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BEST PRACTICE

Regional Emergency Planning for Healthcare Facilities: Regional Information Management Systems

PURPOSE

This Best Practice discusses regional information management systems for use by healthcare facilities.

SUMMARY

Effective information management is essential for a coordinated regional emergency response by healthcare facilities. Regional emergency planning and agreements need to establish information management systems among the participating healthcare facilities. These should also delineate protocols that govern the system, especially in an emergency.

DESCRIPTION

Healthcare facilities rely on regional information management systems during a major emergency for information and data about the incident and to request, offer, and coordinate assistance. According to Drs. Joseph Barbera and Anthony Macintyre, information management systems facilitate "the collection, authentication, and analysis of data, and the synthesis and dissemination of information concerning local and regional health and medical issues." This distinguishes them from communications systems, which are the methodologies for passing data or information between parties. Thus, communications systems are but one component of information management systems.

Regional emergency planning efforts by healthcare facilities should define their information management requirements before developing communications systems. This will insure that the communications system possesses the capability to meet the region's information and data needs.

Developing an Information Management System

Accurate data shared in a timely manner is essential for an effective and coordinated regional emergency response. Achieving this under emergency conditions may present a great challenge for any regional information management system. Systems must be able to share information and data among the participating healthcare facilities as well as between these facilities and other emergency responders including the incident scene, public safety officials, and public health officials.

Regional emergency planners must first address a number of fundamental issues when developing an information management system for their healthcare facilities. This includes decisions about which data to acquire and how that data should be reported—i.e., format, timing, and methods. These decisions should take into account the information requirements for each phase of an incident response. Drs. Barbera and Macintyre's "Medical and Health Incident Management (MaHIM) System" report discusses these issues in more depth.

The regional information management system used by healthcare facilities should be compatible with the regional structure under the Incident Management System (IMS). The regional system used by healthcare facilities will need to coordinate with the local jurisdiction's emergency operations center (EOC). Many jurisdictions insure that healthcare facilities are represented within their EOC. For more information on the IMS, please see the Lessons Learned Information Sharing Best Practices: *Regional Emergency Planning for Healthcare Facilities: Initiating the Regional Planning Process* and *Emergency Management Programs for Healthcare Facilities: The Incident Management System*.

Regional information management systems should, ideally, provide a continuous ability to receive and transmit data, regardless of whether an actual emergency is in progress. This will insure that accurate data is always available. Moreover, whenever possible, key elements of data sharing should be conducted on a daily basis—e.g., emergency department and inpatient bed availability. Healthcare facilities should be committed to feeding the data they rely upon for internal capacity management into the regional system to insure the integrity of the data. Individual healthcare facilities will need to establish internal processes for generating the data and sharing it as required.

Emergency planners should consider designing regional information management systems, including communications systems, which are dedicated, redundant, reliable, secure, and sufficiently staffed at the participating healthcare facilities. Such systems should be designed using a secure, open, standards-based Internet Protocol architecture so as to ensure interoperability with other information technology systems that may be in development by other emergency response disciplines. Planners also need to take regional hazard vulnerability analyses and risk assessments into account when developing these systems. Resource limitations may challenge the ability of planners to meet all these objectives, at least initially.

Regions developing new or reviewing existing information management systems should strongly consider systems that will be useful during normal operations as well as emergency operations. The more a system is employed during normal operations, the more likely it will be used successfully during emergency operations. Regional planning efforts should identify back-up systems that are not vulnerable to the same types of damage and overloading as the primary one.

Categories of Data to Share
Regional emergency planners must determine the data to be shared through the information management system. Generally, healthcare facilities will need to share data on patients, personnel, medical supplies, equipment, and other resources. Experienced emergency managers believe that healthcare facilities need to carefully consider what data should and should *not* be shared. Too much may inundate and confuse administrators when making critical decisions during an emergency. Healthcare officials and planners should establish baseline data on the regional system's capacity; this data can be invaluable for the prompt and appropriate mobilization of resources in an emergency.

The American Hospital Association's (AHA) Model Memorandum of Understanding (MOU) recommends that healthcare facilities in a region be prepared to share data on injury victims, bed availability, medical resources, and medical personnel. Templates for recording data in an exercise or actual emergency are available in the AHA's Model MOU and from the Vermont Hospital Association.

The Vermont Hospital Association solicited data from healthcare facilities in the [Vermont Hospital Mutual Aid Network](#) on nine emergency preparedness areas: radio and telephone communications, hospital indicators, security, transportation, personnel, pharmaceuticals, equipment and medical supplies, patient evacuation and transfer, and collaborative community planning. These data aid in emergency planning efforts among the state's healthcare facilities.

Regional Clearinghouses

Clearinghouses serve critical roles in the information management systems for a number of regions. These are the specific emergency point of contact for other healthcare facilities in the region. The [District of Columbia Hospital Association](#) (DCHA) and the [American Hospital Association](#) played instrumental roles in developing and promoting the Clearinghouse concept. According to the DCHA and AHA, the Clearinghouse "serves as the data center for collecting and disseminating current information about equipment, bed capacity, and other hospital resources during a disaster."

Information and data are shared via the Hospital Mutual Aid Radio System (H-MARS), enabling the region's healthcare facilities to coordinate collectively and with other emergency responders. Once contact has been established and the initial information relayed, healthcare facilities can also use other methods to transmit information, such as a landline conference call.

Applications of the Clearinghouse concept include:

- DC Children's Hospital serves as the Clearinghouse for Washington, DC healthcare facilities. If there is an emergency, Children's Hospital contacts all other hospitals in the region via H-MARS. The Clearinghouse disseminates important information such as how many casualties can be handled, what personnel are available, and what resources can be loaned or donated. In the event of a problem at Children's Hospital, any other participating healthcare facility is capable of fulfilling the same duties, using either H-MARS or via a system of walkie-talkies.

- The thirteen hospitals in Northern Virginia, which make up the Northern Virginia Hospital Alliance (NVHA), have developed a Clearinghouse called "MEDCOMM." This system links with the DC H-MARS and the State of Maryland SYSCOMM radio networks, using the 800 MHz radio backbone of the Fairfax County Public Safety Communications Infrastructure. It also uses an Internet based data management system that allows for resource tracking, including bed availability, staff availability, and specific pharmaceutical and medical supply availability. This has contributed to the improvement of information sharing throughout the Washington, DC metro area.

- The [St. Louis Metropolitan Medical Response System](#) (SLMMRS) has created a regional communication system also called "MEDCOMM" that serves as a data center for participating healthcare facilities in an emergency. MEDCOMM relies on four components:
  - The Hospital Emergency Administrative Radio Network, a VHF radio system.
  - [EMSystem](#)®, an internet-based hospital status system.
  - The Emergency Patient Tracking System (EPTS) that tracks patients from the incident scene to the healthcare facility. For more on EPTS, see the Lesson Learned Information Sharing Good Story: "St. Louis's Emergency Patient Tracking System."
  - Routine communications through phone, fax, or other means.

- The [Minneapolis-St. Paul, Minnesota Regional Compact](#) established two communications centers (East and West Metro Medical Resource Control Centers), which are located at Regions Hospital and Hennepin County Medical Center, respectively. The region has installed an 800 MHz radio system at every hospital that has a channel constantly monitored by the Regional Hospital Resource Center and by the region's Medical Resource Control Center. The system includes tactical channels for hospitals to use for operations as well as interoperable channels that are cross-patched to all public safety and health agencies in the region.

- The Chattanooga, Tennessee region established "[Chattanooga MedComm](#)," located at the Erlanger Medical Center. It serves as the liaison between the incident scene and regional healthcare facilities in an emergency. Chattanooga MedComm also manages other regional healthcare communications and information sharing functions.

Other regions have developed emergency communications systems that vary in design and complexity. For example, the [Little Rock and Central Arkansas region](#) relies on dedicated analog telephone lines for emergency communications among its healthcare facilities. Cell phones, pagers, and email serve as backup systems. Responsibility for coordinating the system rotates monthly among the participating facilities.

Regional Data Systems
Regions employ a variety of systems to share data, some of which have been discussed above. These systems may rely on email, the Internet, telephone, radio, or some combination thereof. They may be developed through regional planning efforts or be a commercially available system. Examples of regional data sharing systems include:

- The New York State Department of Health and the Greater New York Hospital Association (GNYHA) built a data collection system—the [Hospital Emergency Response Data System](#) (HERDS)—to provide a centralized source of information to manage healthcare resources more effectively during an emergency. HERDS provides health officials with current information on available hospital resources and injuries in an emergency. Regional facilities can input data on bed capacity, personnel, and other resources.

- San Diego County, California uses the live, web-based system called "Quality Assurance Net" (QA Net). It has a resource-tracking component that allows a real time look at healthcare facility status. Facilities can record up-to-date information on resources in use and available. In an emergency, an alert system informs managerial levels throughout the QA Net. Additional parameters allow the alert to be received by other emergency responders. The QA Net system is staffed continuously and hospitals are required to keep their resource information current on a constant basis.

Several regions use commercially run, web-based communications and resource management systems. These often include tools designed for use by emergency medicine, emergency medical services (EMS), public health, hospital administration, law enforcement, and others.

Testing and Exercising Information Management Systems
Regional emergency planning by healthcare facilities should include provisions for testing and exercising the information management system. A number of agreements call for regular tests of the regional system. The AHA's [Model MOU](#) requires, and DC Children's Hospital conducts, daily radio checks of H-MARS at random times. This helps maintain a level of familiarity in using the system and insures the accuracy of information shared.

Many regional agreements require annual or semi-annual exercises of their regional healthcare emergency system.

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) also requires that one or two yearly disaster exercises involve critical participants from the emergency response community. "Participation in at least one community-wide practice drill yearly (where applicable) relevant to the priority emergencies identified by the organization's hazard vulnerability analysis, that assesses communication, coordination, and the effectiveness of the organization's and community's command structures."

The AHA's Model MOU calls for an annual H-MAS exercise. These are often supplemented by periodic meeting of the healthcare facilities, EMS, and other emergency responders to ensure effectiveness and improve operations.

Finally, each healthcare facility in the region needs to regularly review training protocols and procedures for using its information management system. For more on this topic, see the Lesson Learned Information Sharing Best Practice: *Emergency Management Programs for Healthcare Facilities: Emergency Operations Plan: Concept of Operations: Notification*.

RESOURCES
Standards
JCAHO Environment of Care
- EC.4.10.15. "The plan provides processes for cooperative planning among hospitals that together provide services to a contiguous geographic area (for example, among hospitals serving a town or borough) to facilitate the timely sharing of information about the following:
  - "Essential elements of their command structures and control centers for emergency response;
  - "Names and roles of individuals in their command structures and command center telephone numbers;
  - "Resources and assets that could potentially be shared in an emergency response; and
  - "Names of patients and deceased individuals brought to their hospitals to facilitate identifying and locating victims of the emergency."

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- District of Columbia Hospital Association, "Mutual Aid Memorandum of Understanding," September 27, 2001. (*LLIS.gov* ID# 9666)

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- Vermont Association of Hospitals and Health Systems Website:
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