

CDC's Role in Preparedness and Response



Julie Louise Gerberding, M.D., M.P.H.

Director

Centers for Disease Control and Prevention

September 25, 2006





TODAY

NEWS

Two Plane Crash Into World Trad

9:52

9:52

September 11, 2001

Health Protection Preparedness Goal: People in all communities should be protected from infectious, occupational, environmental, and terrorism threats

Preparedness:

The continuous process of improving the health system's capacity to detect, respond to, recover from, and mitigate the consequences of infectious, occupational, environmental, and terrorist threats.



Preparedness

Vision:

People protected – public health prepared.

Mission:

Prevent death, disability, disease and injury associated with urgent health threats by improving preparedness of the public health system, the healthcare delivery system and the public through excellence in science and services.



CDC's Preparedness Goals

Pre –Event	Event	Post-Event
<p>Prevent</p> <p>1) Increase the use and development of interventions known to prevent human illness from chemical, biological, radiological agents, and naturally occurring health threats.</p>	<p>Investigate</p> <p>5) Decrease the time to identify causes, risk factors, and appropriate interventions for those affected by threats to the public's health.</p>	<p>Recover</p> <p>7) Decrease the time needed to restore health services and environmental safety to pre-event levels.</p> <p>8) Improve the long-term follow-up provided to those affected by threats to the public's health.</p>
<p>Detect and Report</p> <p>2) Decrease the time needed to classify health events as terrorism or naturally occurring in partnership with other agencies.</p> <p>3) Decrease the time needed to detect and report chemical, biological, radiological agents in tissue, food or environmental samples that cause threats to the public's health.</p> <p>4) Improve the timeliness and accuracy of communications regarding threats to the public's health.</p>	<p>Control</p> <p>6) Decrease the time needed to provide countermeasures and health guidance to those affected by threats to the public's health.</p>	<p>Improve</p> <p>9) Decrease the time needed to implement recommendations from after-action reports following threats to the public's health.</p>



Terrorism Preparedness

CDC Strategy:

- Build all-hazards terrorism preparedness on the foundation of existing public health all-hazards capacities
- Utilize investments in terrorism preparedness to enhance existing public health capacities



All Hazards Preparedness and Response



Biological Terrorism

Chemical Terrorism

- Choking agents (phosgene / chlorine)
- Blood agents (cyanides)
- Blister agents (mustard gas)
- Nerve agents (sarin, soman, tabun, etc.)

Radiation Terrorism

- Dirty bombs
- Food / water supply contamination
- Power plants

Is That an Epidemic — or a Terrorist Attack?

Bioterrorism Is the Least of Our Worries



A Lethal Weapon We Must Learn to Recognize

By Jonathan B. Tucker

The news media are fascinated with bioterrorism. After a New Yorker article this week quoted unnamed Central Intelligence Agency analysts who speculated, apparently wrongly, that the outbreak of West Nile-like fever in New York could have been the work of Iraqi terrorists, a number of television news programs reported the story. And earlier this month, ABC's "Nightline" aired a weeklong docudrama in which a hypothetical anthrax attack on the subway system of a major city inflicts more than 50,000 deaths.

This sort of worst-case scenario is extremely unlikely. In truth, most terrorists aren't interested in staging catastrophic biological attacks, and those who are would have significant technical hurdles to overcome. Over the past century, not a single

provide technical help, but only at grave risk: the sponsor could lose control over the terrorists and invite severe retaliation if its involvement became known. Or a wealthy terrorist group might try to recruit scientists formerly employed by the Soviet Union, for example, which had advanced bioweapons programs. But no evidence currently available points to such assistance.

Without technical help, small terrorist cells would have a hard time mounting a large-scale biological attack. Germs suitable for warfare are difficult to mass-produce and even harder to disseminate effectively. Microbes might be spread, for example, as an aerosol cloud, but it is technically complex and dangerous to produce a concentrated aerosol that could infect thousands of people. Contaminating urban water supplies is also beyond the ability of most terrorists, mainly because a huge volume of harmful agent would be needed to overcome the effects of dilution, chlorination and filtration.

In the late 1980's in Japan, the Aum Shinrikyo cult, which had vast financial resources, recruited scientists from leading Japanese universities to develop bioweapons. But even though the cult acquired anthrax bacteria and botulinum toxin and carried out several attacks in Japan, no injuries or deaths were reported. The cult then resorted to sarin, a chemical nerve agent. In March 1995, the group released the poison on the Tokyo subway, killing 12 people and injuring more than a thousand.

Given the constraints, a bioterrorist attack in the United States in which thousands of people are killed remains extremely unlikely. While planning for such an event is warranted, government authorities should pay attention to a far more probable scenario: small-scale incidents involving food or drug contamination, which could cause widespread fear and economic disruption. □

By Jessica Stern

The flurry of rumors last week about the origins of the encephalitis outbreak in the New York metropolitan area proved how anxious we are about biological terrorism.

After an article in The New Yorker quoted unnamed Central Intelligence Agency sources who speculated that the West Nile-like virus might have been spread in an Iraqi biological attack, the C.I.A. found itself having to reassure the public that this chain of events was highly unlikely.

And indeed, it is. For one thing, West Nile encephalitis

Jessica Stern, a fellow at Harvard's Center for Science and International Affairs, is the author of "The Ultimate Terrorist."

is a relatively mild disease, and Saddam Hussein has far more virulent agents in his arsenal. For another, the outbreak has all the earmarks of a naturally occurring infectious disease, according to the Centers for Disease Control and Prevention.

But this case illustrates one of the most troubling aspects of biological terrorism: it can be extremely difficult to distinguish germ warfare from a natural outbreak of disease.

After all, this is not the first time that biological attacks have been blamed for sudden epidemics. In 1997, when foot-and-mouth disease struck pigs in Taiwan for the first time in 83 years, the Taiwanese Government was forced to slaughter some four million hogs. Taiwanese farmers, without any evidence, suspected that China had deliberately introduced the disease on the island to damage the economy.

After Cuba suffered an epidemic of dengue fever in 1981, it accused the United States of biological ag-

gression. In 1997 Cuba made a similar claim, charging that the United States had dropped crop-eating pests from a low-flying plane.

On the rare occasions when biological weapons have been used or accidentally released, scientists and government officials often first assumed that the epidemics were natural outbreaks.

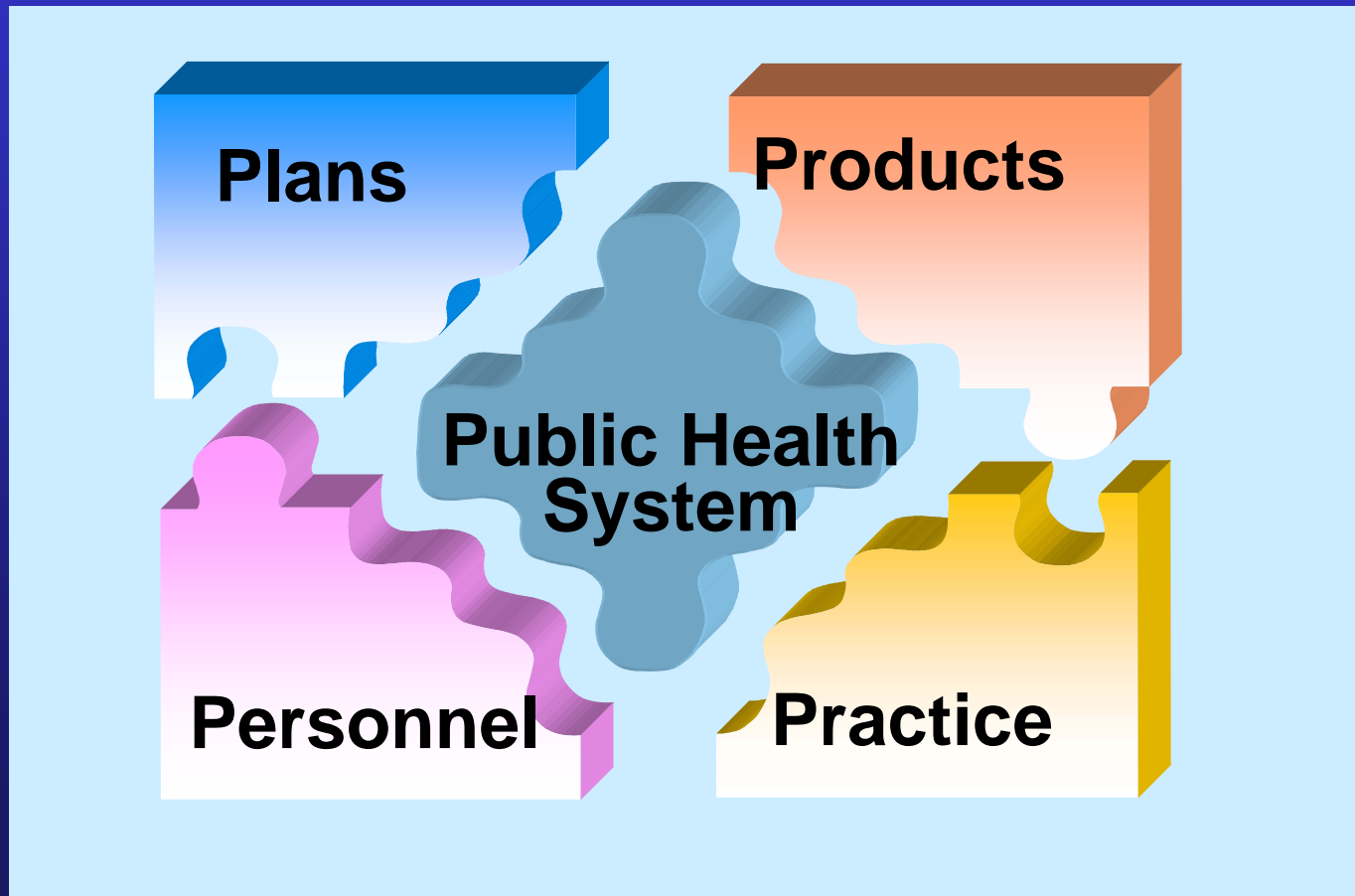
Our uncertainty about a virus's origin is a warning.

For instance, many American security experts initially believed that a 1979 outbreak of anthrax in the Soviet Union was caused by contam-

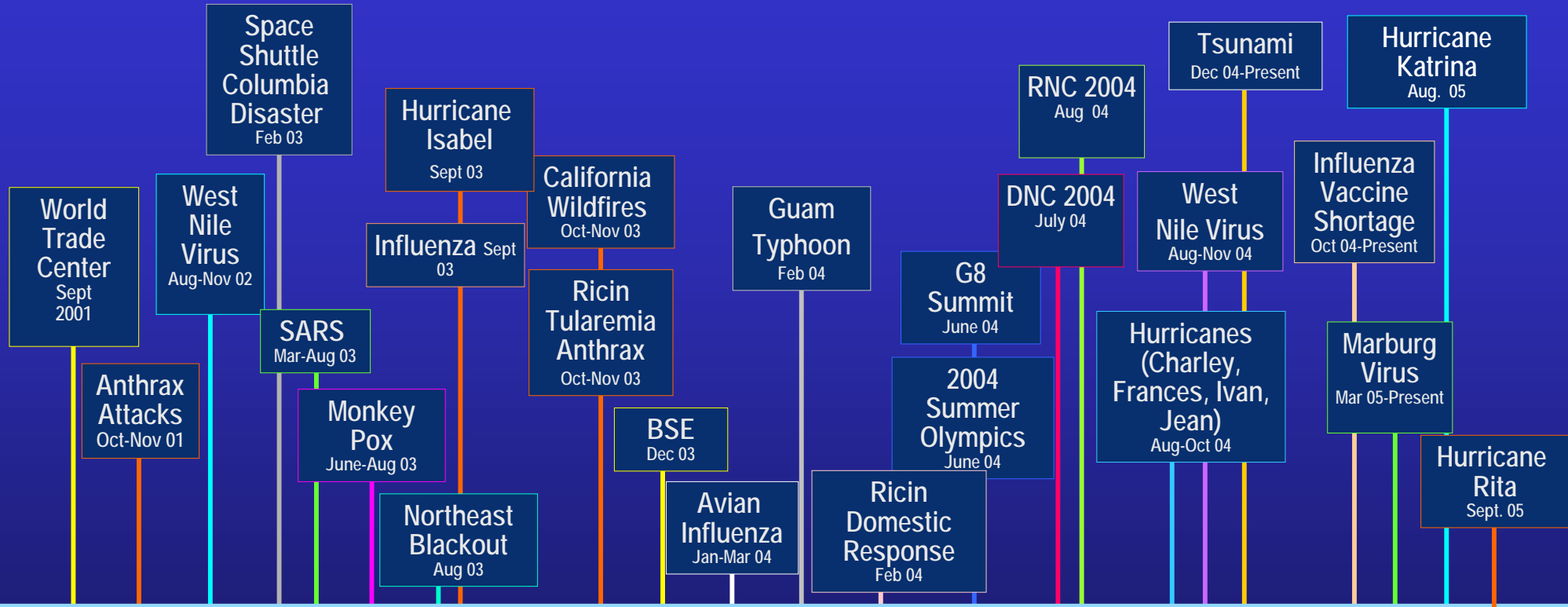
NY Times, Oct. 16, 1999



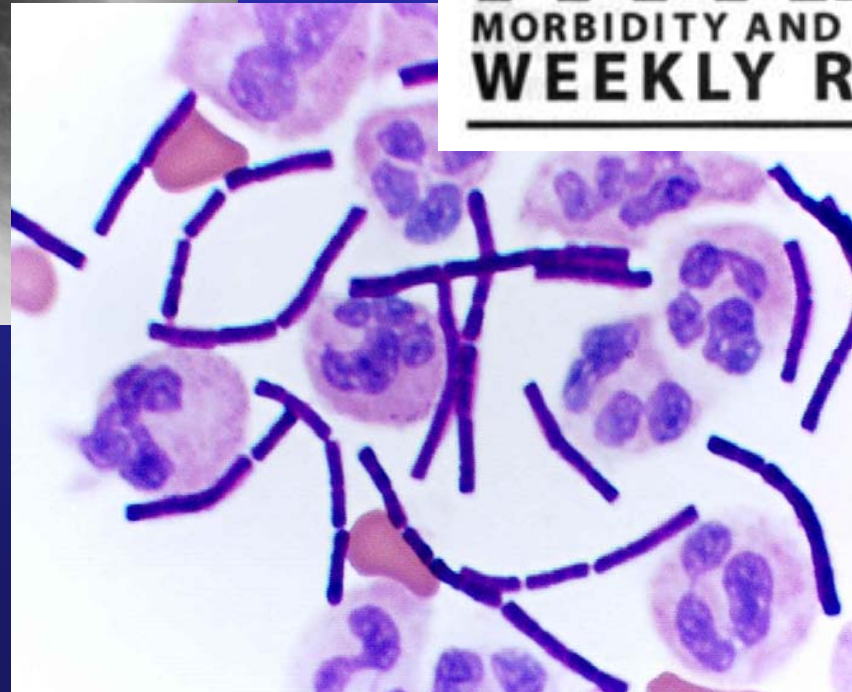
Preparedness: Strategies



CDC: EOC Health Protection Responses since 2001



CDC Detects: Inhalational Anthrax



INDEX CASE OF FATAL INHALATIONAL ANTHRAX DUE TO BIOTERRORISM IN THE UNITED STATES

LARRY M. BUSH, M.D., BARRY H. ABRAMS, M.D., ANNE BEALL, B.S., M.T., AND CAROLINE C. JOHNSON, M.D.

SINCE the mid-1990s, *Bacillus anthracis*, the causative agent of anthrax, has been postulated to be a likely agent of biological warfare or terrorism because of its physical properties and its virulence factors. Several countries have been known to have biologic-weapons programs that were focusing on *B. anthracis* for potential military use. However, fatal anthrax had not been encountered in the United States as a weapon in an act of war or terror until the index case we report was recognized¹.

NEJM 2001;345:1607



Bioterrorism Preparedness and Response

Clinicians and Public Health Agencies as Essential Partners

Julie Louise Gerberding, MD, MPH

James M. Hughes, MD

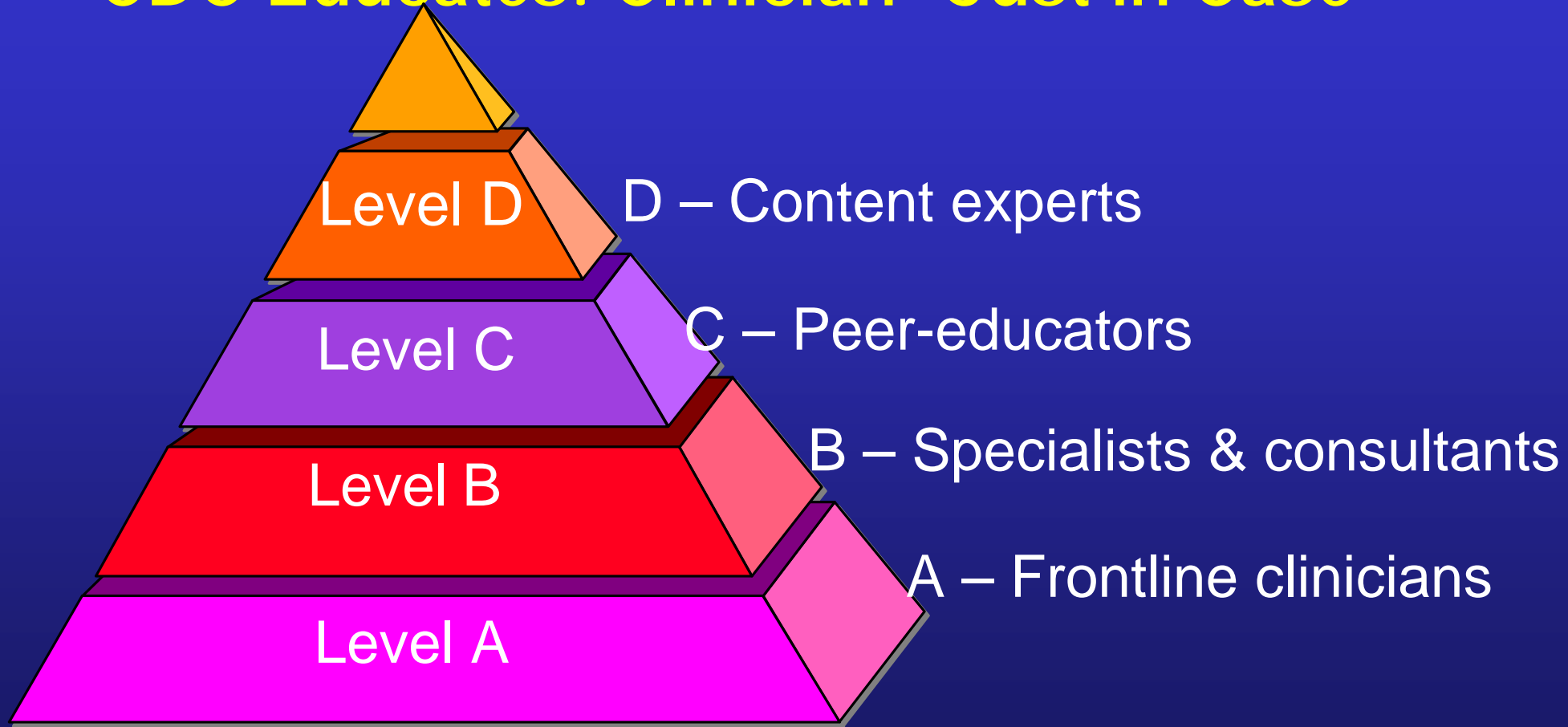
Jeffrey P. Koplan, MD, MPH

BEGINNING IN MID-SEPTEMBER 2001, THE UNITED States experienced unprecedented biological attacks involving the intentional distribution of *Bacillus anthracis* spores through the postal system.¹ The full impact of this bioterrorist activity has not been assessed, but already the toll is large. A total of 22 persons have developed anthrax and 5 have died as a direct result.²⁻³ More than 10 000 persons were advised to take post-exposure prophylactic treatment because they were at known or potential risk for inhalational anthrax; in addition, more than 20 000 others started such treatment until the investigation provided reassurance that exposure was unlikely and treatment could be stopped; thousands more were vic-

occupation, must be addressed in bioterrorism preparedness and response programs.

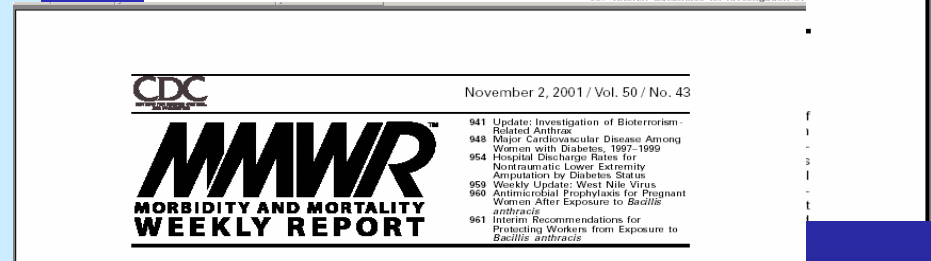
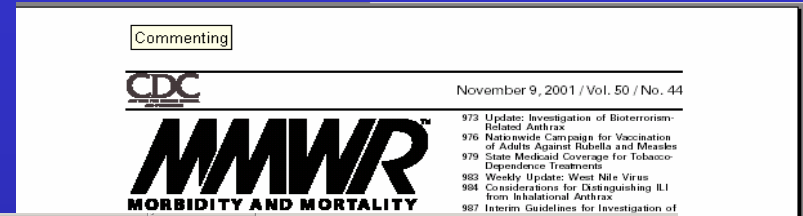
From the public health perspective, recognition and response to the recent bioterrorist attacks has evolved in a series of overlapping phases at each location. The initial phase involved detection and then confirmation of a case of anthrax or a powder-containing envelope, followed by rapid deployment of public health and law enforcement personnel and other needed resources to the site. The second phase has been characterized by full-scale investigations as well as interventions to prevent additional cases. Longer-term consequence management, including follow-up of affected individuals and remediation of contaminated sites that could pose an occupational health risk, are major activities in the current phase. In all these phases, clinicians have proven to be essential partners, which is a lesson that must be incorporated into future bioterrorism preparedness and re-

CDC Educates: Clinician “Just in Case”



CDC Educates: Clinician "Just in Time"

- Web / Webcasts/ podcasts/ radio
- MMWR
- Satellite Broadcasts
- EpiX / Health Alert Messages
- Hotlines



CDCHAN-00050-01-10-31-ADV-N Updated Information on Recognizing and Handling Suspicious Mail - Message (Rich Text)

File Edit View Insert Format Tools Actions Help

Reply Reply to All Forward

From: Health Alert Network Sent: Wed 10/31/2001 9:27 PM
 To: Health Alert Network
 Cc:
 Subject: CDCHAN-00050-01-10-31-ADV-N Updated Information on Recognizing and Handling Suspicious Mail

**This is an official
 CDC Health Advisory**

Distributed via the Health Alert Network
 October 31, 2001, 21:25 EST (9:25 PM, EST)
 CDCHAN-00050-01-10-31-ADV-N

**Updated Information About How to Recognize
 and Handle a Suspicious Package or Envelope**

This information supplements CDC's recommendations for recognizing and handling suspicious packages or envelopes that were published as a CDC Health Advisory on October 27, 2001, and replaces information about identifying suspicious packages that was published as a Health Advisory on October 12, 2001.

Letters containing *Bacillus anthracis* (anthrax) have been received by mail in several areas in the United States. In some instances, anthrax exposures have occurred, with several persons becoming infected. To prevent such exposures and subsequent infection, all persons should learn how to recognize a suspicious package or envelope and take appropriate steps to protect themselves and others.

Start 8:43 PM

CDC Centers for Disease Control and Prevention

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Epi-X The Epidemic Information Exchange

My Epi-X Action Items

Type	Title	Submitted	Status	Review	Reviewer	Contributor
	Outbreak of Cryptosporidiosis, Ohio, 2000		Draft, Private	48 Hours		Portowski
	Rift Valley Fever, Saudi Arabia, August-October 2000	10/16/00	In Review, Private	48 Hours		Portowski
	Upper Airway Obstruction and Cerebral Sinus Thrombosis	11/13/00	SME Review, Private	48 Hours	M. Fischer	Wiersma
	Outbreak of Rift Valley Fever	11/8/00	Contributor Review, Private	48 Hours		Portowski
	test	10/30/00	In Review, Private	48 Hours		Portowski

Current Epi-X Postings

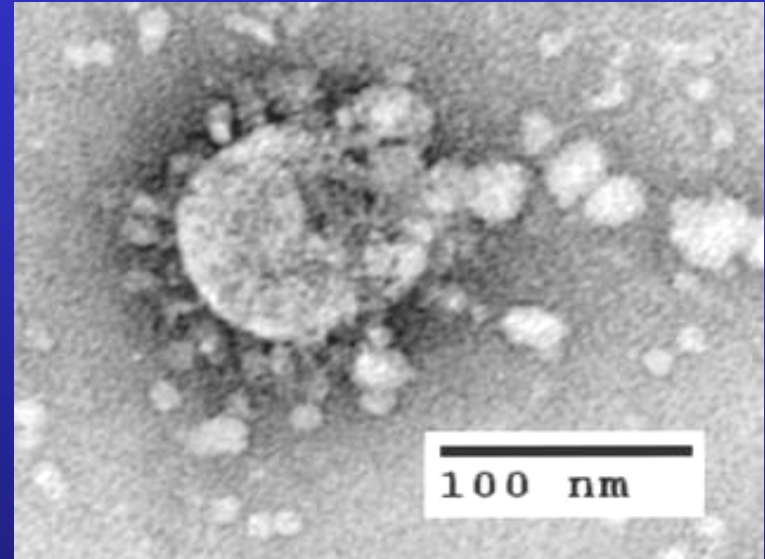
Type	Title	Location	Category	Posted	Comments
	TEST EMER ALERT 11-8	Alabama	Infectious Disease, Bacterial	Private 11/9/00	24
	TEST UNEDIT 11-99	Arizona	Infectious Disease, Bacterial	Private 11/9/00	12
	Status of State Health Referenda - November 2, 2000	Entire U.S.A.	Chronic Disease	Private 11/9/00	0

The status of 16 health-related referenda and initiatives on 12 state ballots; eight were



CDC Detects: SARS Discovery

- Specimen transport and processing
- More than 3000 specimens processed from 27 countries
- Key role in virus isolation, characterization, and diagnostic test development and deployment



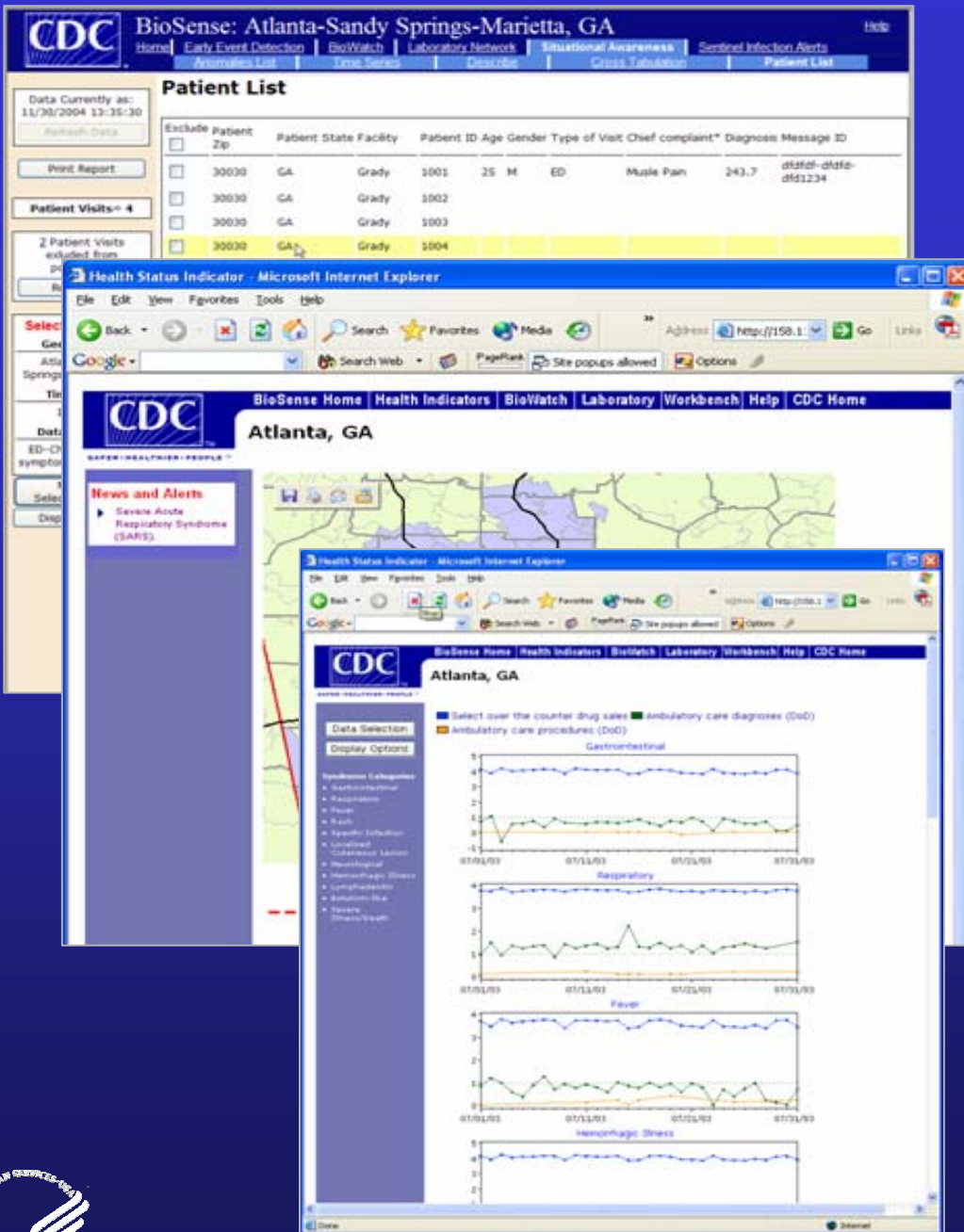
Coronavirus particle by negative stain EM (isolate from patient with SARS) CDC, March 2003

Biowatch

- Collaboration among DHS, EPA, and CDC
- Early warning system designed to rapidly detect trace amounts of biological materials in the air, whether release is due to intentional, accidental, or natural causes
- Successfully operating in more than 30 urban centers since early 2003

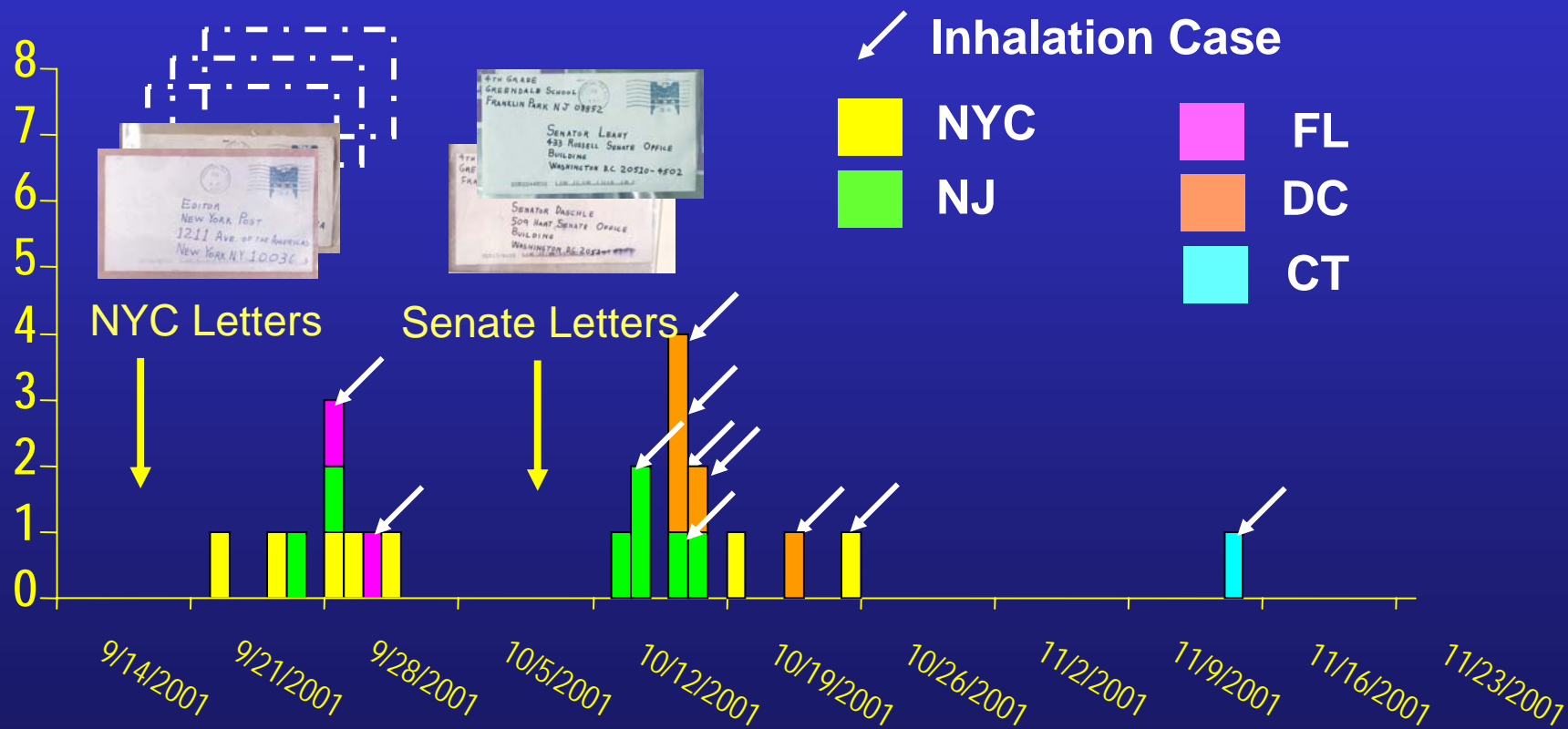
BioSensing

- Enable early event detection and health situational awareness using real-time clinical data from hospitals
- Allow federal, state, local public health simultaneous access to health data to:
 - Analyze syndromes
 - Visualize as geospatial maps, time series, patient line listings
 - Query as needed

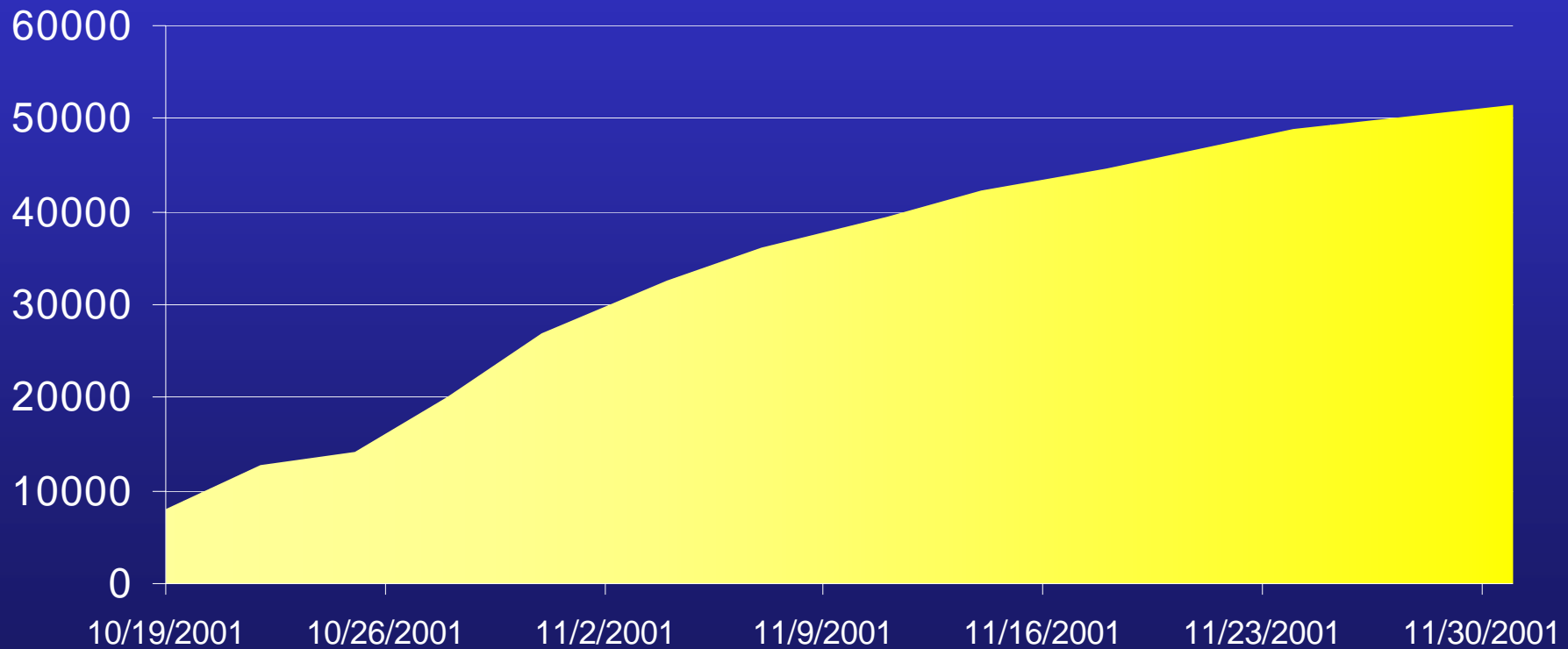


CDC Investigates: Bioterrorism-related Anthrax Cases

Reported Date of Onset



Cumulative *B. anthracis* Non-clinical Samples in LRN Laboratories



CDC Responds



World Trade Center Attacks

September 11, 2001

- CDC's response began minutes after the second hijacked plane struck the World Trade Center
- Stockpile provided met a 50-ton "push package" filled with pharmaceuticals, medical supplies and equipment
- With the New York City Department of Health, CDC:
 - Assessed hospital capacity and needs
 - Assessed ED visits for terrorism syndromes
 - Assisted to develop a comprehensive worker health and safety program



Anthrax Attacks, 2001

- Infected 22 people and killed 5
- CDC and other public health and law enforcement at federal, state, and local levels collaborated to:
 - Identify possible cases of anthrax
 - Describe case and exposure characteristics
 - Prevent further cases through public health interventions
- 2,000 CDC employees involved in response - the largest, rapid mobilization of CDC staff for a single public health issue in the agency's history



CDC Responds: SARS



More than 800 persons activated to serve on rotating basis for the SARS response

- Overall, nearly 100 deployments to assist with domestic and international investigations
- More than 80 staff deployed to join WHO or national teams in 10 countries
- 1959 total days (7.8 work-years) spent on international deployments



Hurricane Katrina

- CDC Personnel (deployed ~700 people to 4 states)
- Technical assistance to state and local health departments and response partners
- Health and safety messages
- Medical supplies and Federal Medical Stations (SMS)
- Public health needs assessments, including environmental assessments
- Disease surveillance activities
- Mental health assessments and response
- Reoccupation and Rebuilding



CDC Roles and Responsibilities: HHS ESF 8 Response

- Health and medical care
 - Detection, surveillance, investigation, monitoring
 - Exposure assessment
 - Strategic national stockpile
 - Infection control, decontamination, disinfection
 - Countermeasure guidance
 - Occupational health and safety
 - *(On-site medical care)*
- Law enforcement / public health investigation coordination
- Mental health care services
- Veterinary services
- Mortuary care
- Post-event remediation and health monitoring



CDC E-Preparedness

	<u>Public Health Preparedness</u>	<u>Terrorism Preparedness</u>
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Detection

Alert clinicians	✓✓	✓✓
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Patient MIS / LIS data	✓✓	✓✓
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Surrogate data	✓✓	✓✓
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Interpretation

Algorithms	✓✓	✓✓
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Investigation	✓✓	✓✓
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Response

Alerting	✓✓	✓✓
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Active case reporting	✓✓	✓✓
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Just-in-time information	✓✓	✓✓
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Investigation coordination	✓✓	✓✓
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Secure communication	✓✓	✓✓
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Emergency Operations

- Responsible for overall coordination of CDC's preparedness, assessment, response, recovery, and evaluation prior to and during public health emergencies
- Director's Emergency Operations Center (DEOC)
 - CDC's command center for the coordination of emergency response to domestic and international public health threats
 - Staffed 24/7/365
 - Activated 27 times between September 2001 and May 2006
 - During Hurricane Katrina, the DEOC deployed approximately 700 people to 4 states



Strategic National Stockpile

- National repository of antibiotics, antivirals, chemical antidotes, antitoxins, life-support medications, and medical supplies
- Deliver critical medical assets to the site of a national emergency within 12 hours of a decision to deploy; assist with redistribution
- Includes procurement, storage of medical material, Technical Assistance and Response Unit (TARU) teams, state and local assistance
- Assets stored in multiple strategic locations across the country



Select Agent and Toxins

CDC's Select Agent and Toxins Program regulates the possession of biological agents and toxins that have the potential to pose a severe threat to public health and safety.



Coordination and Collaboration

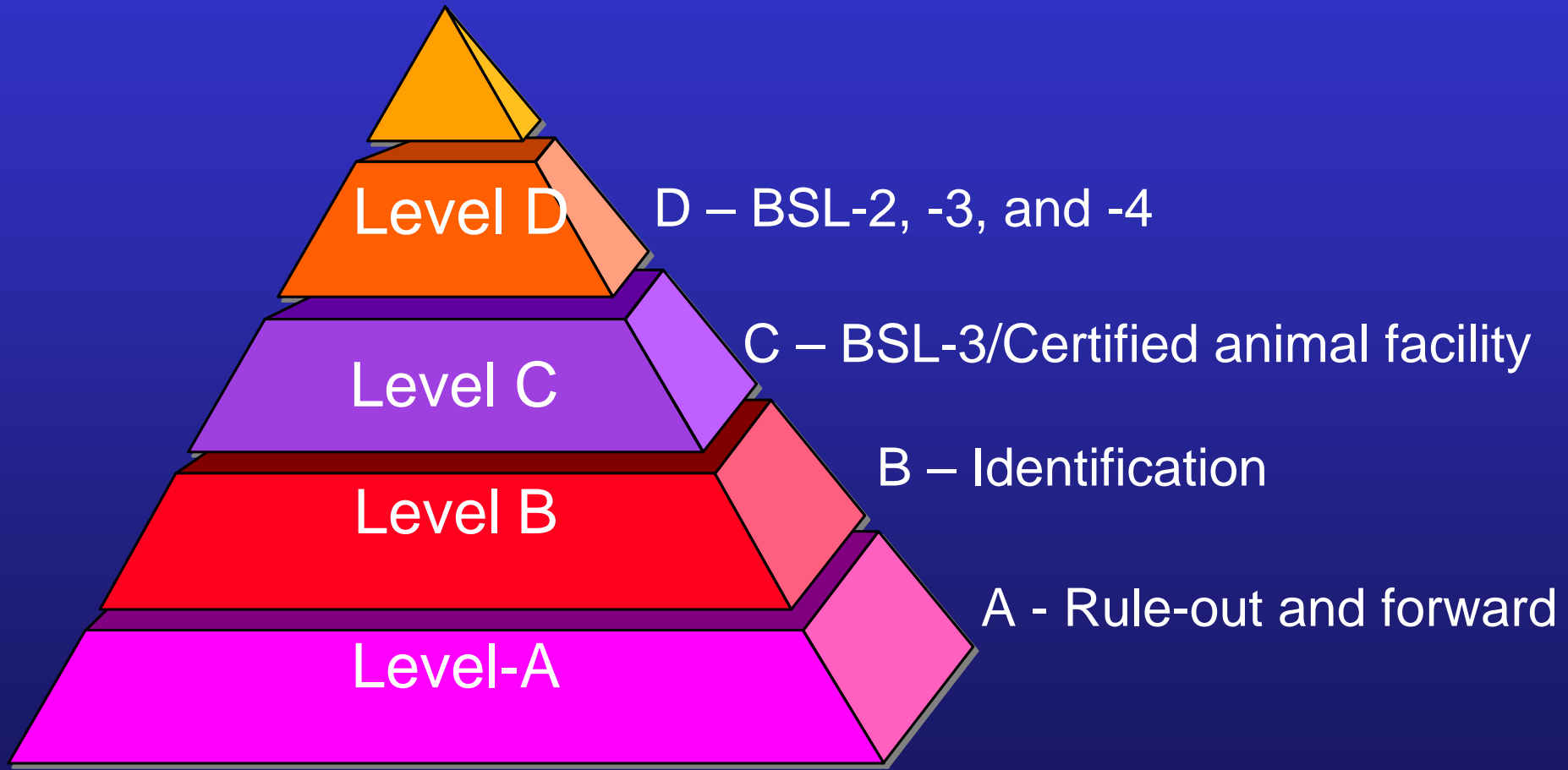
Bioterrorism-Related Anthrax...Collaboration Between Public Health and Law Enforcement: New Paradigms and Partnerships for Bioterrorism Planning and Response

Jay C. Butler,* Mitchell L. Cohen,* Cindy R. Friedman,* Robert M. Scripp,† and Craig G. Watz†

**Centers for Disease Control and Prevention, Atlanta, Georgia, USA; and †Federal Bureau of Investigation, Washington, D.C., USA*



Laboratory Response Network



Key Stakeholders: CDC, FBI, Association of Public Health Laboratories, Department of Defense



Some are infected; all are affected...

- 22 people with anthrax; 5 deaths
- Hundreds evaluated to “rule out” anthrax
- 30,000 people advised to start antibiotics
- 10,000 people recommended to take at least 60 days of antibiotic therapy
- Hundreds of thousands more affected by events

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



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.

New York Times, October 13, 2001

Coordination

Collaboration

Commitment

Competency

Communication

Compassion

Consistency

Clinicians

Clinical Laboratories



"Golden Triangle" of Preparedness and Response

Local Public Health Agencies

Healthcare Organizations

Clinicians & Laboratorians

Post-Exposure Prophylaxis for Prevention of Inhalational Anthrax

- 22 people with anthrax; 5 deaths
- Hundreds evaluated to “rule out” anthrax
- 30,000 people advised to start antibiotics
- 10,000 people recommended to take at least 60 days of antibiotic therapy
- Hundreds of thousands more affected by events

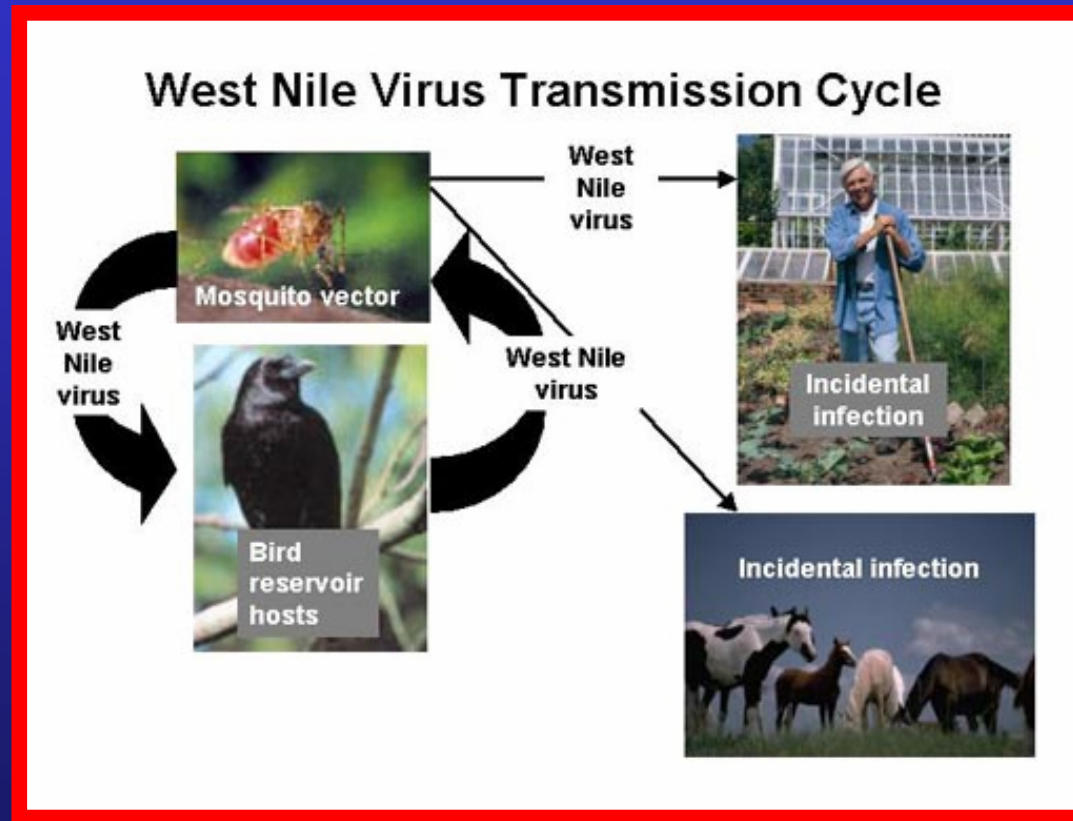


National Pharmaceutical Stockpile

- Push packages anywhere in the U.S. within 12 hours
- Vendor Managed Inventory (VMI) – follow-on stores of medical supplies to augment push packages that arrive within 24-48 hours of activation



CDC's West Nile Virus Operation, 2002



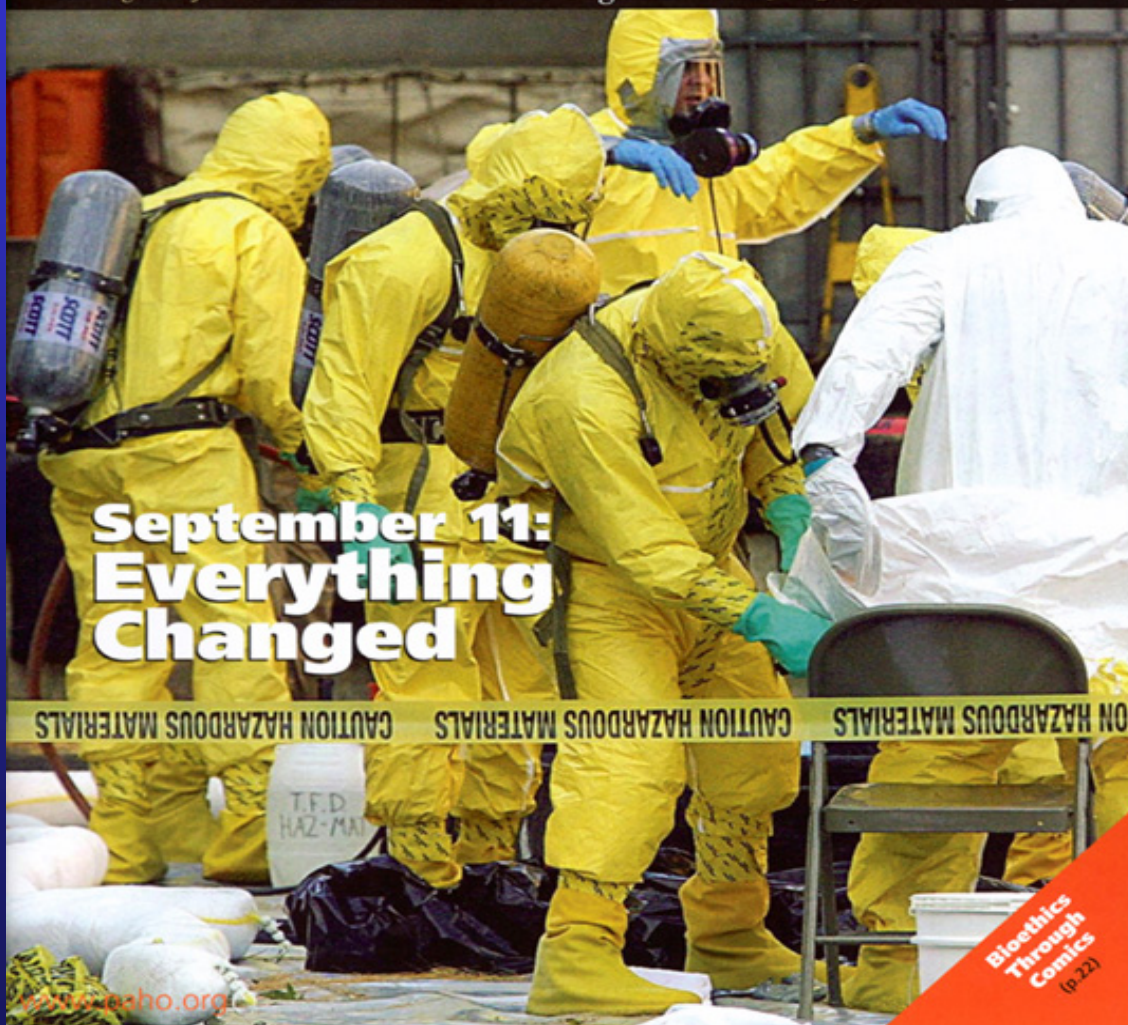
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PERSPECTIVES

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September 11: Everything Changed

CAUTION HAZARDOUS MATERIALS CAUTION HAZARDOUS MATERIALS CAUTION HAZARDOUS MATERIALS

Bioethics
Through
Comics
(p.22)

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