

Disaster Medicine: What's the Reality?

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What is “disaster medicine”? What are the essential health care needs following a disaster and how can we optimally respond to them? What approaches can we take to address these areas? The article in this issue by Sharma et al¹ raises these important questions, and provides direction to some answers.

Historically, disaster medicine was modeled after the emergency surgical response to war casualties, as emulated by the International Committee of the Red Cross' response to conflict. In the United States, the original Disaster Medical Assistance Teams focused on acute injury interventions, but as we began studying the health issues of disaster victims, particularly in international settings, the importance of primary care, chronic diseases, and public health issues was gradually revealed.² International response to disasters, especially humanitarian crises, has long focused on interventions addressing these issues, but domestically we still lag, often deploying specialist teams to care for potential acute injury and illness when different resources are in greater need. A new understanding of this reality is reflected in the title of this journal, *Disaster Medicine and Public Health Preparedness*, which highlights the increasingly recognized and essential roles of public health along with primary care and preventive medicine.

Societal factors exacerbate the demand for primary care following a disaster. From the outset, vulnerable populations have limited resources and access to health care. Medically underserved populations already bear higher rates of chronic illness and lack adequate preventive care and treatment. This leaves them especially susceptible to disruptions in the health care system, particularly those that affect the public health system. Disasters have a profound impact on these groups, greatly exacerbating needs arising from chronic illnesses or other tenuous baseline health conditions.

Numerous reports from Katrina reflect the importance of primary care for the affected population.^{3–7} Sharma et al noted that nearly one fourth of all health care visits were for chronic disease and related conditions (CDRCs). The proportion of visits for CDRCs increased with age, and hospitalization rates among those with CDRCs were considerably higher than those for other groups. Our own experience with the American Red Cross when conducting a health assessment among sheltered populations after Katrina found even higher rates of chronic illness.³ This raises the question of

whether specific planning and resources could prevent worsening of chronic medical conditions, which may in turn reduce the burden on an already overwhelmed health care system. Hurricane Katrina was a unique event, with the complete disruption of a health care system and mass population movements not seen in the United States since the Civil War. However, other major disaster events have similar potential to wreak havoc on an even greater scale—a pandemic outbreak or a massive earthquake readily come to mind.

It is possible that the health needs following a disaster will vary greatly by location and type of event, but data remain limited. Clearly, many types of disasters can result in extensive injuries that may overwhelm an intact health care system. Some events may destroy large segments of the health care infrastructure by physically damaging building and transportation systems. Even then, after the immediate response phase and care for the injured, it will be the primary and chronic health care issues among affected populations that have the greatest long-term consequences.

A major barrier to improvement of health care response following disasters is the difficulty of collecting accurate data. In the immediate aftermath of an event, implementing a practical study design and collection of accurate data is no simple task, affected in large part by factors ranging from the frenzied environment and highly mobile populations to unclear denominators and lack of universally accepted indicators. This often limits our ability to generalize findings and determine effectiveness of health-related interventions.

Moreover, during the midst of a disaster response, capturing information that will be of potential long-term benefit for future events often is the last thing on everyone's mind. Although disaster response efforts cannot be hampered by investigation, it is only by adopting a systematic approach to determine what happens that we are able to obtain essential insight into actual needs, what was done to address those needs, and whether measures taken were effective. Too often, valuable information is lost in the chaotic aftermath of an event. For instance, in this study, gathering of surveillance data was only possible nearly 1 week after the hurricane made landfall. The authors faced other inherent difficulties of disaster research. Because the surveillance system was not intended to identify CDRCs, ambiguity of reported symptoms led to challenges concerning classification. Despite these

limitations, Sharma et al should be commended for their efforts to shed light in this area.

What can be done to improve our understanding of disaster health needs? Much disaster research lacks external validity because of the absence of identifiable common factors, the unique characteristics of different disasters, and the lack of standardized collection techniques and data. Although work is in progress, even the National Disaster Medical System has yet to implement a standardized database for the Disaster Medical Assistance Teams responding in the field. Rather than continuously developing new epidemiological tools with disparate methods of data collection used in each disaster, a comprehensive approach to systematic data collection and reporting should be revisited.

The international community once again has taken the lead in this area. One such example is the ongoing process to develop guidelines for evaluation and research in the Utstein style by the World Association for Disaster and Emergency Medicine.⁸ The broad recommendations are to develop a standardized, universal set of definitions; a conceptual model for disasters; indicators and standards; descriptions of 14 basic societal functions bound together by coordination and control functions; and disaster response and research templates. Specific recommendations pertaining to evaluation and research methodologies are anticipated for release later this year. As a community, we should review these constructively, building upon them and other efforts as applicable to health-related concerns in disasters. Another example of collaboration and standardization has been the development of the Sphere Project to develop “minimum standards in disaster response” by the international humanitarian response community.⁹ These standards not only provide direction for response but also create recommended datasets that allow for a formal evaluation of the effectiveness of the response.

Perhaps the time is right to engage national stakeholders in discussion and development of standardized instruments with common indicators pertaining to domestic disaster health care response. If such tools have garnered consensus and acceptance during preparedness planning, they would be more likely to be available immediately following a disaster and actually implemented. The economic and human costs of disasters demand that research, thus monitoring and evaluation, take on a higher priority. Structured and objective evaluations are required for effective translation of lessons learned to actual practice. Teams involved in studying health

response should be equipped with appropriate evaluation tools and include those with specific responsibility for collecting and managing such standardized information.

The health care response to disasters is ever evolving, particularly as we gain better quality information on the health needs of disaster victims. Research by Sharma et al and others is encouraging because it shows that we have moved far beyond anecdotal “response reports.” There are still major gaps in our understanding of the needs following a disaster, related to health or not, and even less reported experience assessing the effectiveness of disaster health care interventions. A few things are clear: Chronic disease management and primary health care are important components of disaster medicine; higher quality data are needed to further characterize health care needs following disasters; and disaster health responders should be trained in and have a greater understanding of public health measures and epidemiological methods.

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REFERENCES

1. Sharma AJ, Weiss EC, Young SL et al. Chronic disease and related conditions at emergency treatment facilities in the New Orleans area after Hurricane Katrina. *Disaster Med Public Health Preparedness*. 2008;2: 27–32.
2. Henderson AK, Lillibridge SR, Salinas C et al. Disaster medical assistance teams: providing health care to a community struck by Hurricane Iniki. *Ann Emerg Med*. 1994;23:726–730.
3. Greenough GP, Lappi MD, Hsu E et al. Burden of disease and health status among Hurricane Katrina–displaced persons in shelters: a population-based cluster sample. *Ann Emerg Med*. Epub August 31, 2007.
4. Rodriguez SR, Tocco JS, Mallonee S et al. Rapid needs assessment of Hurricane Katrina evacuees—Oklahoma. *Prehosp Disaster Med*. 2006;21: 390–395.
5. The Hurricane Katrina Community Advisory Group. Hurricane Katrina's impact on the care of survivors with chronic medical conditions. *J Gen Int Med*. 2007; 22:1225–1230.
6. Edwards TD, Young RA, Lowe AF. Caring for a surge of Hurricane Katrina evacuees in primary care clinics. *Ann Family Med*. 2007;5:170–174.
7. Jung MA, Shehab N, Rohr-Allegrini C et al. Chronic disease and disasters—medication demands of Hurricane Katrina evacuees. *Am J Prev Med*. 2007;33:207–210.
8. Health Disaster Management: Guidelines for Evaluation and Research in the Utstein Style. <http://pdm.medicine.wisc.edu/Guidelines/TOCVol1.htm>. Accessed December 10, 2007.
9. The Sphere Project. <http://www.sphereproject.org/content/view/27/84/lang,English>. Accessed December 12, 2007.