

The Role of the Laboratory -- Public Health and Forensic

Insert seal
or logo here

YOUR NAMES HERE





Insert seal
or logo here

Lecture Goals

- Describe roles of the Public Health and Forensic (crime) laboratories
- Understand laboratory procedures in suspected BT events
- Understand chain of custody as applied to laboratory specimens





Public Health Laboratory

Insert seal
or logo here

Add your name here





Insert seal
or logo here

Why is the Public Health Laboratory (PHL) Involved?

- State Labs are reference labs within the state
- Mandate by Congress
- Experience with biological agents of concern and outbreak investigations
- Link between local laboratory level and CDC /federal agencies



Insert seal
or logo here

Roles of the State PHL

- Disease identification and outbreak investigation
- Reference services (additional, definitive testing on isolates and specimens)
- Specialized testing
- Direct services
- Environmental testing





Insert seal
or logo here

Roles of the State PHL

(continued)

- Rapid testing
- Improvement of clinical laboratories throughout the state
- Applied research
- Support of disease surveillance and epidemiology investigations



Emergency Preparedness and Response





Insert seal
or logo here

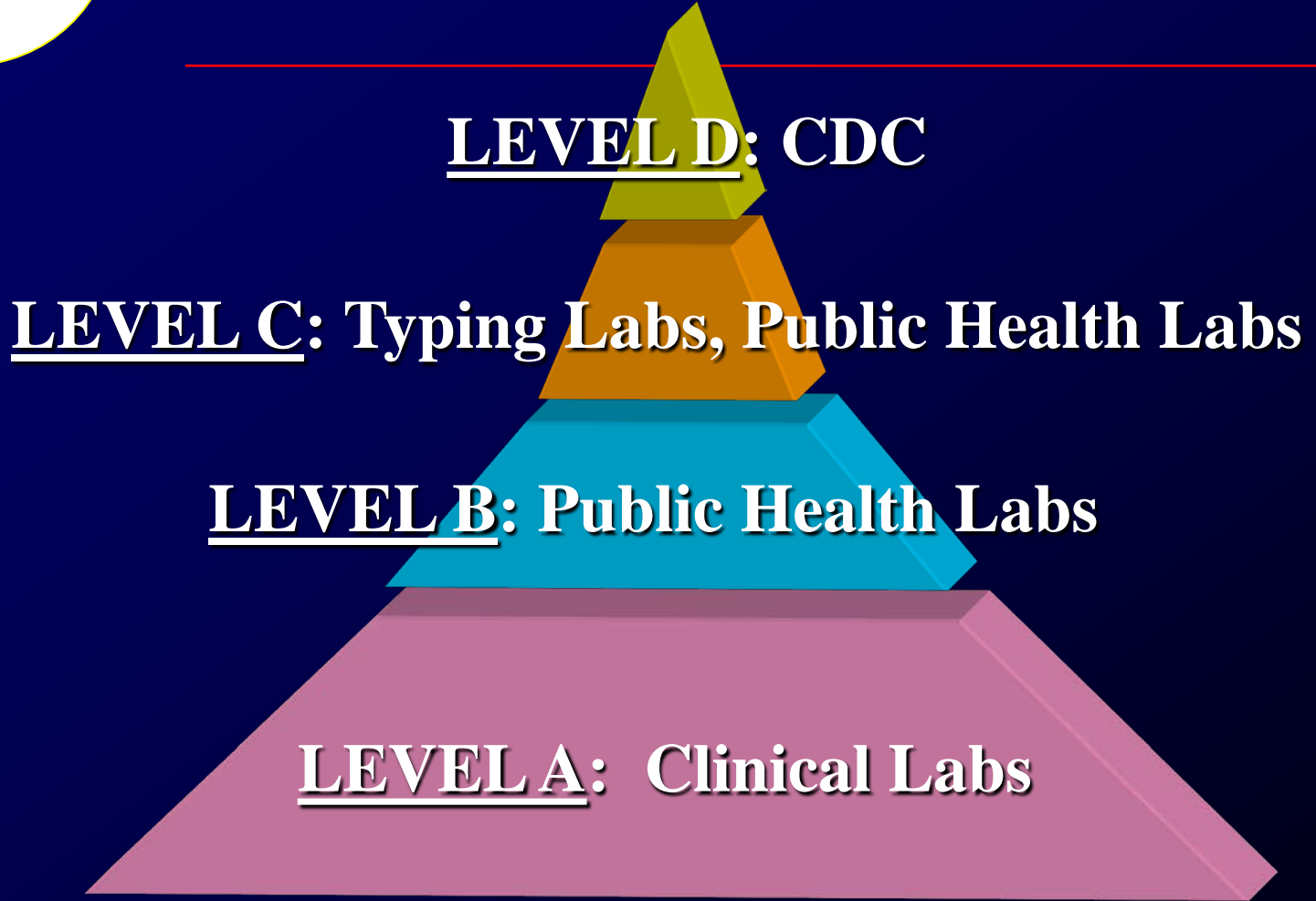
The Laboratory Response Network

- Network supports response to all kinds of public health emergencies, but especially detection and response to BT
- Includes both public and private labs
- Labs test according to consensus protocols
- Timely and accurate testing and reporting
- Linked with local, state, and federal agencies
- Supported by CDC and FBI



Insert seal
or logo here

LRN Laboratory Levels





Insert seal
or logo here

LRN Safety & Proficiency Adequate to...

Level D Labs-
Work at BSL-4

Confirm, Validate and Archive. Perform high level characterization. Probe for universe of agents.

Level C Labs -
Work at BSL-3

Rapid identification. Rule-in and Refer.

Level B Labs -
BSL-3 Recommended

Perform susceptibility testing. Isolate. Identify. Rule-in and Refer.

Level A Labs - Use BSL-2

Detect early (presumptive cases). Rule-out or Refer.





Insert seal
or logo here

Public Health Laboratory(ies) Serving this Community

- Use this slide to describe what public health laboratories serve this community, what agency they are part of, where they are located.
- Describe how LRN works in this community – does this PH lab support other states, or get support from other states?



Insert seal
or logo here

Services Usually Offered by Public Health Laboratories

- Primary analysis of specimens from people in epidemiologic/enzootic investigations
- Primary analysis of specimens from people getting clinical services in health departments
- Referral services for hospital and clinical laboratories to help identify unusual or important organisms
- Regional referral services as part of LRN
- May do breathalyzer and blood alcohol testing under contract
- Screening of newborns for metabolic disorders
- Testing of environmental samples





Insert seal
or logo here

Services Offered by this Public Health Laboratory

- Use this slide (or two) to briefly list the BT-relevant services your lab can provide.
- Rather than use technical names of tests, describe functions (see notes)





Insert seal
or logo here

Public Health Laboratory Authority and Regulation

- Use this slide to indicate what authority, if any, the state public health laboratory has to require submission of clinical specimens or isolates for confirmation or typing
- Also describe role, if any, of state public health laboratory in licensing of clinical laboratories and in quality assurance testing of these labs.





Insert seal
or logo here

Background and Training of Staff

- Laboratories employ scientists with training as medical technologists and/or as microbiologists at the bachelor's, master's or doctoral level.
- Also employ support staff, managers, data system managers, trainers
- Use this slide to mention the most highly trained members of your lab's staff and maybe some of their accomplishments. "Dr. So-and-so in our lab is the one who confirmed the anthrax diagnosis in the three patients from our state in late 2001."



Insert seal
or logo here

Clinical Laboratory Testing

- Preliminary testing occurs in physician's office, emergency department or at a lab collection point
- Commercial and hospital labs may make definitive identification of an organism
- For unusual organisms the specimen is sent on to the State PHL
- State PHL may make definitive identification or send to another lab in the LRN or to CDC



Insert seal
or logo here

Lab Record Keeping

- All these labs have careful protocols to document specimens, who they were collected from, status of testing, etc.
- But these do not meet requirements of chain of custody
- Labs need to know for which specimens chain of custody procedures need to be implemented because they may be evidence of a crime



Insert seal
or logo here

Environmental Samples for BT Agents

- Rapid field testing may be done by law enforcement, hazmat or PH workers
- CDC has not yet endorsed any of the rapid field tests for BT agents
- Specimens must always also be tested at Public Health Laboratories for definitive result
- **What environmental tests does this state public health lab perform?**



Insert seal
or logo here

Environmental Laboratory Testing

- Specimens of water, food, air, dust, swabs, etc
- If obtained in a public health investigation, will usually go to a public health lab (or Agriculture Dept lab) and then into the LRN as needed
- If obtained in a law enforcement investigation, will usually go to forensic laboratory



Insert seal
or logo here

Sample Submission

- Use this slide to describe your agency's procedure for obtaining, logging in, and processing specimens taken when a suspicious substance is found
- Describe how you implement chain of custody requirements
- Who makes the decision about sending a specimen to the PH lab for testing? Is the lab itself in the loop on the decision-making?





Insert seal
or logo here

Lab Results

- Who gets results on specimens submitted to the public health lab?
- Who is authorized to receive results if they request them?
- How are they sent out? (phone call, written result, e-mail message, fax, file transfer?)





Insert seal
or logo here

Local Examples

- Examples of white powder hoaxes in this locale in fall of 2001
- Tests performed – pictures of kinds of specimens submitted
- What do you want people to do in this community with unusual objects citizens are concerned about?
- What kind of training do 911 dispatchers have in handling calls from citizens concerned about white powders?





Insert seal
or logo here

How to Reach Us

- Names and phone numbers for key public health laboratory contacts
- Include 24-hour contact number(s)
- Include cell-phone or pager numbers, e-mail addresses as appropriate
- Give web site address for more information





Forensic Laboratory

Insert seal
or logo here

Add your name here





Insert seal
or logo here

Forensic Labs

- Use this slide to describe which forensic laboratory serves this community – what organization is it part of?
- Describe also what services this laboratory generally provides in criminal investigations
- Describe what services this lab specifically provides that can support BT investigations
- (Use more than one slide if necessary)





Insert seal
or logo here

Additional Information about Forensic Labs

- Describe where you get services you need that exceed your capabilities
- How does the forensic laboratory relate to the medical examiner or coroner?
- Who does forensic chemical analysis?
- How do labs associated with different levels of law enforcement agencies relate to each other (e.g. city, state and FBI forensic labs)?





Insert seal
or logo here

Forensic Lab Authority and Regulation

- Are health care organizations required to supply certain kinds of materials to forensic laboratories in support of criminal investigations?
- What kinds of deaths become coroner's cases requiring autopsies in this community?
- What kinds of information developed by forensic labs are a matter of public record, if any?
- Other relevant regulations or laws?





Insert seal
or logo here

Background and Training of Staff

- Describe the training and background of your technicians and scientists.
- What other kinds of workers are employed in a forensic lab?
- Do lab technicians go to crime scenes to collect specimens or is there a separate unit that does this?
- Are forensic laboratory technicians trained and equipped to collect specimens in crime scenes with bacteriologic or toxic risk, or do others collect them?



Insert seal
or logo here

Services Offered by This Forensic Laboratory

Customize this list to your capabilities

- Fingerprinting and maintenance of databases
- Analysis of hair and other human materials
- Microscopic and chemical analysis of fiber, paper and other materials
- DNA testing of human specimens
- Blood types and other tissue testing
- Ballistics
 - Projectile characterization
 - Weapon analysis
 - Explosive debris analysis
- Etc??



Insert seal
or logo here

Sample Submission

- How do forensic laboratory staff obtain their specimens for testing?
- When do they go to a crime scene?
- How would an envelope containing both a threatening letter and a suspicious white powder be handled?
- Process taken when a suspicious substance is found
- Preservation of physical evidence and chain of custody considerations, including standards, in crime lab





Insert seal
or logo here

Lab Results

- Who gets results on specimens submitted to the forensic lab?
- Who is authorized to receive results if they request them?
- How are they sent out? (phone call, written result, e-mail message, fax, file transfer?)





Insert seal
or logo here

Chain of Custody

- Describe how your laboratory implements chain of custody.
- What are common errors in specimen collection or handling that make it impossible to use forensic evidence in court?





Insert seal
or logo here

Field Response Protocols

Chain of Custody Issues in the Field and the Laboratory

- The need for chain of custody
 - “Everything goes to court...”
- Field vs. laboratory chains
 - Lock and Key Requirement
 - Tampering vs. Accidental interference
 - University Laboratory Example...
- The complete chain
 - He who collects, testifies...

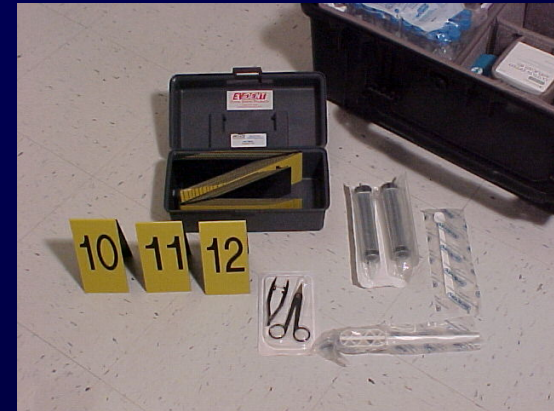


Insert seal
or logo here

Field Response Protocols

Biological Response Kits and Materials For Field Collection and Screening

- Overpacking Requirements
 - Diagnostically Appropriate
 - Legally Appropriate
 - Sterile vs. Certified Clean
- Field Screening Procedures
 - Protecting Personnel
 - Protecting Laboratory Equipment and Capability
 - Noting the Results for Lab Personnel



Insert seal
or logo here

Field Response Protocols

Forensic Laboratory Testing vs. Diagnostic (Health) Lab Testing

Forensic and Diagnostic Labs have different goals:

- Forensic Lab Testing
 - DNA Strain Comparison
 - Chemical Analysis (Explosives)
 - Blood Evidence
 - Alcohol / Drugs
 - Trace Evidence (Packaging)
 - Fingerprint
 - DNA

Insert seal
or logo here

Field Response Protocols

Forensic Laboratory Testing vs. Diagnostic (Health) Lab Testing

Forensic and Diagnostic Labs have different goals:

- Diagnostic Labs
 - Analysis of blood and other body fluids for diagnostic/treatment purposes
 - Rarely requires chain of custody for handling of specimens (exceptions: drug & blood alcohol, rape kits)



Insert seal
or logo here

Local Examples

- Examples of white powder threats or hoaxes in this locale in fall of 2001
- Tests performed – pictures





Insert seal
or logo here

Testifying in Court

- Who testifies on behalf of forensic laboratory?
- What kinds of errors in specimen collection or handling weaken a prosecution?
- How do you prepare for testimony?





Insert seal
or logo here

Inter-lab Coordination

- Under what circumstances will crime lab work with / cross over to PH lab for microbiological or chemical analysis?
- What agreements are currently in place, if any, about who processes which kinds of specimens, or how specimens are shared? What agreements are needed, if any?
- How would an envelope containing both a threatening letter and a suspicious white powder be handled?





Insert seal
or logo here

How to Reach Us

- Names and phone numbers for key forensic laboratory contacts
- Include 24-hour contact number(s)
- Include cell-phone or pager numbers, e-mail addresses as appropriate
- Give web site address for more information



Insert seal
or logo here

Questions

