Chapter 5.22
Information Technology and Data Systems in Disaster Preparedness for Healthcare and the Broader Community

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ABSTRACT

In the healthcare and public health community, information technology and data management tools are indispensable in preventing, preparing for, responding to, and recovering from public health emergencies, both natural and manmade. This chapter is divided into three sections. The first section discusses various uses of health technology and data systems in disaster preparedness and response. The second section expounds on technological applications to train healthcare staff for their roles and responsibilities in delivering critical health services during a disaster, as well as to integrate healthcare organizations and providers into the broader community planning and response processes. The chapter concludes with a model that has been implemented to integrate and train the broader group of community stakeholders, including healthcare organizations and providers, in disaster preparedness and response.

INTRODUCTION

In the healthcare and public health community, information technology and data management tools are indispensable in preventing, preparing for, responding to and recovering from public health emergencies, both natural and man-made. This

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USING TECHNOLOGY AND DATA TOOLS IN DISASTER PREPAREDNESS

Information technology and data management systems are invaluable in preventing, preparing for, responding to and recovering from emergencies. According to Mathew (2005):

preparedness functions, including "prevention strategies, research and epidemiologic studies, education programs, rapid mobility and deployment of resources and services, community preparation, remote area planning, medical incident management, disaster site arrangements, communication network from the disaster site to casualty treatment post, training, disposal of dead, vector control, hygiene and sanitation, and psychological interventions," can be made more effective through the use of technology and data systems. (p. 56)

A United States federal government report, Bioterrorism Preparedness and Response: Use of Information Technologies and Decision Support Systems, identifies potential technology uses by clinicians and public health officials in the event of a bioterrorist attack (Agency for Healthcare Research and Quality [AHRQ], 2002; Bravata, 2004). To conduct a review of the literature, researchers classified five broad systems categories: detection systems; diagnostic, management, and prevention decision support systems; surveillance systems; reporting and communication systems; and integrated systems. According to another AHRQ report, information technology supports bioterrorism preparedness in the following ways:

- Detection and monitoring systems support disease and threat surveillance and collect national health status indicators.
- Analytical systems facilitate real-time evaluation of live data feeds and turn data into information to identify disease outbreaks.
- Information resources and knowledge management systems provide reference information, distance learning, and decision support.
- Alerting and communications technologies transmit emergency alerts, facilitate routine professional discussions, and support collaborative activities.
- Response systems help manage vaccine distributions, track side effects, and disseminate public health information (Agency for Healthcare Research and Quality [AHRQ], 2005a, p. 3).

This first section describes various existing and emerging uses of information technology and data management systems in the health arena for disaster preparedness and response. The uses addressed here are surveillance, to include disease tracking, detection, diagnosis and reporting; communication; volunteers; electronic health records; modeling and simulation; telehealth; continuity of operations; and education and training.

Surveillance Systems

Surveillance entails the ongoing systematic collection, analysis, and dissemination of data about