hospitals.

*Gregory Ciottone, MD*

**Sasabuchi Y, Matsui H, Yasunaga H, Fushimi K. Increase in avoidable hospital admissions after the Great East Japan Earthquake. J Epidemiol Community Health 2017;71:248-52. Published online ahead of print September 9, 2016.**

*Early intervention may reduce avoidable hospital admissions for new acute conditions in the months following an area impacted by a natural disaster*.

**Summary:** The objective of this study was to investigate the influence of the Great East Japan Earthquake and subsequent tsunami and nuclear disasters on people’s long-term health conditions in terms of their ambulatory care sensitive conditions (ACSCs) using a national inpatient database in Japan. Using a retrospective two-stage cross-sectional study, researchers concluded that preventable (where immunization and other interventions can prevent illness) and chronic ACSCs (where effective care can prevent flare-ups) may have increased just after the earthquake and then immediately decreased. However, avoidable admissions due to acute ACSCs remained high in the long term after the 2011 earthquake and tsunami disaster. In fact, acute ACSCs (where early intervention can prevent more serious progression) increased significantly (3.3 admissions per 100 000 population; 95% CI 0.4 to 6.3; p=0.028).

**Comment:** This retrospective analysis highlights that while prior reviews of disasters, specifically, Hurricane Katrina noted an increased incidence of hospital admissions for chronic ACSCs, acute ASCSs are another area of opportunity where early pre-hospital intervention may prevent a rise in hospital volume.

*Eric Goralnick, MD*

**Schoch-Spana M, Gronvall G, Brunson E, Sell T, Ravi S, Shearer M, Collins H. How to steward medical countermeasures and public trust in an emergency: a communication casebook for FDA and its public health partners. 2016.** <http://www.centerforhealthsecurity.org/our-work/events/2016%20FDA%20MCM/FDA_Casebook.pdf>

*This is a resource document and casebook developed for the FDA providing guidance on communicating medical countermeasures to the public in an emergency.*

**Summary:** Medical countermeasures are often novel products, rare in number and use, and many are still under production at the time of a needed deployment. Further, the threats they are meant to mitigate are themselves rare and extraordinary events. This document, prepared for and with the support of the Food and Drug Administration (FDA), presents a review of effective communication of medical countermeasures (MCMs) during a disaster event, as well as several case studies. A list of cases was garnered from scholarly literature and refined in collaboration with an expert working group based on prioritized issues. A team of project analysts worked with this expert panel to evaluate MCM communication in four selected recent crises, highlighting specific communication challenges faced by the FDA. These case studies include the recent Ebola outbreak, the 2011 Fukishima nuclear crisis, the 2009-10 H1N1 influenza pandemic, and the 2001 anthrax letter attacks.

**Comment:** Overall, this document provides a thorough and easily digestible review of MCM communication challenges. The focus on actual cases is powerful and provides practical and applicable lessons. While the small number of selected cases may limit generalizability, the authors nicely present the case studies in the broader context of emergency preparedness. The tables are well organized and summarize specific dilemmas, potential solutions, and implementation strategies. The major limitation of this resource document is that it was prepared specifically for the FDA. However, its applicability to the larger preparedness community is readily apparent and the lessons learned easily translatable.

*Scott Goldberg, MD, MPH, FACEP, FAEMS*

**ASPR TRACIE. CMS and disasters: resources at your fingertips. 2016.** <https://asprtracie.s3.amazonaws.com/documents/cms-and-disasters-resources-at-your-fingertips.pdf>

*The Center for Medicare and Medicaid Services (CMS) issued the Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers Final Rule to establish consistent emergency dependence requirements for healthcare providers participating in Medicare and Medicaid. The providers and suppliers are required to meet four core elements including developing an emergency plan, implementing policies and procedures, having a communication plan, and having a training and testing program. A table guides providers/supplier to determine whether this CMS Rule applies to them. Also, the document highlights several different methods by which organizations can meet the CMS Rule.*

**Summary:** Through literature search and review of available resources this article points out 11 different resources available to providers/suppliers which can help with CMS Emergency Preparedness Rule compliance. Each of the resources listed has a summary with information about how to access and use it. The report also has several technical assistance requests with a table that lists summaries of requests and the ASPR TRACIE responses. For example, if the requester is seeking sample emergency operation plans and policies for federally qualified healthcare centers, the technical assistance report notes that that information is included in this document and, furthermore, the ASPR TRACIE team provides resources specific to federally qualified healthcare centers in several categories. The document also includes technical assistance samples specifically looking at requesters who are seeking sample emergency operation plans and policies for federally qualified healthcare centers and for requesters asking about ambulatory surgical center templates to help organizations develop or update plans.

**Comment:** The document is a useful tool to providers, facilities, and suppliers looking to meet CMS Emergency Preparedness Rule requirements. It provides several important tables as well as a list of information that people can use to determine how to meet these rules and if they are subject to them. The biggest limitation of the document is that it may not be a complete listing of all the resources available. Meeting the CMS Emergency Preparedness Rule will be critically important to all healthcare entities and this document is very useful in condensing the information and resources needed into one place.

*Andrew Milsten, MD*

**van Berlaer G, Staes T, Danschutter D, et al. Disaster preparedness and response improvement: comparison of the 2010 Haiti earthquake-related diagnoses with baseline medical data. Eur J Emerg Med 2017;24:382-8. Published ahead of print March 12, 2016.**

*This article provides a comparison of pre-event and the two years post-event diagnosis with diagnosis of patients seen up to one-month post-earthquake in the same location.*

**Summary:** The Belgian First Aid and Support Team responded to and provided care from day two to one month after the 2010 Haiti earthquake. During that time period, they saw approximately 7000 patients. They had complete records on 2795. The authors obtained diagnosis data from the Médecins Sans Frontières/Doctors Without Borders from clinics operating in the same location during the same time of year in 2009, 2011, and 2012 to compare. Trauma cases dominated the first two weeks after the event and then medical cases became more prevalent. There was an increase in injury, acute wounds, respiratory, ophthalmological, digestive, neurological, dermatological, and psychological diagnosis compared to other years. There was a decrease in violence, accidental trauma, general, and follow-up care. There was no change in circulatory and genitourinary cases. There was an across the board increase in infectious diseases which was exaggerated in the pediatric (< 5 years old) population.

**Comment:** This study provides quantitative data to a subject that has been suggested by many responders. The amount of records involved adds to the weight of the data. Using grouped diagnosis data does limit the descriptive ability of the study. There is enough data provided in the study to start contemplating the composition of response teams both initially and for extended responses. In addition, the composition of the supplies can be better tailored to meet the needs of responses in the future.

*Ira Nemeth, MD, FACEP, FAEMS*

**World Health Organization. Emergency medical teams: minimum technical standards and recommendations. Geneva, Switzerland: World Health Organization; 2016.** [**http://apps.who.int/iris/bitstream/10665/252809/1/9789241511728-eng.pdf**](http://apps.who.int/iris/bitstream/10665/252809/1/9789241511728-eng.pdf)

*This is a guidance document produced by a WHO-convened working group on minimum standards and requirements for emergency medical teams (EMTs) on providing rehabilitation after large-scale disasters.*

**Summary:** This guidance document was produced by the WHO to outline minimum standards and expectations of EMTs regarding rehabilitation care during a response to a large-scale disaster. This is to prevent patient complications and ensure a continuum of care after the EMTs leave the affected area. A working group conducted a review of the current literature and relevant resources. Minimum standards were prepared by a working group of independent advisors including those who work in physiotherapy, occupational therapy, orthotics and prosthetics, nursing, and rehabilitation medicine, all of whom have had operational experience in emergency response. The work prepared was sent to relevant professional bodies, non-governmental organizations, and international organizations for review and recommendation, revised, and sent back out for review to key stakeholders. These standards were piloted with four type 2 EMTs and then revised accordingly. These standards address the workforce, the field hospital environment, rehabilitation equipment and consumables and information management. These call for at least one rehabilitation professional per 20 beds at the time of initial deployment, with further recruitment depending on case-load and local rehabilitation capacity. They require allocation of a purpose-specific rehabilitation space of at least 12 m2 for all type 3 EMTs and deployment of EMTs with at least the essential rehabilitation equipment and consumables according to specific type.

**Comment:** This document is useful for emergency medical teams seeking placement on the Global EMT registry as it clearly outlines much needed new capabilities that were previously not part of the published minimum standards for EMTs. The process of coming up with these standards seems adequate given the limited information available to guide best practices in the field. Major limitations in any sudden onset disaster still apply in terms of accountability for actors who will present to provide aid without being pre-approved by the WHO or compliant with all standards.

*Ritu Sarin, MD*

**World Health Organization. Noncommunicable diseases in emergencies. Geneva, Switzerland: World Health Organization; 2016.** [**http://apps.who.int/iris/bitstream/10665/204627/1/WHO\_NMH\_NVI\_16.2\_eng.pdf**](http://apps.who.int/iris/bitstream/10665/204627/1/WHO_NMH_NVI_16.2_eng.pdf)

*This brief is intended primarily for emergency planners, emergency professionals, and policy makers tasked with emergency preparedness and response. It provides a brief overview of the impact of emergencies on people with noncommunicable diseases (NCDs) and describes the minimum standard and emergency actions to be adopted in relation to NCD emergencies.*

**Summary:** This review document covers important topics in non-communicable diseases including why they are important and objectives of management during the initial and continuing response phases. The document also reviews NCD risk factors and emergency preparedness management, using information obtained through World Health Organization (WHO) documents. An annex listing the WHO pen package of essential and CD interventions is included. Specifically, the article covers epidemiology of NCDs, vulnerable population information, response elements, and identifying factors. For each of these elements the article provides high level issues and points for emergency care professionals and policy makers to consider.

**Comment:** This document’s strength is that it is geared specifically towards a certain reader and keeps its narrative at the appropriate level. It does not go into detail about the main issues but covers them broadly and thoroughly. The document is limited by its additional resource section which only includes 5 other WHO items. Treatment of these and NCDs is critical in the emergency preparedness and disaster environment and a high-level overview of what to watch out for is very helpful.

*Andrew Milsten, MD*