COMMENTARY

The Forgotten Need of Disaster Relief

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ABSTRACT

Disasters in countries with limited resources can put the emergency preparedness of the country to the test. The first major task after a disaster is to take care of the wounded. In countries where the epidemiological transition has occurred, chronic disease can place a major strain on public health preparedness after a disaster. The purpose of this field report is to alert public health practitioners of an infrequently reported public health problem: the impact of natural disasters on adherence to chronic medications. In our experience, the most common complaint in the weeks that followed the 2016 earthquake was not having access to their chronic medications. (*Disaster Med Public Health Preparedness*. 2018;12:284-286)

Key Words: medication adherence, earthquakes, chronic diseases

Natural disasters put to the test the infrastructure and emergency response systems of any country experiencing them. In countries with limited resources, such as those in Latin America, a major earthquake will initially challenge rescue and acute trauma care capabilities, but gradually many other public health concerns arise and strain the country's weakened infrastructure for many years after.

This was a clear lesson from the devastating earthquake in Haiti. Acute trauma was followed by wound infections and sepsis, but later by water- and vector-borne diseases as well as by conditions related to overcrowding. The project Medishare demonstrated that in the short- and medium-term a small team with self-procured medical equipment, transportation, food, and water is effective at reaching the more remote affected areas and at tailoring what supplies and skills are brought to meet the needs.[1]

On April 16, 2016, Ecuador experienced a devastating 7.8 magnitude earthquake that claimed the lives of 659 people, injured 12,500, and displaced 28,911. The experience in Haiti and the strong ties with Ecuador prompted the University of Miami to set out to help immediately. Our team was able to reach government officials early after the earthquake to coordinate our trip; however, the expected international regulations regarding how and when medical personnel and medications can enter a country after a disaster can delay the deployment of international small medical units that can assist in reaching more remote areas. In our case, for a trip coordinated only a few hours after the earthquake, we were only able to bring Ecuadorian physicians with existing registered diplomas at Ecuadorian agencies.

Our team was consequently shaped by the confluence of having a strong desire to help and the appropriate documentation to do the work. Thus, our team was composed primarily of Ecuadorian nonsurgeons and we were concerned that our limited surgical skills would pose a barrier in caring for our fellow Ecuadorians so early after the disaster.

Thus, along with our desire to help, we brought the usual acute care medical supplies needed to manage the expected wounds and infections and recruited the help of a local orthopedic surgeon to accompany our team. However, our background as internists and our knowledge of the very high prevalence of diabetes and hypertension in the earthquake area prompted us to also bring antihypertensives, antidiabetics, inhalers, and pain medications. Our road trip toward Bahía de Caráquez, a city we were informed was still in need of medical assistance, demonstrated a few very important facts: the strong road infrastructure, the significant military presence, and the immense outpouring of solidarity from all corners of Ecuador toward the affected areas were factors that would facilitate the relief efforts. We set up base in a small coastal town 88 miles from the epicenter in Manabí. We were fortunate to have effective local partners who helped us identify a community in need and develop a relationship with the local leader of a community of 1800 people called Fanca. He immediately set out to spread the word that we were providing free medical care and within the hour hundreds of patients were in line. We were extremely impressed by the resourcefulness of the community leaders in organizing the waiting and care areas and in figuring out ways to transport patients who could not walk to the "clinic." It was also interesting to realize that patients came only when they had someone to watch

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https://doi.org/10.1017/dmp.2017.67 Published online by Cambridge University Press

over their remaining belongings. As we started to work, we noticed a large number of adult patients with elevated blood pressure and uncontrolled diabetes who did not have any medications available. We encountered several non-ambulatory disabled individuals, most as a consequence of a chronic disease (stroke, diabetes-related blindness, or renal failure) and also children with Down syndrome who were ambulatory. They were transported to us in improvised wheelchairs and cared for by their young children. Our team was moved to tears by the story of a young mother blinded by diabetes whose 12-year-old son came every day to clarify the dose of insulin he should be administering to his mother. The pleasant surprise was that her hemodialysis sessions conducted in a town 32 miles from her hometown had continued without interruptions. Among the children, the main medical conditions needing treatment were upper respiratory infections and asthma exacerbations. We found the same community resourcefulness and medical needs during the following days when we traveled toward the earthquake epicenter through very small coastal towns of only 100 to 200 habitants where no medical help had yet arrived. As those with the most serious earthquake-related injuries had already been transported toward the 2 mobile hospitals or to a major city, we encountered only a few surgical and neurosurgical emergencies. The police were very responsive in transferring these patients to the closest facility.

We were surprised by the finding that access to medications was such a prevalent and important need in disaster relief. The most common reasons patients did not have their medications were that they could not bring their medications when they were evacuated, they lost the medications when their house was destroyed, or the health center only gave them a few medications before the earthquake and they ran out. Chronic medication use was not a priority for them in light of the devastation, lack of housing, work, and mental health complaints. In addition, the numerous competing demands on the government made the continuous supply of chronic medications less of a priority relative to the most urgent needs.

By the end of our trip we had seen approximately 500 adults and children, and of those at least half needed non-earthquake-related chronic care. Because of the large number of patients we were only able to give out 10 days' worth of blood pressure and diabetes medications. Upon our return to Guayaquil we were able to partner with a local hospital and university to continue to staff the base clinic in Fanca and they are making follow-up trips to the small rural towns.

The disaster has held a mirror into the reality of South America. The epidemiological transition has occurred even across small fishing towns like those we visited in Ecuador. Even in those small towns, we did not see infectious diseases but rather mostly chronic diseases, like metabolic syndrome, obesity, hypertension, and diabetes. This finding is the hallmark of the epidemiological transition.

Although Ecuador has improved its infrastructure and spread of public health posts over the past decade, post-earthquake access to chronic care and medications was significantly compromised. The reasons are multifactorial and range from lack of transportation to medication shortages and collapsed health care facilities. An important consideration is that patients in small towns would not leave to seek medications or medical care because a priority was to take care of their land and belongings.

Studies about medication interruption or lack of adherence after disasters are rarely reported. A cross-sectional study after a flash flood in Japan found that 23% of those evacuated had interrupted their medications.[2] Also, 2 studies after hurricane Katrina reported low medication adherence even years after the disaster struck.[3,4] We believe the strategies to halt this impending public health emergency related to poor control of chronic conditions are as follows:

1. Empower local community leaders to assess and relate the community's health care needs. This may require basic training or tools to standardize the evaluation across the affected areas.
2. Set up basic primary care clinics within communities even if attention happens on a weekly basis. Physicians need to go to the patients, not the other way around; patients will not come even when really sick.
3. Coordinate efforts among the government, universities, and other nongovernmental organizations to prevent duplication of services.
4. After providing an initial supply of medications, conduct needs assessment of future needs and evaluate the reasons medications were not taken, particularly to determine if mental health plays a role.
5. Finally, given the numerous challenges that a disaster poses to any country and the need to comply with internationally accepted regulations regarding the import of medical personnel and medications, it may be beneficial to establish pre-disaster disaster relief agreements and plans with several specific countries, agencies, or organizations. This could be facilitated by agencies such as the Pan-American Health Organization or locally by the different ministries.

Hurricane Katrina taught the United States the need to have very concrete disaster relief procedures. Having a good number of established partners with well vetted procedures for the many tasks needed after a disaster, including the continued supply of chronic medications, may expedite the deployment of resources to even the most remote areas.

The earthquake in Ecuador has demonstrated again that local contexts will determine the natural history of a disaster and the public health needs of the population. It has also shown us that immense local and international solidarity is a powerful tool

https://doi.org/10.1017/dmp.2017.67 Published online by Cambridge University Press

that can be harnessed to improve disaster relief procedures and to support the regrowth of a country's public health infrastructure for years to come.

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Published online: September 18, 2017.

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https://doi.org/10.1017/dmp.2017.67 Published online by Cambridge University Press