

EDITORIAL

Recovery Research, Katrina's Fifth Anniversary, and Lessons Relearned

Irwin Redlener, MD; David M. Abramson, PhD, MPH, Guest Editors

The impulse to understand how people and places recover from catastrophic disasters is not new. In December 1917 in the throes of World War I, 2 ships accidentally collided in Halifax Harbor off Nova Scotia, Canada: one a Belgian ship loaded with relief supplies and the other a French ship carrying highly volatile compounds: picric acid, TNT, gun cotton, and benzol. The resulting explosion was characterized as equivalent to a 2.9-kton bomb. It demolished a 2-km harbor area, precipitated a tsunami that destroyed a Native American encampment, and ultimately killed more than 2000 people—one fifth of the city's population—and injured more than 9000.¹ The scope and magnitude of Halifax's devastation was compared at the time to that of the 1906 San Francisco earthquake and fire. An early witness to the relief and recovery efforts was a young doctoral student, Samuel Prince, whose 1920 dissertation "Catastrophe and Social Change" is regarded by most scholars as the first formal piece of disaster research. In it, Prince writes about Halifax's rehabilitation, and about recovery in general: "Disaster-stricken communities cannot become normal until the social surplus is restored."² Prince's key point was that recovery was not merely about the reconstruction of bricks and mortar, but rather about the social surplus, the restoration of the physiological, social, and socioeconomic resources of a place and its people beyond that consumed in the disaster.

Ninety years later we are still learning that lesson, and one that we return to in this special issue of *Disaster Medicine and Public Health Preparedness (DMPHP)*. What may be called "disaster science" is a broad field that begins with understanding hazards, risks, and population vulnerabilities and moves on to establishing best-practice models of response, mitigation, and recovery. Gaps abound in our collective knowledge in all of these areas, and it is fair to suggest that we have only begun to scratch the surface in terms of what we need to know. The goal continues to be to learn how to prevent disasters whenever possible and, when prevention is not possible, to at least optimize survival, preserve vital infrastructure, and return rapidly to a state of normalcy.

Besides the obvious focus on evidence-based practices in disaster mitigation and management, there are more conceptual constructs and theoretical concepts that must underpin progress in disaster response. For instance, we need a far deeper understanding of how complex systems interact and affect outcomes with respect to successful disaster response. Only a greater comprehension of how population preconditions, such as poverty, incapacity, or marginalization, will permit improved management of vulnerable populations before, during, and after disasters.

The focus of this supplement of *DMPHP* is on recovery, an area of disaster science that, some would argue, is the least-understood issue in terms of disaster planning. We know this because the history of megadisaster recovery simply does not suggest that this last phase of disaster response is well understood, effectively practiced, or otherwise successful for many communities that have been in harm's way in large-scale disasters, irrespective of their causes.

The 5-year mark following the massive impact of Hurricanes Katrina and Rita and the flooding of New Orleans was believed to be a good place on the disaster timeline to pause and reflect. Clearly, there are many unprecedented aspects to the events of late summer 2005. Katrina affected some 100 000 miles² of the Gulf Coast region (compared to, say, 300 miles² of South Florida damaged by Hurricane Andrew in 1992). No large US city has experienced as great an impact as had New Orleans since San Francisco in the 1906 earthquake. Still, there are commonalities shared with catastrophes in Haiti, Kashmir, China, and other unfortunate disaster-impact regions worldwide. But the questions remain: Where are we now with respect to disaster recovery? What have we learned?

As is pointed out in several of the articles in this issue, we know that 5 years post-Katrina the Gulf region is still in recovery from the ravages of the hurricanes and flooding. In the New Orleans metropolitan area, 20% of the population has not returned and the health care system remains troubled and far from recovered. Although the New Orleans school system is making great strides, perhaps surpassing the accessibility to and quality of education before the storms, thousands of children and families continue to live in states of uncertainty and instability with respect to housing. Peek and Richardson reflect upon the aspects of educational systems that facilitated recovery among a displaced pediatric Katrina population, and the critical roles played by parents and schools in addressing such "educational vulnerability."³

A number of the articles in this special issue address the clinical outcomes of disaster exposure among specific vulnerable or at-risk populations: pregnant women,⁴ people with diabetes,⁵ and residents of nursing facilities.⁶ Cumulatively, these research articles speak to the need for strong, redundant systems of care that can support these populations and their health care needs. Other articles in this issue consider 2 specific workforces that are critical to the operations of such systems: public health workers⁷ and medical residents.⁸ The National Response Framework, in particular, has galvanized the public health

workforce to adopt more of a first responder role in disasters, and McKibben et al⁷ highlight the long-term effects such a role may have on a workforce that is generally unaccustomed to such stressors. This is noteworthy given the instrumental role that governmental public health plays in the reconstruction of a community—ensuring that surveillance and regulatory mechanisms have been reinstated, that health care for vulnerable populations is ensured, and that preventive services are again available.

Most concerning, perhaps, has been the unpredicted occurrence of another major catastrophic event in a region still struggling to recover. The undersea oil gusher from the deadly failure of the Deepwater Horizon/BP rig spilled oil and gas into the fragile ecology and economy of the Gulf for almost 3 full months before finally being contained in late July 2010. One could imagine that much of the economic and psychological damage had already been done. Concern levels remain high because too little is known about the short- and long-term human health consequences of oil and chemical dispersants deployed at the height of the crisis. Parents and children still recovering from Katrina are now facing a new disaster, one that could seriously compromise their recovery from the last trauma.

Improving our capacity to recover from large disasters is complicated but vitally important. Enhancing the resiliency of individuals, communities, and the nation is, in part, dependent on how rapidly and fully we can recover from serious trauma. And, as we have suggested, the longer and more dysfunctional the recovery process, the more likely vulnerable families will experience consequences well into the future. The practical reality is that if policies are not influenced by evidence and lessons from past experience are not incorporated into planning for future events, then the process of disaster recovery is left to whim, anecdote, and the vagaries of political and economic pressures.

We also recognize that recovery is a complex task that involves and crosses over many disciplines that do not generally communicate, much less plan and strategize together. Full recovery of a community postdisaster to normal or “new normal” conditions lends itself to insights from many sectors and disciplines: health care, public health, social sciences, engineering, urban planning, operational research, communications, public administration, and public policy. Each of these disciplines brings perspective and methodologies to the recovery table; all of them need to be integrated in new ways.

This special issue has attempted to reflect these principles. Invited authors do present a variety of perspectives, drawing conclusions and suggesting strategies that would improve recovery planning and implementation, no matter what the disaster. Much as we would prefer that we never again experience a catastrophic event, this can never be the case. Natural disasters,

pandemics, and terrorism are inevitable, but poor planning, failure to understand essential principles, and a persistent inability to learn from the past are not intractable realities. It is hoped that this special issue helps provide a roadmap to improving our resiliency and capacity to effectively rebuild after any major disaster.

The journal is exceedingly grateful to the Irene W. and C.B. Pennington Family Foundation of Baton Rouge, Louisiana, for their generous support of this special issue of *DMPHP*. They have played a leadership role in inspiring other regional and community foundations to support humanitarian relief and recovery in the Gulf Coast. The Foundation’s commitment to recovery is underscored here by the importance of understanding what accelerates recovery and what impedes it. This issue of the journal is not intended as a “closing of the book” on Katrina, but rather a further step in understanding the clinical and social implications of catastrophes, how we survive them, and most importantly, how we can come back strong.

Authors’ Affiliations: The authors are with the National Center for Disaster Preparedness, Columbia University.

Correspondence: Address correspondence and reprint requests to Dr Irwin Redlener, National Center for Disaster Preparedness, Mailman School of Public Health, Columbia University, 215 W 125th St, New York, NY 10027 (e-mail: ir2110@columbia.edu).

Received for publication: Received for publication July 23, 2010; accepted July 28, 2010.

Authors’ Disclosures: The authors report no conflicts of interest.

REFERENCES

1. Dynes RR, Quarantelli EL. *The Place of the 1917 Explosion in Halifax Harbor in the History of Disaster Research: The Work of Samuel H. Prince*. Newark: University of Delaware Disaster Research Center; 1992.
2. Prince SH. *Catastrophe and Social Change, Based Upon a Sociological Study of the Halifax Disaster*. New York: Columbia University Press; 1920.
3. Peek L, Richardson K. In their own words: displaced children’s educational recovery needs after Hurricane Katrina. *Disaster Med Public Health Prep*. 2010;4(Suppl 1):S63-S70.
4. Harville EW, Tran T, Xiong X, Buekens P. Population changes, racial/ethnic disparities, and birth outcomes in Louisiana after Hurricane Katrina. *Disaster Med Public Health Prep*. 2010;4(Suppl 1):S39-S45.
5. Thethi TK, Yau CL, Shi L, et al. Time to recovery in diabetes and comorbidities following Hurricane Katrina. *Disaster Med Public Health Prep*. 2010;4(Suppl 1):S33-S38.
6. Dosa D, Feng Z, Hyer K, Brown LM, Thomas K, Mor V. Effects of Hurricane Katrina on nursing facility resident mortality, hospitalizations, and functional decline. *Disaster Med Public Health Prep*. 2010;4(Suppl 1):S28-S32.
7. McKibben J, Fullerton CS, Ursano RJ, et al. Sleep and arousal as risk factors for adverse health and work performance in public health workers involved in the 2004 Florida hurricane season. *Disaster Med Public Health Prep*. 2010;4(Suppl 1):S55-S62.
8. Donini-Lenhoff FG, Rockey PH, Surdyk PM, Heard JK, Blackwell TA. Emergency preparedness for residency/fellowship programs: Lessons learned during Hurricane Katrina and applied during Hurricane Ike. *Disaster Med Public Health Prep*. 2010;4(Suppl 1):S71-S74.