Building Physician Networks as Part of the Zika Response

Nia Heard-Garris, MD, MSc; Sanjeev Arora, MD; Nicole Lurie, MD, MSPH

ABSTRACT

The global community needs to easily identify and respond to new and reemerging threats, such as H1N1, Ebola, and most recently Zika. Clinicians are often the first-line providers to recognize these threats, but yet have few opportunities to learn from each other in real time. In this concept article, we describe the ways clinical information is traditionally shared during a public health emergency and then introduce new mechanisms to facilitate physician communication and learning as a part of the response to Zika. (*Disaster Med Public Health Preparedness*. 2017;11:259-261)

Key Words: communication, emergency preparedness, Zika, physician networks

The health security of our highly mobile global community continues to be threatened by new and reemerging diseases, such as Zika virus. Our ability to respond to these threats depends on early detection, surveillance, prevention, and treatment. Clinical recognition and characterization of new diseases, and their sequelae, are key to these efforts. Often it is the astute clinician who recognizes and reports a new disease or clinical manifestation to public health officials. However, there are few avenues for clinicians to learn and share information when first confronting a new disease. Recent experiences with public health crises, such as the H1N1 and Ebola outbreaks, suggest that providing additional opportunities for clinician interaction could rapidly contribute to new knowledge and strengthen our nation's response to new and emerging threats.

Evolving technologies such as electronic medical records, e-prescribing, and electronic disease reporting are changing the practice of medicine. Similarly, technology has also created novel ways for health professionals to communicate with each other and the public. Broadcasted electronic health alerts and didactic lectures disseminate information but are typically unidirectional and often difficult to translate into clinical practice. During public health emergencies, rapid bidirectional information exchange has repeatedly been shown to be critical. For example, during the Deepwater Horizon oil spill, volunteers photographed and identified the geographic coordinates of birds coated with oil, while others used that information to locate and clean the birds, combining crowd-sourced information on the nature and location of the problem with a coordinated response.[1]

Crowd-sourced information has become a means of bidirectional information exchange and an essential part of emergency response. During the 2010 earthquake in Haiti, Ushahidi, an online crowd-sourcing platform, linked groups with resources for survivors to people who needed those resources.[1,2] Crowd-sourcing platforms also allow the public to share health information. For example, Facebook groups (Facebook, Menlo Park, CA) connect individuals with clinical problems (eg, parents of children with special health care needs) and have spurred discussion about diagnosis and novel treatments. These technological developments can inform new strategies for facilitating clinical information exchange, including the identification of novel approaches to diagnosis and treatment.

In this article, we describe examples of traditional clinical information sharing in the face of new diseases. We then propose new mechanisms for providing such opportunities for clinicians and patients with use of the current Zika virus epidemic as an example.

CLINICAL INFORMATION EXCHANGE DURING PUBLIC HEALTH EMERGENCIES: PAST EXAMPLES

During public health crises, the Centers for Disease Control and Prevention (CDC) use ongoing Clinician Outreach and Communication Activity (COCA) calls to share important health information. The calls largely share information unidirectionally through a lecture-based format followed by a question-and-answer period. In addition to the COCA calls, during the H1N1 pandemic the US Department of Health and Human Services (HHS) convened teleconferences with providers caring for patients in intensive care units. Physicians presented cases and discussed how best to manage acutely ill patients, which allowed for a two-way flow of important clinical information.

Building on this experience, during the Ebola crisis in 2014-2015, the World Health Organization and HHS organized regular teleconferences for clinicians caring for patients with Ebola who were evacuated to the United States and Europe. Providers from multiple countries shared their experiences and provided advice to one another about clinical management.[3] For example, these calls initially highlighted evacuated patients' need for large volumes of fluid resuscitation. As experiences accrued, clinicians alerted others to neurologic and pulmonary complications and shared experiences with novel therapies administered as investigational new drugs. Clinicians gained information about the clinical manifestations and management, without waiting for publications or formal conferences detailing this information. The high survival rate among this cohort was partly attributed to the real-time, peer-based clinician consultation along with the high level of supportive care available in Europe and the United States.

Peer-based feedback and discussion is not new in clinical medicine. Nearly every academic institution conducts grand rounds and morbidity and mortality conferences for this purpose. Increasingly, telehealth video-based platforms are extending the reach of clinical care beyond the hospital or clinician's office, increasing access to care.[4]

One such videoconferencing platform, Project ECHO (Project Extension for Community Healthcare Outcomes), uses an approach dubbed "tele-mentoring." Project ECHO removes the barriers between community primary care physicians and academic specialist by using "teleECHO" clinics. These clinics function similarly to grand rounds, where community physicians present patient cases. However, specialists advise and mentor the community physician and other network participants on the case. Initially, Project ECHO was used to link primary care providers caring for patients with hepatitis C with academic specialists through video-enabled case discussion and consultation. Now Project ECHO has expanded to over 50 clinical conditions in 21 countries.[5] Over time, these primary care providers can serve as "local experts" for other clinicians in their communities, increasing access to care through their participation in videoconferences.[6] The ECHO model enables network participants to be teachers as well as learners as they interact with their peers on the network. Project ECHO may provide rapid multidirectional information exchange, and as future emergencies arise, the effectiveness of multidirectional communication in disseminating and sharing information will need to be evaluated. The emergence of the Zika virus along with the advances in videoconferencing gives us the opportunity to build physician networks and utilize multidirectional information exchange as a part of the Zika response.

PROVIDERS MENTORING PROVIDERS TO MANAGE ZIKA

Clinicians in the United States and 45 other countries are confronting yet another disease with which there is little familiarity: Zika virus. At the time of this writing, there were over 1600 pregnant women in the continental United States and over 3300 pregnant women in Puerto Rico and US territories with documented Zika virus infections.[7]

While the numbers of infected women are growing, few clinicians have experience caring for babies born to Zika-infected mothers, and new sequelae are still being identified. The opportunity is ripe to build on the knowledge gained from the information-sharing experiences of H1N1 and Ebola. Establishing organized, voluntary, videoconferencing opportunities for clinicians caring for Zika-infected mothers or their babies to communicate regularly with one another can encourage multidirectional information exchange and the generation of new knowledge. Clinicians in Puerto Rico, the continental United States, or elsewhere, can share their clinical observations and experiences with one another, and those with significant clinical experience could serve as mentors to other physicians. With support from HHS, the American Academy of Pediatrics and Project ECHO have launched such an effort with the hopes that it will expand Zika-related clinical knowledge and access to care.

Organizing clinician-to-clinician communication may allow participants to recognize new clinical correlates of Zika infection and approaches to management, potentially stimulating additional research and hypothesis testing. Clinicians participating in these sessions could form the basis of a clinical research network, and the communication sessions themselves could serve as a means to collect real-time data on emerging trends in symptomatology and treatment, if conducted under the auspices of an Institutional Review Board (IRB). The IRB process could be expedited by standardized IRB protocols as well as reporting protocols allowing rapid data collection, including patient outcomes, in times of public health emergencies. If quickly activated for use in new diseases, this platform would enhance national preparedness to conduct clinical research when the next disease occurs. During public health emergencies, Project ECHO may have multiple uses, including aiding clinician learning through patient cases and clinical mentoring to improve the quality of patient care, as well as spurring clinical research to produce novel ways to identify and treat disease. Project ECHO's multiuse format provides additional facets to public health responses to emergencies, such as capacity building through physician learning. While general videoconferencing applications, such as Skype (Skype Communications, Luxembourg, Luxembourg), WebEx (Cisco WebEx, Santa Clara, CA), and GoToMeeting (LogMeIn, Boston, MA) may have similar functionality to Project ECHO, Project ECHO has been studied within the health care setting. Project ECHO has demonstrated primary care clinicians can acquire subspecialty expertise over time[6] and are able to provide safe, effective care through the utilization of the ECHO tele-mentoring platform.[5] Also, parallel efforts linking families with Zika-infected children may also be helpful. This effort could foster discussion about

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caring for children with Zika, especially management and treatment options, as well as surfacing new clinical manifestations related to Zika infection. However, at the time of this writing we are unaware of any formal efforts underway to create such a parent network, at least in the United States.

When in the midst of a public health emergency, we can also be preparing for the next one. By launching and assessing Project ECHO's usefulness in helping clinicians care for their patients with Zika virus sequelae, and determining whether the network is successful in enhancing understanding of the disease and its treatment, we will be better positioned to respond to our next threat.

About the Authors

Robert Wood Johnson Clinical Scholars Program and Department of Pediatrics and Communicable Disease, University of Michigan Medical School, Ann Arbor, Michigan (Dr Heard-Garris); Director of Project ECHO and University of New Mexico School of Medicine, Albuquerque, New Mexico (Dr Arora); and Department of Health and Human Services, Washington, DC (Dr Lurie).

Correspondence and reprint requests to Nia Heard-Garris, MD, MSc, FAAP, North Campus Research Complex, 2800 Plymouth Road, Building 14, Room G100, Space 18, Ann Arbor, MI 48109 (e-mail: niaheard@umich.edu).

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