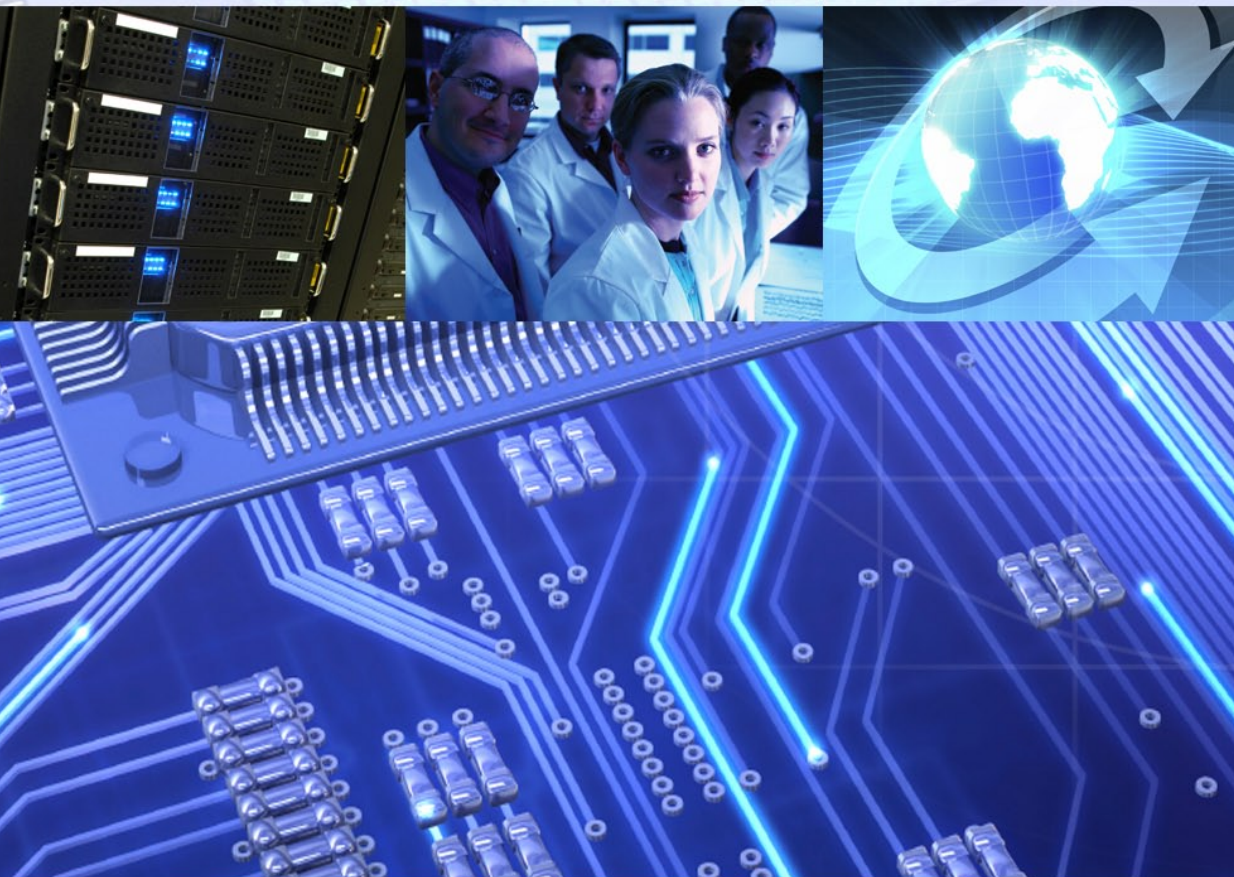




Progress in Public Health Informatics

Topic Contents:

- Biosurveillance
- Outbreak Management
- Electronic Lab Reporting



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Background

Biosurveillance:

- Electronic PH data-gathering & analysis
- Data interpretation relating to disease activity & health threats
- Early warning capabilities
- Early detection capabilities
- Situational awareness



Public health threats are everywhere and public health events are inevitable. Preparation for such threats and events is paramount as it helps protect the lives of the public and our emergency response workers. Not only did September 11 and the subsequent anthrax attacks highlight the importance of public health preparedness, but also the disparity in public health's ability to respond efficiently and effectively to an emergency. Many of the identified September 11 disparities related to public health's inability to exchange real-time case information, laboratory results, potential contacts, and environmental contamination, which prompted the Secretary of Health and Human Services to convene the American Health Information Community (AHIC). AHIC's primary purpose is to accelerate the development and adoption of standards-based healthcare and public health information systems that are capable of sharing information across organizational and jurisdictional boundaries.



Public health requires interoperable information systems for both routine and emergency functions such as biosurveillance, outbreak management, and electronic laboratory reporting.

- ◆ **Biosurveillance** is the process of active data-gathering with appropriate analysis and interpretation of data that might relate to disease activity and health threats in order to achieve early warning of health threats, early detection of health events, and overall situational awareness of disease activity.
- ◆ **Outbreak Management** refers to a standardized group of systems that enable public health authorities to analyze case reports and data and provide links to surveillance, laboratory and countermeasure and response administration information.
- ◆ **Electronic Laboratory Reporting (ELR)** is the transmission of data of public health importance from clinical laboratories to public health agencies in electronic format.
- ◆ **Health Information Exchange (HIE)** is defined as the mobilization of health-care information electronically across organizations within a region or community. HIEs provide the capability to electronically move clinical health information between various health care systems while maintaining the meaning of the information being exchanged.

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Why are Interoperable Information Systems Critical to the Public's Health?

The ability to exchange information ensures early detection of events, faster response times, and earlier intervention. In 2008 AHIC recognized the importance of public health information technology and adopted a series of recommendations in these areas to enhance the adoption of interoperable systems and ultimately improve the public's health.

Interoperable Information System Success Stories:

◆ Louisiana Immunization Network for Kids Statewide (LINKS)

The Louisiana Immunization Network for Kids Statewide (LINKS), Louisiana's first electronic immunization information registry demonstrated how building a system based on common standards pays off during an emergency like Hurricane Katrina. LINKS is a web-based immunization tracking system that currently holds information on over one million patients and almost eleven million immunizations. This represents approximately 80% of all children in the state.



In early September 2005, thousands of families evacuated southern Louisiana and re-settled in new homes across the country as a result of Hurricane Katrina. These families frequently arrived in new states without the immunization records needed for school enrollment. Due to data standardization and the interoperability of the LINKS system, the children's immunization records were accessible electronically and students were able to enroll in schools without delay. LINKS provided matches for more than 45,000 queries about displaced children.

◆ Kentucky Preparation and Response on Advanced Communications Technology (PROACT)

Hurricane Katrina also provided opportunities for the testing of new public health communications systems. On September 7, 2005, the Kentucky Preparation and Response on Advanced Communications Technology (PROACT) network was activated to aid volunteer and evacuee coordination efforts. PROACT connected 42 sites across the state in its first application during a public health emergency.

PROACT is a network of interactive videoconference telehealth facilities committed to participating in disaster preparedness and response efforts. PROACT facilities can be activated within four hours. In addition to 42 PROACT sites, 25 health departments connected to the PROACT teleconferences during Hurricane Katrina using datacasting, a Kentucky Educational Television technology. Over 400 state and local professionals from medicine, public health, social services, mental health, pharmacy, environmental health, emergency management, and information technology participated in the PROACT network, either via direct videoconferencing or datacasting.

PROACT made it possible for the Kentucky Department for Public Health to coordinate and integrate state agency response and local communities seeking to help in the hurricane relief efforts. It connected all individuals involved in emergency response, from top decision-makers to field workers, in real time.

Outbreak Management:

- Enables PH authorities to analyze case reports and data
- Links to surveillance, laboratory, countermeasure, and response administration information
- The ability to manage terrorist attacks and/or disease outbreaks



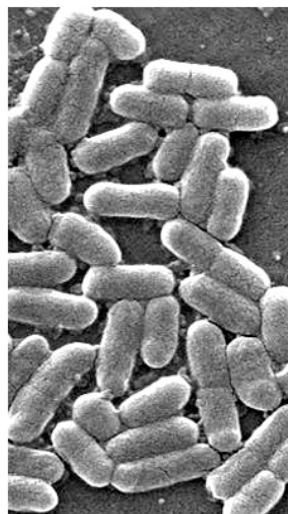
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Success Stories Continued

◆ EpiCom in Florida

Public health emergencies include not only the natural and man-made disasters that make headlines, but also community-level disease outbreaks. In 2003, the Florida Department of Health implemented an electronic information exchange and emergency alerting system, known as EpiCom. EpiCom provides a secure, moderated information exchange for the reporting and tracking of outbreaks while providing alerts to public health officials. EpiCom connects professionals from state and local public health agencies, the private healthcare sector, and other organizations such as law enforcement and emergency management officials.



On February 24, 2005, a message was posted on EpiCom by an epidemiologist in Orange County describing a case of E. coli. The following day, an epidemiologist in Collier County posted a similar message describing another case of E. coli. An alert moderator read both messages and determined that the cases were possibly linked and initiated an investigation. At the investigation's conclusion, EpiCom identified 26 confirmed cases and 43 suspected cases of E. coli. EpiCom made it possible for users in different counties to quickly identify a common link between cases, thereby significantly reducing the combined response time.

◆ The Pennsylvania Electronic Disease Surveillance System (PA-NEDSS)

PA-NEDSS is an information system that affords the rapid identification, investigation, and data analysis of disease threats. It supports the public health capacity to respond to, and follow-up with, exposed populations. PA-NEDSS is a patient-centric system that establishes a near real-time, secure communication link between laboratories, hospitals, individual medical practices, and the Department of Health.

PA-NEDSS includes web-based reporting; integrated electronic lab reporting; an integrated Health Alert Network; graphical reporting/analytical tools; and geographical information systems used in public health surveillance. As of February 2005, PA-NEDSS linked 426 hospitals and clinics, 236 laboratories, 629 physicians, and 663 public health staff.

PA-NEDSS was first used to manage and track the progress of a 2003 Hepatitis A outbreak in Beaver County, Pennsylvania. Prior to the implementation of PA-NEDSS, the average time to report a case was 8.4 days; after PA-NEDSS was implemented, report time was reduced to 1.5 days. The redistribution of PA-NEDSS work flow allowed for the local staff to administer over 9,500 doses of immunoglobulin, while ensuring that all new cases were promptly investigated.

Since the 2003 outbreak, PA-NEDSS has been used to reduce the time to identify and respond to disease outbreaks and has improved the allocation of resources needed to meet the demands of outbreak response.

Electronic Lab Reporting:

- Electronic transmission of clinical lab data to PH agencies
- More complete and timely disease surveillance
- Quicker response to notifiable diseases than paper-based methods
- Enhanced public awareness & reporting efficiency



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