

# COMMENTARY

## Science Unpreparedness

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The Institute of Medicine (IOM) recently released a report summarizing a Science Preparedness conference cosponsored by the National Institute of Environmental Sciences (NIEHS), the Department of Health and Human Services (HHS) Assistant Secretary for Preparedness & Response, the Centers for Disease Control and Prevention, and the IOM in June 2014.<sup>1</sup> This meeting was part of an ongoing initiative within HHS to address the research needs in the immediate post-disaster period, during which important data are lost and key questions remain unanswered. The conference brought together nationally recognized public health researchers from academia, government, and private industry to discuss challenges faced in the process of disaster research. The IOM report notes that funding, rapid institutional review board (IRB) reviews, preapproved research protocols, and acceptance by the responder community remain as barriers to conducting disaster research.

The NIEHS, in collaboration with the National Library of Medicine, joined together last year to create the National Institutes of Health (NIH) Disaster Research Response (DR2) Project to help address many of these issues. The DR2 Project has so far established a publicly accessible library of over 165 research data collection tools, created a scalable research protocol for quick deployment to the field that has been presented to the NIEHS IRB, initiated a national network of involved environmental health researchers, and conducted a tabletop scenario-based exercise involving over 140 stakeholders from academia, local, state, and federal agencies, and community organizations to assess current research capabilities, needed relationships for performing research, and the value of the NIH DR2 Project.

The importance of having a capacity to perform research in the proximate postdisaster time frame cannot be overstated. It took over 11 months to begin a comprehensive longitudinal study of the health impacts of disaster workers exposed to oil and dispersants after the Gulf Oil spill. HHS needed 12 months to obtain and award modest funding to examine the public health medical response to Super Storm Sandy in 2012. Over such time frames, the ability to identify participants or gather vital information to determine health impacts or efficacy of

mitigation strategies is lost if data are not collected in a timely, systematic, and scientifically rigorous manner. After-action reports rarely capture the data needed to determine disaster-related risk factors such as resiliency, health outcomes related to exposures or other stressors, or efficacy of various response activities. As a result, we are unable to scientifically assess many of the important outcomes of the situation (eg, linking adverse health effects to specific causes) in order to make needed improvements in preparedness and future responses.

The response to the current Ebola outbreak further underscores the need for time-critical research. Recently an IOM workshop identified how knowledge gaps in the transmission, infectivity, and appropriate worker protection for Ebola have contributed to unnecessary exposure, delays in response, and uncertainty regarding the effectiveness of medical and public health interventions.<sup>2</sup> Although the Ebola outbreak demands that the international research community gather needed information to improve our management of the disease and control of transmission, our ability to mount an effective research response has been bogged down by the same funding issues, lack of ready-to-go research protocols and trained researchers, and bureaucratic and administrative requirements that have plagued previous attempts to conduct research during other disasters. Thus, the research studies about Ebola that would better inform our policies and improve the effectiveness of our interventions and risk communications to allay public fears are not conducted.

A useful start for building a rapidly deployable research capability for disasters includes many of the solutions noted in the IOM report. Researchers need funding. Supplemental appropriations are not reliable enough to build a credible research program. It took over 90 days for supplemental appropriations to be approved following Super Storm Sandy. The Stafford Act, established to support our federal emergency response system, does not provide mechanisms for funding of needed disaster human health research. Secure funding is also needed to establish and develop professional disaster research career tracks. Recent cuts to the public health preparedness programs have slowed development of the small number of nascent academic programs. We need to create (and fund)

tenure-track research positions in academic institutions that attract our brightest minds to this discipline; otherwise they will pursue other research-oriented career opportunities. Professional research networks must be developed. Researchers require knowledgeable peer review to share ideas and scrutinize results. These research networks should be built in collaboration with the existing local, state, and federal public health practice infrastructures and utilizing pre-existing research networks sponsored by NIH and other federally funded research programs. Finally, we need opportunity. Although the frequency and severity of disasters seem to be increasing, disaster research needs to be better integrated into the preparedness, response, and recovery frameworks. Well-trained disaster researchers are capable of working side by side with other responders without interfering with lifesaving activities or diverting the limited resources associated with a disaster setting. Research needs to be written into disaster plans and practiced in exercises. Emergency managers must understand that data captured in the early response can influence short-term decisions that impact key issues like protective measures and management of scarce resources. Disaster research can enhance crucial relationships between the response and the affected community. Transparent and inclusive planning with communities builds trust and resilience necessary for successful recovery. Although some progress is being made toward improved research capabilities by individual federal departments and agencies, like the Department of Interior's Science Support Group activity, ultimately we need a national disaster research framework, not unlike the frameworks we have for response and recovery. This framework can establish priorities, guide the coordination of resources, and develop

policies and procedures necessary for a whole-community research response.

We need not be continually surprised by reoccurring events and outcomes of disasters. Failure of imagination is no longer an acceptable excuse for being unprepared. Decreasing preparedness funding mandates that we employ only the most effective and efficient response and recovery interventions. A comprehensive disaster research program, including secure funding, established research priorities, and a network of well-trained, experienced career researchers, is key to breaking the cycle of science unpreparedness.

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