

Laboratory Response Network

Ralph Timperi

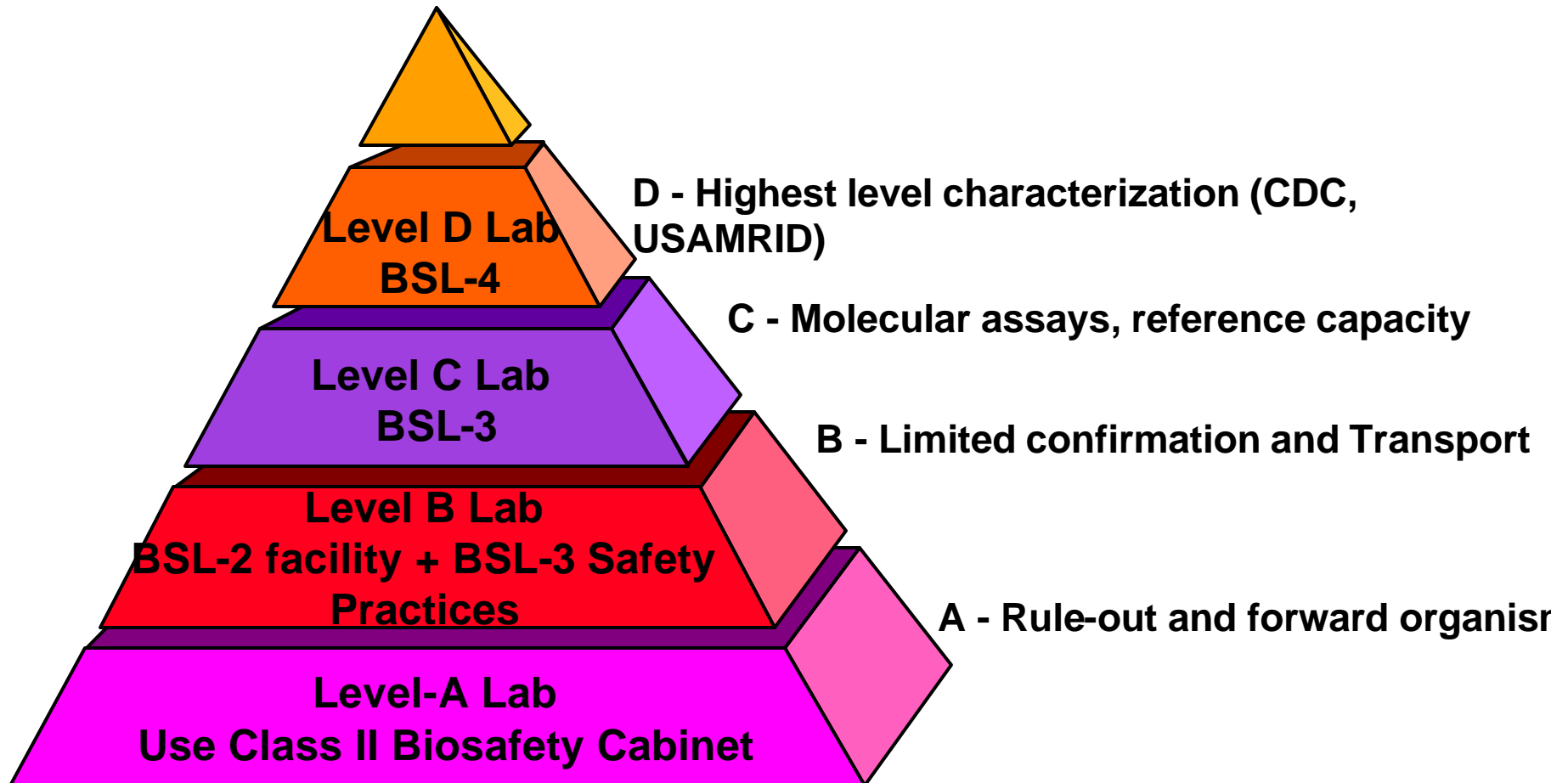
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Laboratory Response Network For Bioterrorism



CDC BT Rapid Response and Advanced Technology Lab

- **BSL -3**
- **Agent Identification and Specimen Triage**
- **Refer to and Assist Specialty Lab Confirmation**
- **Evaluate Rapid Detection Technology**
- **Rapid Response Team**

LRN Capacity

Specimen Collection and Transport

- **Appropriate specimens**
- **Forensic issues and chain of custody**
- **Timely transport & testing safety**

Capacity to Diagnose

- **Surveillance**
- **Rapid screens - People/environment**
- **Definitive and trusted testing**
- **Secure, reliable means of electronic communication**
- **The right answer, to the right persons at the right time**

LRN: Work-in-progress

- State and large city / county public health laboratories- secure internet website (reagents, protocols, capacity locator)
- Training and proficiency on 'highest priority agents'
- Conventional and rapid methods
- Validation of methods
- 'Surge capacity'

LRN: Growing capacity

- Clinical microbiology laboratories collaboration- standard protocols, rule-out testing for clinical specimens, (future) definitive identification of agents
- Building a secure system for electronic laboratory reporting of test results- the technology is not the problem
- Surge capacity- build, protect, access
- Technology and reagents to more laboratories- capacity to validate and accept

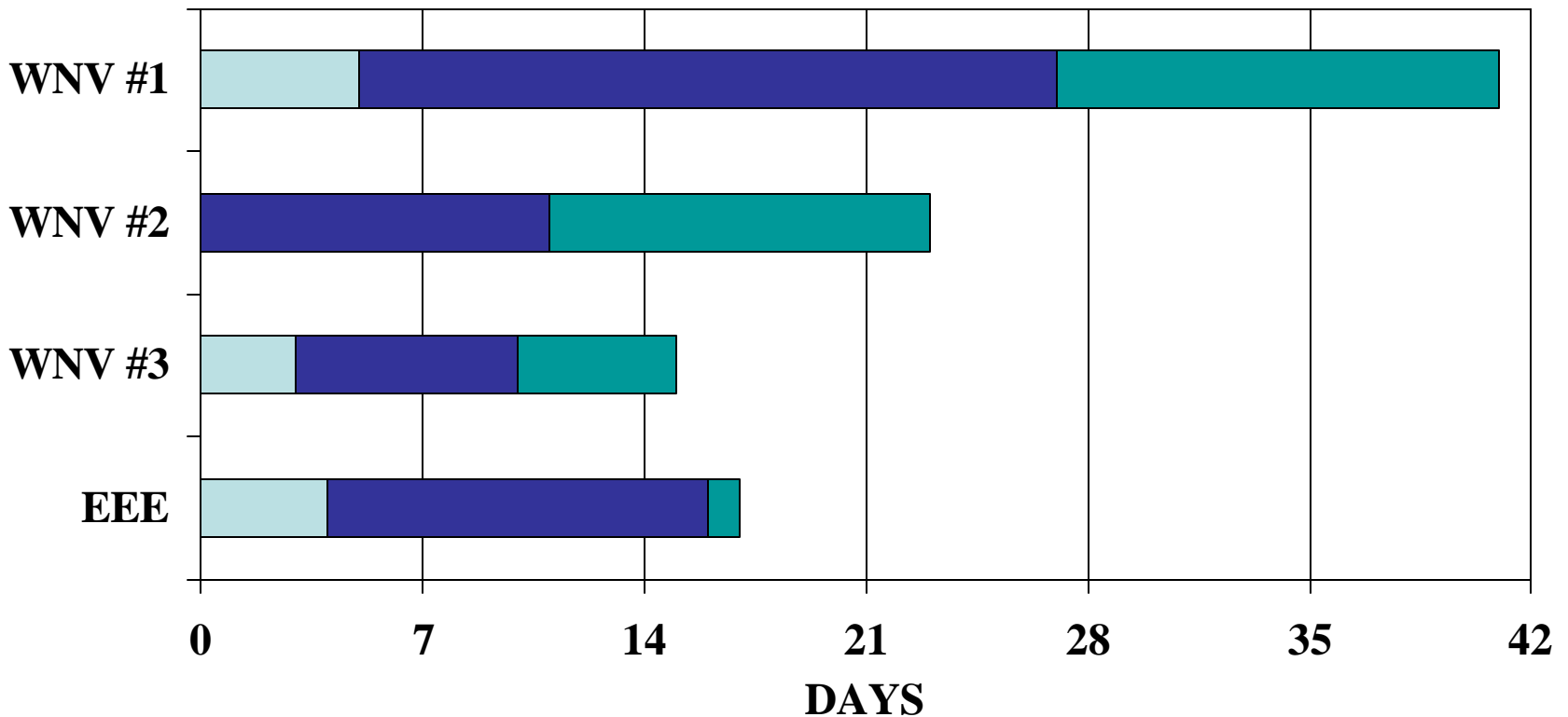
Laboratory and Testing Issues

- Surveillance- Numbers of ill persons, general syndromes, laboratory-based species and DNA characteristics
- Field testing- First responders, environmental, risk characterization
- Laboratory diagnosis of human and animal illnesses- coordination and communication
- 24/7 available and accessible capacity

Human Arbovirus Cases, MA

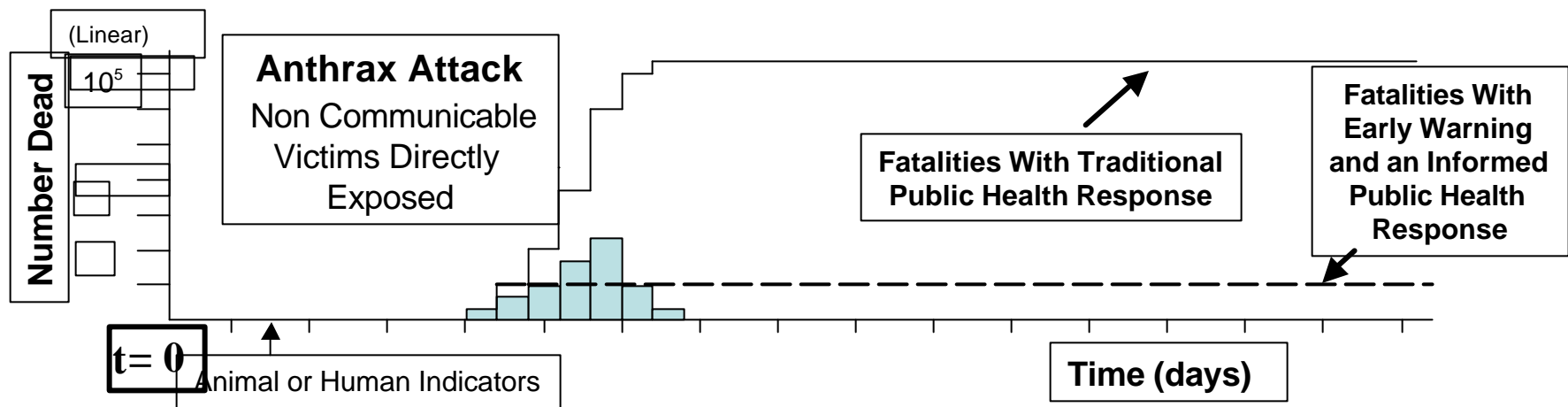
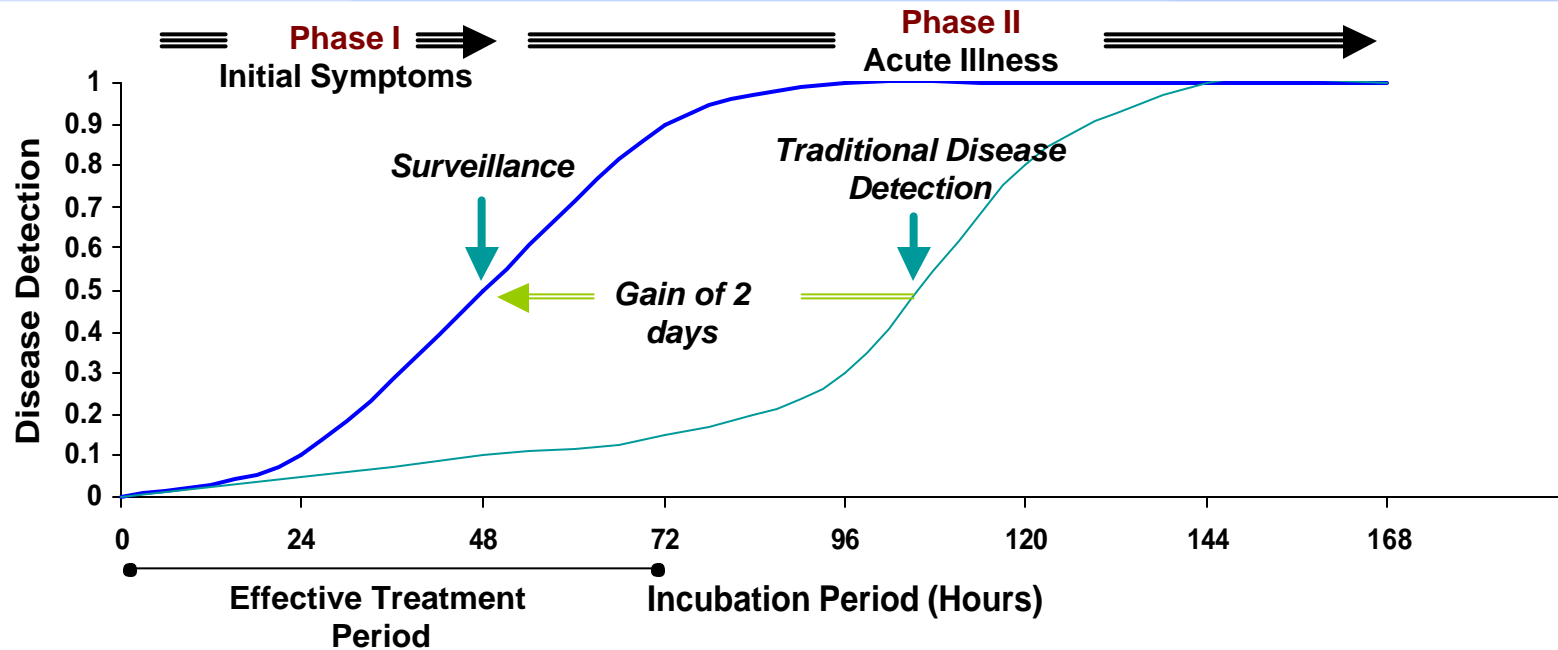
Timelines: Onset to Diagnosis

■ Onset to Health Care ■ Health Care to Notification ■ Notification to Diagnosis

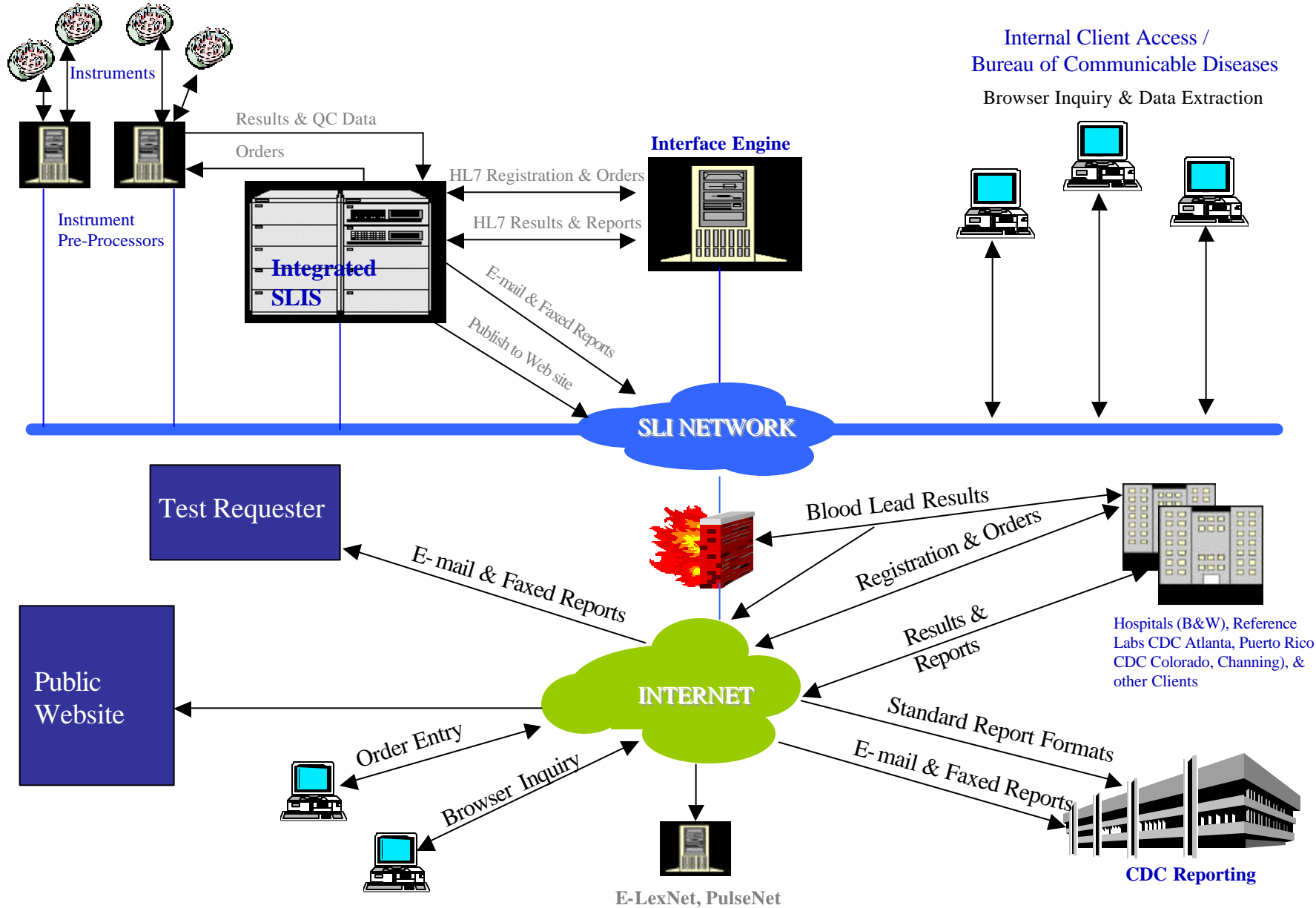




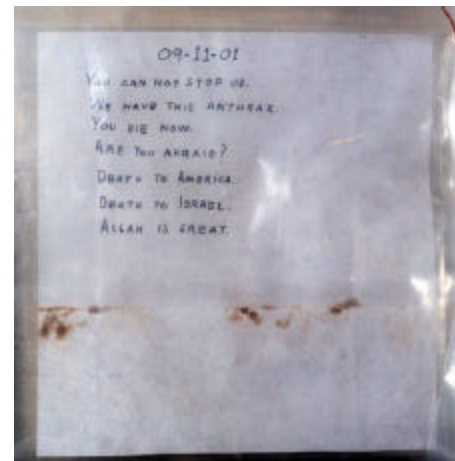
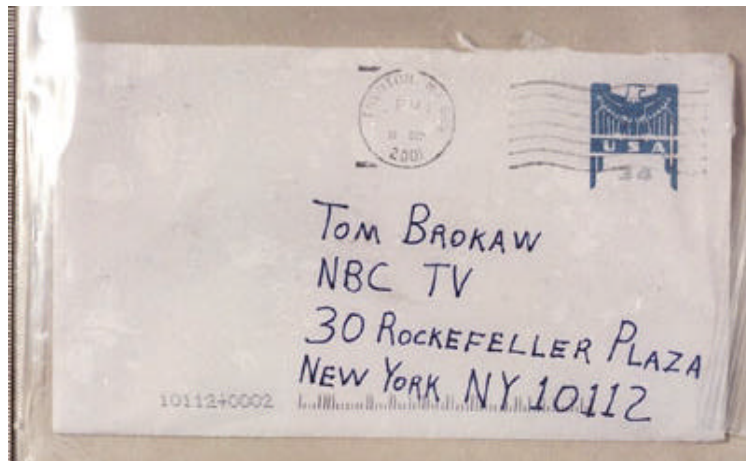
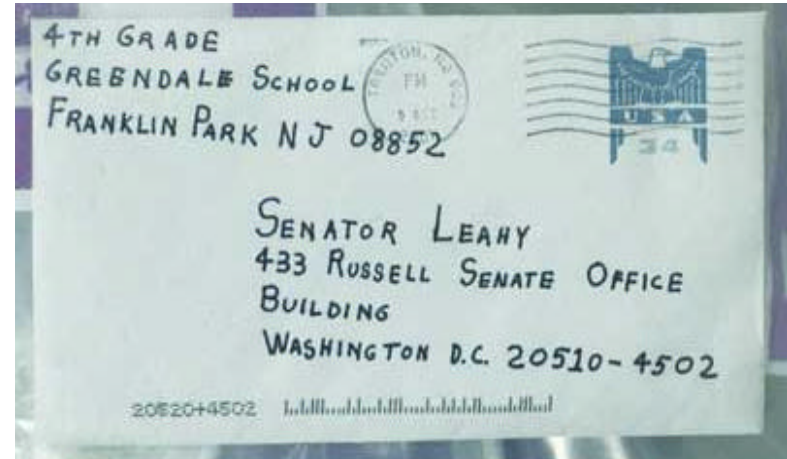
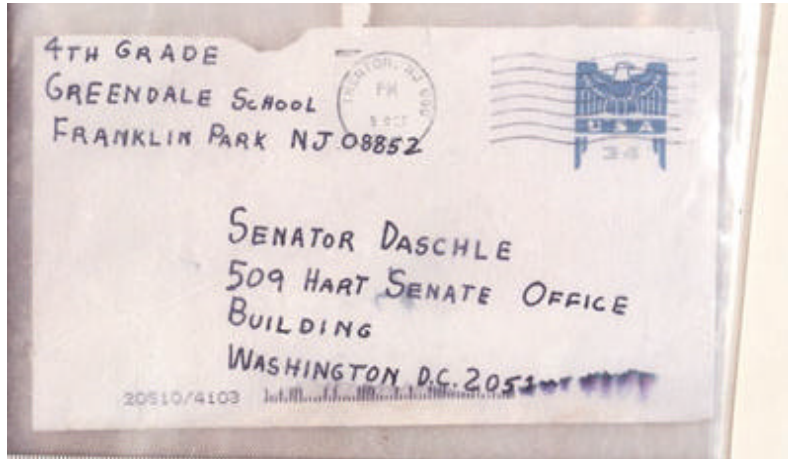
Impact of Surveillance on Survivability (Anthrax)



FRAMEWORK FOR AN INTEGRATED SLIS



Anthrax Sent By Mail September / October 2001



ENVIRONMENTAL SAMPLES

Description	Number Submitted	Risk / Testing Priority
U.S. Mail contaminated with anthrax	0	Low to high / High
U.S. Mail with a suspicious powder (not anthrax or other pathogen) with or without a threat letter	52	None / High
Powders, particulate matter and various liquid or solid material on surfaces of floors, walls, furniture, clothing, appliances or food	~800	None / Low
Clothing, household items, business products, etc. without evidence of powder, particulate matter, etc.	~1800	None / None

LRN validated methods and reagents available

- ***Bacillus anthracis*: C, PCR, TRF**
***Brucella* sp.: C**
- ***Francisella tularensis*: C, TRF**
- ***Yersinia pestis*: C, PCR, TRF**
- ***Clostridium botulinum*: C**

**Conventional, polymerase chain reaction,
time resolved fluorescence**

Methods in development

- **Ricin: TRF**
- ***Brucella* sp.: PCR, TRF**
- ***Francisella tularensis*: PCR**
- ***Staph.* enterotoxin B: TRF**
- ***Burkholderia mallei*: PCR**
- ***Burkholderia pseudomallei*: PCR**
- ***Coxiella burnetii*: TRF**
- ***Clostridium botulinum*: EIA, TRF**
- **Validation in progress**
- **Validation by summer**
- **Validation by late summer**
- **EDA not estimated**
- **Fall/Winter 2002**
- **Fall/Winter 2002**
- **EDA not estimated**
- **2004**

Testing Methods - Environmental

- 1- Gross examination- (environmental samples only)
- 2- Microscopic examination for bacteria and spores
- 3- DNA test methods
- 4- Culture (growth of bacteria on artificial media)
- Most samples tested by methods 1, 4
- U.S. Mail and similar items tested by methods 1, 2, 4 and possibly 3
- Some items with no apparent contamination, no risk indicators tested by method 1 only