IT Systems Considerations for Disaster Preparedness and Management

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Natural disasters and other public health emergencies pose unique challenges for health care organizations. During and following a disaster, community health centers and other safety net organizations must be prepared to provide continuity for existing patients, while addressing the emergent needs of community members and triaging patients for appropriate care.

While disasters are by definition unpredictable and extraordinary, the capacity to maintain business and clinical operations in a disaster situation depends upon mundane tasks: deep and ongoing preparation, documentation, redundant technology and effective communication to optimize services, even when infrastructure fails. Disaster preparedness requires planning, planning and more planning, along with developing processes and procedures that are known throughout the organization, and testing and vetting those procedures and systems.

In September 2016, the Centers for Medicare and Medicaid Services (CMS) posted the final Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers rule — the purpose of which is to establish national requirements to ensure adequate planning for both natural and man-made disasters, and coordination with federal, state, tribal, regional and local emergency preparedness systems.

The regulation became effective November 15, 2016 and required that health care providers affected by the rule come into compliance by November 15, 2017, a year after the effective date — and following what proved to be a catastrophic Atlantic hurricane season.

The rule outlines the four core elements of the Emergency Preparedness Program that broadly cover the scope of any preparedness effort:

- Risk assessment and planning
- Policies and procedures
- Communications plan
- Training and testing

Risk assessment and planning are the primary activities, and the cornerstone of preparation. The simple fact about planning is that it is hard, but recovery without planning is much harder, and might not even be possible.

While planning has many components, IT systems and infrastructure are essential to operational recovery, and the focus of this discussion. Planning begins long before a disaster is looming or anticipated, and should be part of the ongoing processes at any health center or health care organization.

The first step in the planning process is, essentially, list-making, that is, the completion of an up-to-date inventory of hardware and software, including: vendor; license details, version(s), primary and backup locations, accessibility and security details (with personnel responsible). Next is the creation of backup and recovery plan for hardware, software, applications and operations. Finally, processes must be put in place to maintain and continuously update inventory, backup and recovery plans and to drill for recovery.

Planning is about setting up redundancy, determining what is needed, establishing how to test it and understanding how to access it. All hardware, software, and data must be replicated to provide a failsafe when crisis hits. Replicates should be located off-site, in a separate and secure location (virtual or cloud-based) so that they are less likely to be affected. Replication should include:

- Alternative network provision with live switching
- Servers (can be virtual) that are either live or updated often so that they can be switched to when necessary
- Live or recently updated data sources for strategic data (EHR, financial, or other).

Beyond software and hardware, planning must be done to ensure the continued delivery of network connectivity, server availability, data recovery and accessibility, power and availability of mission-critical applications. One key element is developing, maintaining and backstopping the relationships with those that should be part of any response and recovery effort: core vendors; local health care providers, including hospitals, other community health centers and community-based providers; local and regional disaster response organizations; and municipal, state, regional or national agencies and utilities.

Documenting the planning process is essential, and the importance of policies and procedures for disaster response cannot be overemphasized, since these will establish the framework for response and enable health center staff to react in a productive way when a disaster occurs.

In developing these policies, it is important to consider how those required for IT recovery efforts dovetail with operational procedures. These should detail lines of responsibility for executing key processes, and identify alternate locations where staff may be deployed to maintain continuity of administrative and HIT operations.

Critical IT processes should be reviewed under the guidance and oversight of executive management and tested two times a year or after changes. This review should include a "tabletop" review which involves working through a disaster scenario on paper using current processes. In addition, all alternative switching — network, servers and data access — should be tested once a year.

All testing should be documented, and procedures updated after each test. If the testing identifies process gaps or issues, these need to be discussed and addressed, and plans and processes modified as necessary. Documentation and maintenance of procedures and communication of any changes, need to be the specific responsibility of a designated member or members of the staff, acting under the authority of executive leadership.

Lessons in disaster preparedness are often learned the hard way, but past experience points to some key takeaways that can help health

centers to be better prepared and more resilient:

- Roles and functions must be well-defined processes.

- Processes must be thoroughly documented.

- Multiple redundancies may seem cumbersome in the planning stage, but will make a huge difference if disaster strikes.

- Response must start as soon as possible with whatever tools are available — but safety counts.

- Time matters at the front end, and there could be significant delays in recovery of shared resources like water, electricity, and internet.

- Relationships need to be established early and maintained so that "mutual aid" can be delivered.

- Finally, once the emergency has passed, undertake and document a review.

A plan, however, is more than a set of notebooks. It has to be a living document that is reviewed, tested and updated regularly. Further, while planning cannot be perfect, it is essential, and a thorough, comprehensive plan is one that allows for a flexible response. Adaptation is the key to response and recovery. Personnel on the ground must be familiar with processes and resources so that they can react and adjust operations as needed.

Community health centers are sometimes the only functioning health care providers available during the early stages of a disaster, and often the best situated to

provide a range of services. One such example comes from recent experience in Puerto Rico, where according to information provided by the Health Resources and Services Administration, 83 out of 93 (89 percent) of the community health center sites on the island were open as of October 20, 2017 — just one month after Hurricane Maria and in spite of many local challenges.[1]

Another example of how health centers serve as the backbone of the public health and health services recovery for their communities is when a tornado hit Joplin, MO, in 2011. The city's largest physician complex, its regional community hospital, and many medical and dental offices were devastated. However, **Access Family Care**, Joplin's community health center, had the extraordinary good fortune to be spared a direct hit — and thus had the capacity to provide continuity of care and support community emergency relief efforts.[2] In addition to the health center's strong preparation, coordination and flexibility prevailed — demonstrating that above all, the needs of the community and patients come first, in times of disaster as well as in times of calm. ◆

[1] P. Shin, J. Sharac, R. Gunsalus, B. Leifer S. Rosenbaum, Puerto Rico's Community Health Centers: Struggling to Recover in the Wake of Hurricane Maria, Geiger Gibson RCHN Community Health Foundation Research Collaborative, . November 2017. https://www.rchnfoundation.org/wp-content/uploads/2017/11/Final-GGRCHN-Puerto-Rico-Health-Center-Report_10.31.pdf

[2] Shin P, Jacobs F. An HIT Solution for Clinical Care and Disaster Planning: How One health Center in Joplin, MO Survived a Tornado and Avoided a Health Information Disaster. Online J Public Health Inform. 2012;4(1):ojphi.v4i1.3818. pressreleases/17drugpr.pdf