

Using Clinical Data for Early Event Detection and Health Situational Awareness

Introduction

BioSense is a national program intended to improve the nation's capabilities for disease detection, monitoring, and real-time situational awareness through access to existing data from healthcare organizations across the country.

The BioSense application is a CDC-developed and hosted web-based system for use by healthcare facilities and state and local public health partners. The surveillance methods in BioSense address the need for identification, tracking, and management of rapidly spreading naturally occurring events and potential bioterrorism events using advance algorithms for data analysis. Through its BioIntelligence Center, CDC provides knowledgeable public health analysts, epidemiologists, and statisticians to assist partners in the analysis and use of BioSense on a daily basis.

BioSense Vision and Approach

The BioSense vision is to provide local, state, and nationwide health situational awareness for suspect illness and possible disease cases before, during, and after a health event; and to help to confirm or refute the existence of an event, monitor its size, location, and rate of spread.

This vision is carried out through two broad approaches: real-time delivery of healthcare data to BioSense from hospitals, labs, and other sources; and the provision of timely electronic "views," analytics, and reports for national, state, and local public health, and contributing healthcare organizations.

Data Sources

Beginning in 2005, CDC has focused on recruiting volunteer hospitals to transmit real-time data to BioSense. This will strengthen BioSense by emphasizing public health access to real-time clinically rich data from emergency departments, outpatient clinics, and other hospital settings. These data will be useful for both early event detection and health situational awareness, defined as the ability to monitor disease over time and geography. BioSense will inform public health in a way not previously possible. At the time of an emergency event, hospital and public health officials will have a real-time picture of how a community is affected. This information can help to characterize and monitor an outbreak, as well as aid in the decision-making process for appropriate and timely public health interventions.

Public Health in the 21st Century

Traditional public health surveillance and investigations often involve the manual reporting of cases to public health agencies and phone calls to healthcare providers for more detailed patient chart information. The timeliness, completeness, and breadth of coverage of this manual process can be problematic and too slow to be effective during a public health emergency.

With increasing volumes of health data in electronic form, and a national focus on the value of exchanging those data electronically in a standardized format, a unique opportunity exists to leverage those existing health data to better support public health functions.

Better Coordination with Public Health

Public health departments and healthcare facilities can use BioSense as an event management support tool to aid in initial tracking of naturally occurring diseases or a bioterrorism event. An electronic system potentially means fewer phone calls between public health and hospital staff requesting manual chart reviews. Access to BioSense can facilitate better coordination between local public health and healthcare organizations because they will have access to the same data at the same time. Ultimately, this can produce a faster more coordinated response for the community.

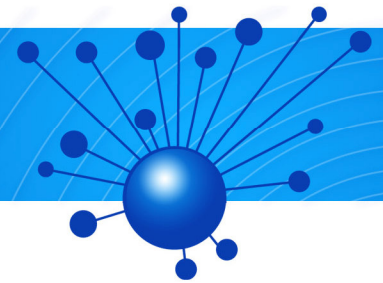
Minimal Impact on Existing Systems

BioSense has been designed using nationally recognized standards for electronic data interchange making it an easy add-on to a hospital's existing IT infrastructure and clinical information systems. Participation in the BioSense initiative will not require any additional data entry for healthcare staff.

Advancing Information Technology

BioSense uses CDC's Public Health Information Network (PHIN) architecture for advancing fully capable and interoperable information systems across public health, its partners, and stakeholders. At the core of PHIN and BioSense are commonly accepted health data standards including HL7, SNOMED, and LOINC. This standard vocabulary improves data quality, comparability, and other activities related to the development of an electronic health record. A key component of this development is the interoperability between public health and healthcare.





Frequently Asked Questions about Using Clinical Data for Early Event Detection and Health Situational Awareness

What is CDC going to do with the data?

The data are used for public health purposes to help identify and characterize naturally occurring disease outbreaks or bioterrorism events using electronic biosurveillance techniques. The data are analyzed and presented within the BioSense application for simultaneous viewing by CDC and state and local health departments. Hospital users can also view their own data through the BioSense application. Data access is limited by controls to ensure that each layer of the healthcare and public health system views the information appropriate for their jurisdiction.

Is CDC paying for a license to data?

Data will not be purchased or licensed on a transaction-by-transaction basis. The funding that is available is to support hospitals and healthcare organizations in their efforts to contribute data to public health.

How will BioSense coordinate with healthcare organizations that already send data to another surveillance system?

BioSense is not intended to replace current local or regional surveillance systems where they are already being utilized. BioSense will augment existing data systems by adding opportunities to access clinical diagnostic data in real-time.

If hospitals already submit data to another surveillance system, that data could be combined with BioSense data sources to provide a more complete picture of the health status of the community. In jurisdictions where no other electronic biosurveillance system exists, BioSense offers a viable solution for linking to local public health.

What about HIPAA?

As a public health authority, CDC has specific exclusions from HIPAA regulations. Nevertheless, CDC is sensitive to public health concerns over issues of privacy and has taken precautions to ensure the data are secure. In addition, no obvious identifiers such as name, address, social security number or medical record numbers will be transmitted to BioSense. Data will be transported, maintained, and stored using methods consistent with the HIPAA security rule.

Is this coordinated with the Office of the National Coordinator for Health Information Technology (ONC) and the American Health Information Community (AHIC) efforts?

BioSense will support efforts of the HHS Office of the National Coordinator for Health Information Technology (ONC). The Health Information Technology Standards Panel (HITSP), is a collaborative effort to harmonize health information interoperability standards, particularly health vocabulary and messaging standards. The American Health Information Community (AHIC or "the Community") was formed to help advance efforts to reach President Bush's call for most Americans to have electronic health records within ten years. BioSense will continue to contribute to and inform these national efforts for addressing health IT.

What kind of data is in BioSense?

For BioSense, CDC is seeking specific data types such as non-identifying patient demographics, diagnoses, chief complaints, radiology orders/results, laboratory orders/results, and pharmacy data. To provide the broad view public health needs, CDC is seeking all related data within those categories, especially for emergency department patients.

How timely is the data collection?

The data can be transmitted to CDC in batches every 15 minutes. Information will be visible on the secure BioSense website within 2 hours.

What national health data sources transmit data to BioSense?

CDC currently has data sharing agreements with several national data sources including the Department of Veterans Affairs (VA) and the Department of Defense (DoD). In addition, LabCorp order information is transmitted to BioSense and the American Association of Poison Control Centers (AAPCC) will be available in 2006. Real-time data are also available from large multi-hospital systems as well as local hospitals.

For more information:

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