BioSense

An Initiative to Support Early Detection, Localization and Quantification of Terrorism Events

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Secretary's Council on Public Health Preparedness
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Today's Environment

Mystery outbreak's global reach grows

By M.A.J. McKENNA
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The mysterious and deadly pneumonia that has alarmed global health authorities appeared to spread to additional countries Monday and scientists at the Centers for Disease Control and Prevention and the World Health Organization ramped up research into possible causes.

New suspected cases were identified Monday in Australia, England, France, Israel, Slovenia and Switzerland.

In Germany, two women were hospitalized, bringing the total of suspected cases there to four. On Saturday, a Singaporean doctor who treated one of the earliest cases of the illness was taken off an airplane in Frankfurt along with his pregnant wife and mother after he developed symptoms. On Monday, authorities said the wife was ill as well.

Hong Kong health authorities said confirmed cases there have doubled, reaching 95, most of them medical workers.

The World Health Organization said 167 cases of "Severe Acute Respiratory Syndrome" have been identified worldwide, with four deaths known to have been caused by the unfamiliar disease.

In southern California, state health officials identified a possible case and sent samples to the CDC for testing.

ANAT GIVON / Associated Press

Travelers wear masks to ward off Asia's mystery illness at Hong Kong's Chek Lap Kok airport on Monday.

Internationally, tensions eased slightly after the government of China said it will provide information to the global health agency about a

➤ Please see ILLNESS, A12

INSIDE

➤ Chinese government asks the World Health Organization to help identify the cause of a pneumonia outbreak four months ago. A12

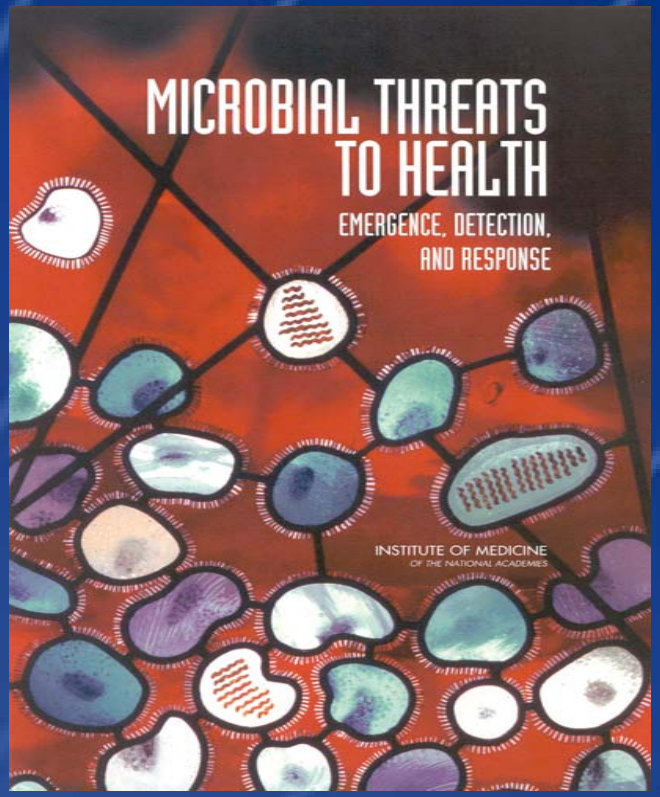
WEST NILE CASES RAISING QUESTIONS OVER TRANSPLANTS

NO TEST TO SCREEN BLOOD

Weeks Needed to Determine if Operation or a Transfusion Allowed Transmissions

By LAWRENCE K. ALTMAN

It will take at least two weeks to determine whether the West Nile virus was transmitted through organ transplants or blood transfusions to a cluster of four transplant recipients in whom encephalitis has been diagnosed or suspected, federal health officials said yesterday.



Anthrax Found in NBC News Aide

Suspicious Letter Is Tested at Times — Wide Anxiety

By DAVID BARSTOW

An assistant to the NBC anchor Tom Brokaw has tested positive for anthrax infection more than two weeks after she opened a threatening letter addressed to Mr. Brokaw that contained a white powder, officials said yesterday.

Even as law enforcement officials were cordoning off Rockefeller Center, the newsroom at The New York Times was evacuated when a reporter opened an envelope that also contained a white powder.

The substance was still being tested last night, as investigators explored potential links between the two incidents. Both letters were mailed from St. Petersburg, Fla., and had similar handwriting, according to law enforcement officials.

The reports of possible bioterrorism caused widespread anxiety in New York and across the country. People depleted supplies of antibiotics at drugstores and besieged their doctors. Offices were evacuated after a spate of threats, and companies made emergency adjustments to the way they received mail. [Page B9.]

The NBC case marked the second time an American has been stricken with a form of anthrax since the Sept. 11 terror attacks.

In the other case, a man died after he contracted an inhaled form of the disease at a newspaper office in Boca Raton, Fla. Two other people at the office were exposed to anthrax

Reuters

Mayor Rudolph W. Giuliani after a news conference yesterday at NBC, where he tried to calm new fears that were raised by an anthrax case.

"All the News That's Fit to Print"

The New York Times

National Edition

South: Mostly cloudy and warm with scattered showers and storms, except partial sunshine near the Gulf coast and also in much of Georgia. Weather map and details are on Page C14.

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Smallpox Vaccinations Are Urged and Prairie Dogs Are Banned to Halt Monkeypox

By LAWRENCE K. ALTMAN

The federal government recommended smallpox vaccinations yesterday for all those exposed to monkeypox, including pregnant women and children. It also banned the sale and distribution of prairie dogs in the nation and prohibited the importation of all rodents from Africa.

The Centers for Disease Control and Prevention also issued a list of signs and symptoms to determine which patients had monkeypox and to help in the agency's investigation of this potentially fatal viral disease.

The actions seek to control the first outbreak of monkeypox in the Americas and to prevent importing it and other diseases endemic elsewhere in the world. Imported rodents are believed to have brought monkeypox to the United States from West and Central Africa, where it is endemic.

Yesterday, there were 54 cases of monkeypox under investigation in four states. Laboratory tests have confirmed monkeypox in nine of the cases. Of the 54, Indiana reported 21, Wisconsin 20, Illinois 10, and New Jersey 1. Ten patients have been hospitalized. But officials at the disease centers said they did not know how many have left the hospital.

Studies conducted in Africa have shown that smallpox vaccine is about 85 percent effective in preventing monkeypox. The disease centers said the vaccination was most effective during the first four days after exposure to an infected animal and to a lesser extent for as long as two weeks after exposure.

The vaccine is being recommended for pet owners, household members and friends who have had close contact with individuals or animals confirmed to have monkeypox as well as for health workers investigating monkeypox outbreaks or involved in the care of infected individuals or animals.

Because the Food and Drug Administration has not approved the smallpox vaccine for monkeypox, the government is making it available under provisions for emergency use. The decision to use it will depend on discussions between patients, doctors and local health officials. All patients receiving the vaccine will be required to sign a form stating that they have been informed of the immunization's benefits and risks.

Monkeypox is fatal in up to 10 percent of cases, much lower than the 30 percent figure for smallpox before it was eradicated worldwide in 1980.

The government stopped routine smallpox vaccinations in 1970. The Bush administration began vaccinating health care workers this year in a program to protect against the introduction of the disease from a bioterrorist attack.

Because vaccinations under that program were a response to a theoretical threat, they excluded children, pregnant women and other categories of high-risk groups. But because infected animals have transmitted monkeypox to people in this country "the risk-benefit ratio of the vaccine changes" and "we are recommending a somewhat more aggressive approach" to include broader groups, Dr. David W. Fleming, deputy director of the Centers for Disease Control and Prevention, said.

"In this situation, where we are recommending smallpox vaccine for a very limited group of people who have had contact and therefore are at risk for monkeypox, we feel that the risk of disease is sufficient to make that recommendation for pregnant women and children as well," Dr. Fleming said.

Of 54 suspected cases, four states and countless questions.

Dr. Fleming said his agency did not know how many people would receive smallpox vaccinations to protect against monkeypox, in part because state and local health departments have not yet completed their investigations.

The vaccine will be administered by someone recently vaccinated in a health department.

Because the smallpox vaccine has been delivered to state health departments, Dr. Fleming said, the government is "confident that we can deliver it to affected individuals in time to do good."

The bans on the sale of prairie dogs and importing rodents from Africa took effect immediately and will remain in effect until health officials can determine the safety of such importations.

Senators James M. Jeffords, independent of Vermont, and John Ensign, Republican of Nevada, yesterday called for an Environment and Public Works Committee hearing on regulations on importing exotic pets and their impact on public health.

The ban within the United States includes prairie dogs and six African rodent species implicated in the current monkeypox outbreak. They are: tree squirrels, rope squirrels, dormice, Gambian giant pouched rats, brush-tailed porcupines and striped mice.

The ban is on the sale of the animals and does not apply to people who want to take their sick animals to veterinarians and health officials. Animals with monkeypox may develop a rash, have problems breathing or runny noses and have red eyes.

Health officials have cautioned people not to release sick animals into the wild. The disease centers said it was recommending euthanizing sick animals after they had been checked by a veterinarian.

Federal health workers are tracking shipments of potentially infected animals to help prevent the spread of monkeypox and to reduce the chances of the disease gaining a permanent foothold.

The disease centers included these signs and symptoms for monkeypox: a rash consisting of raised bumps and blisters spread over the body or confined to a small area; a fever of 99.5 degrees or higher; headache; backache; swollen lymph nodes; sore throat; cough; shortness of breath.

Monkeypox can spread from person-to-person, but is much less communicable than smallpox and diseases like chickenpox and measles. There are no such documented cases in the current outbreak, Dr. Fleming said, but it is possible that a few cases may have been transmitted that way.

Different members of a household have been exposed to a single sick animal but have become ill at different times, raising the possibility of person-to-person spread, Dr. Fleming said.

Institute of Medicine
National Academy of Sciences

Microbial Threats to Health: Emergency, Detection, and Response

- "innovative systems of surveillance that capitalize on advances in information technology should be supported"
- "global and domestic disease surveillance needs to be improved and in particular new innovative systems of surveillance should be explored"
- "promising approaches will need to be coordinated nationally so that data can be shared and analyzed across jurisdictions"
- "CDC should provide leadership"

GAO Bioterrorism Report

The U.S. has:

- "vulnerable and outdated health information systems and technologies"
- "lack of real-time surveillance and epidemiological systems"
- "health care data, communications, and security standards-which are necessary to support the compatibility and interoperability of agencies' various IT systems-remain incomplete across the health care sector"
- "efforts in the federal government are under way to strengthen and increase the use of applicable standards throughout the nation's health information infrastructure"

(GAO 03-139)

BioSense - Purpose

The third piece of the recent bioterrorism initiatives:

BioShield - rapid development of new vaccines and therapeutics against biological threats

BioWatch - deployment of environmental air samplers in key locations to detect releases of certain biological agents

BioSense - enhanced capability to rapidly detect bioterrorism by accessing and analyzing diagnostic and pre-diagnostic health data for bioterrorism indicators

BioSense Principles

- Early event detection needs to support the people and systems for public health response
- Systems and evaluation should consider the continuum for:
  1. Initial detection
  2. Subsequent case identification
  3. Quantification and localization of events to help shape public health response
  4. Integration with outbreak management and response systems

BioSense

Initiative

- Support the advancement of early detection
- Data acquisition, infrastructure for near real-time reporting and analytics
- Promote the use of national standards and develop requisite specifications
- Increase the sharing of approaches and technology
- Insure integration with other public health systems

System

- National “safety net” – help support BioWatch cities
- An implementation of identified standards
- A platform for the implementation and evaluation of different analytic approaches

BioSense

National and Regional Data Sources

National labs test requests & results

DoD and VA sentinel clinical data

Regional clinical networks

Nurse Call Line Data

Lab Response Network (including BioWatch)

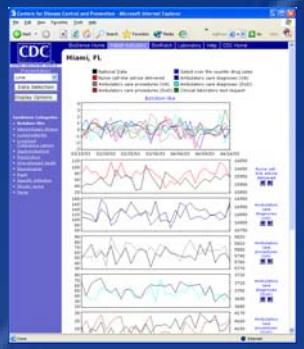
Over-the-counter drug sales

(others)

Analysis and Alerts

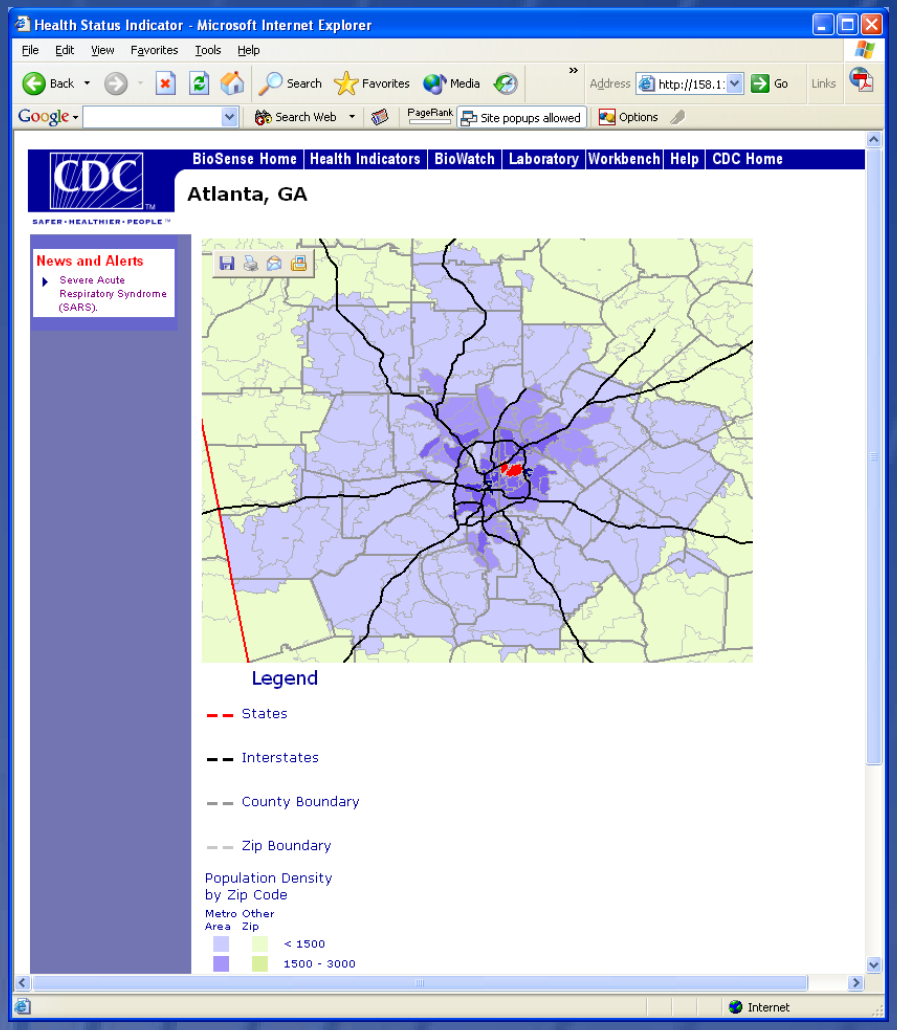
Electronic Investigation

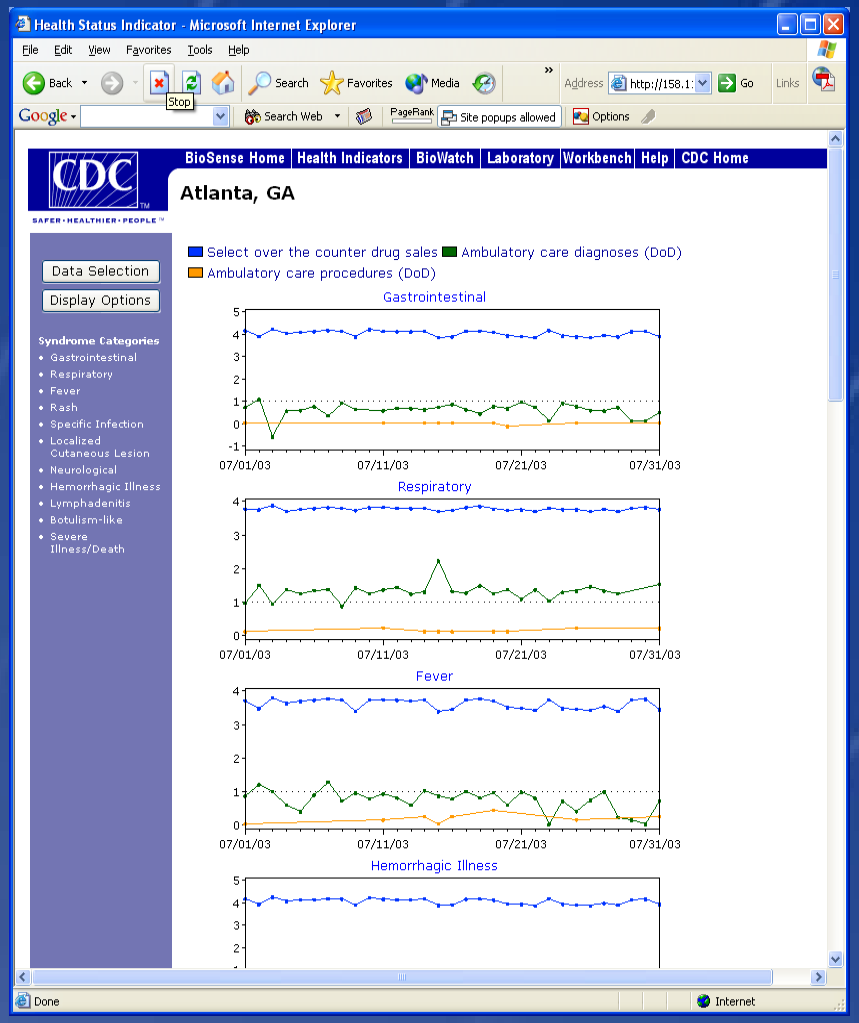
City/State Recipients



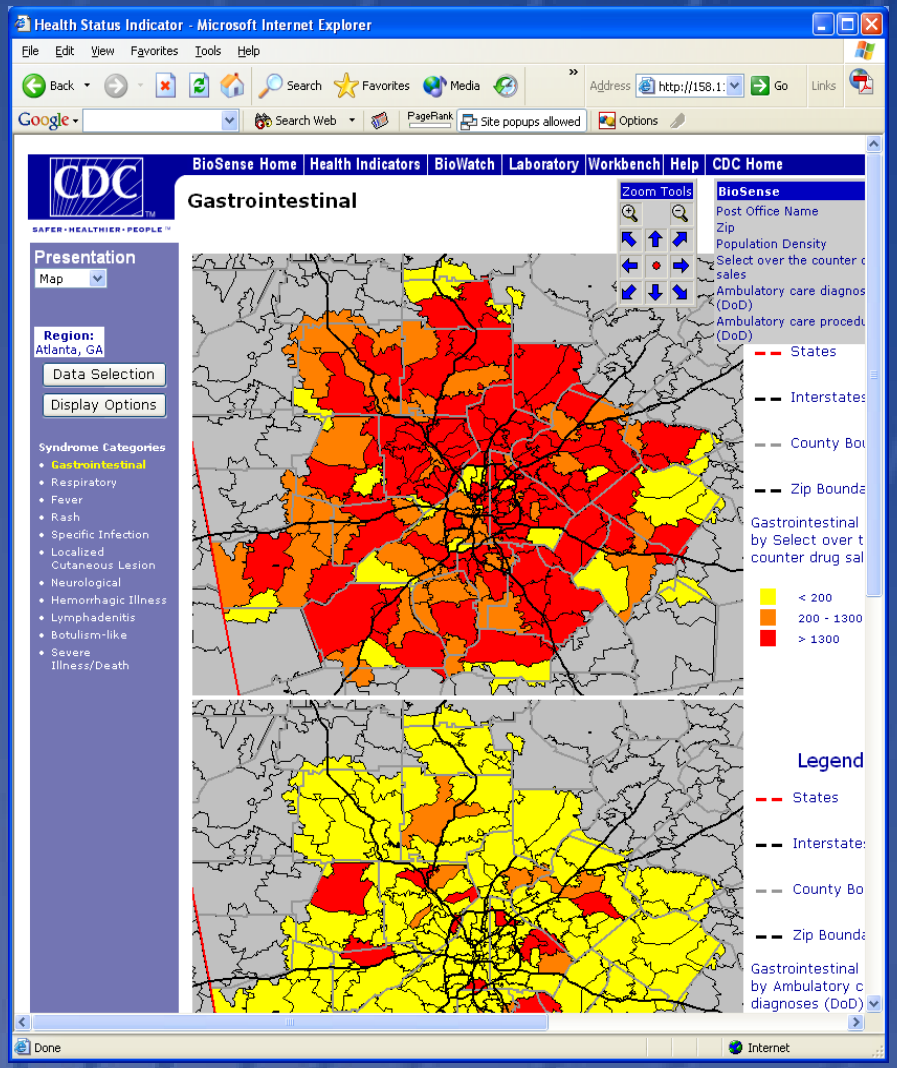
Metropolitan Surveillance and Response Systems

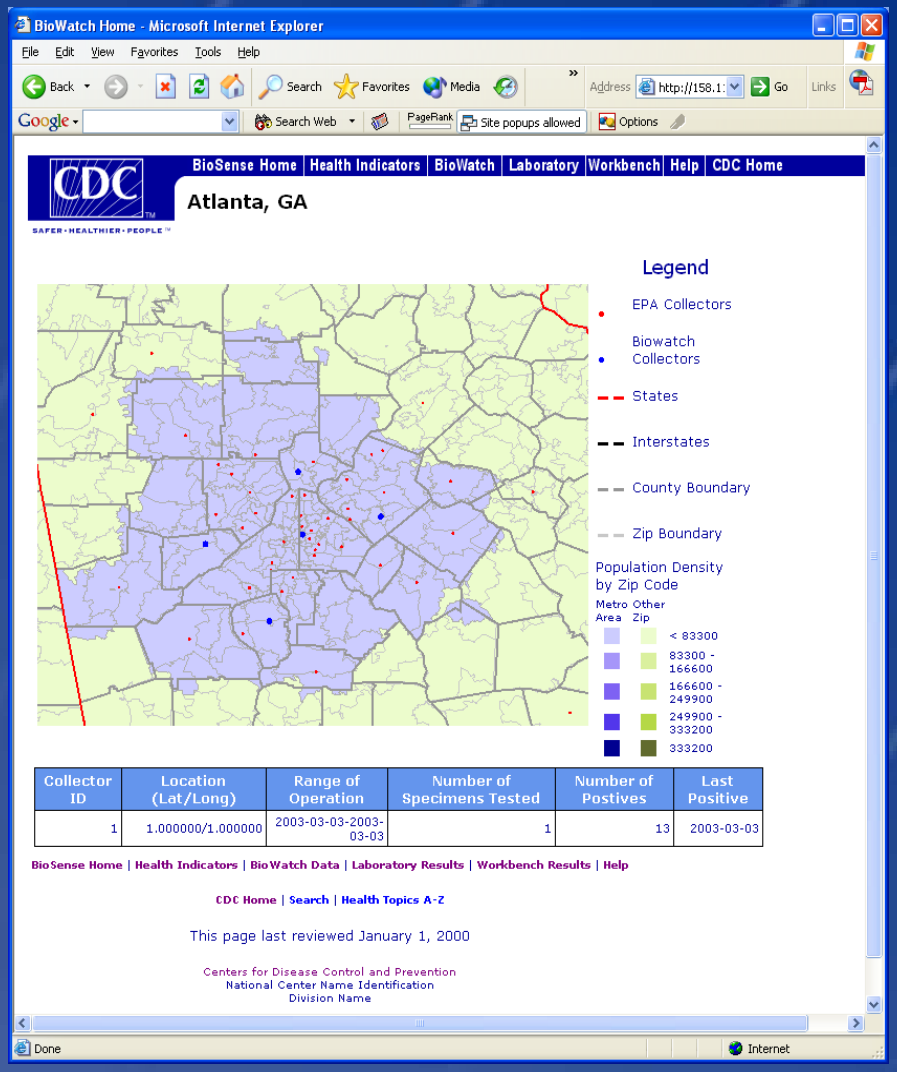
BioSense System





BioSense System





Public Health Information Network

Early Event Detection
BioSense

Surveillance
NEDSS

Secure Communications
Epi-X

Analysis & Interpretation
BioIntelligence
Analytic Technology

Information Dissemination & KM
CDC Website
Health alerting

PH Response
Lab, Outbreak Management, Vaccine administration, etc.

phin
PUBLIC HEALTH INFORMATION NETWORK

Federal Health Architecture, Consolidated Health Informatics, and NHII

Beyond Early Detection Systems

- Case management – possible cases, symptomology, travel history, possible environmental events and demographics
- Investigation and confirmation – integration of clinical lab results, environmental results
- Contact tracing – person-person, person-place, conveyance (plane, home, etc.)
- Response coordination – quarantine, stockpile dispensation, accelerated vaccination, prophylaxis
- Adverse events and follow-up management – exposure registries, vaccination “take” recording, adverse reactions to treatment

BioSense Principles

- Many pre-diagnostic data sources still need to be rigorously evaluated
- Consequence management is a major issue
- Support comparative analysis and interpretation by public health professionals
- As much as possible let public health users control alerting and notifications
- Coordinate multiple data sources to facilitate signal evaluation, reduce false alarms and minimize end-user burden

BioSense Requirements

- Reported data will not include patient names or medical record numbers
- Data will be securely managed for public health use with jurisdictional access controls
- Build on standards and investments
  - Public Health Information Network (PHIN) and National Electronic Disease Surveillance System (NEDSS)
  - Both are fully aligned with the standards identified by CHI and the NCVHS
  - Will align with Federal Health Architecture as it develops

Alternatives

- **Maintain Status Quo** – no coordinated early detection program and irregular coverage
- **Local Systems** – no national leadership, each jurisdiction pursues own approach, limited data and technology sharing
- **National Initiative** - national standards approach with robust evaluation and facilitation of local needs