

# 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

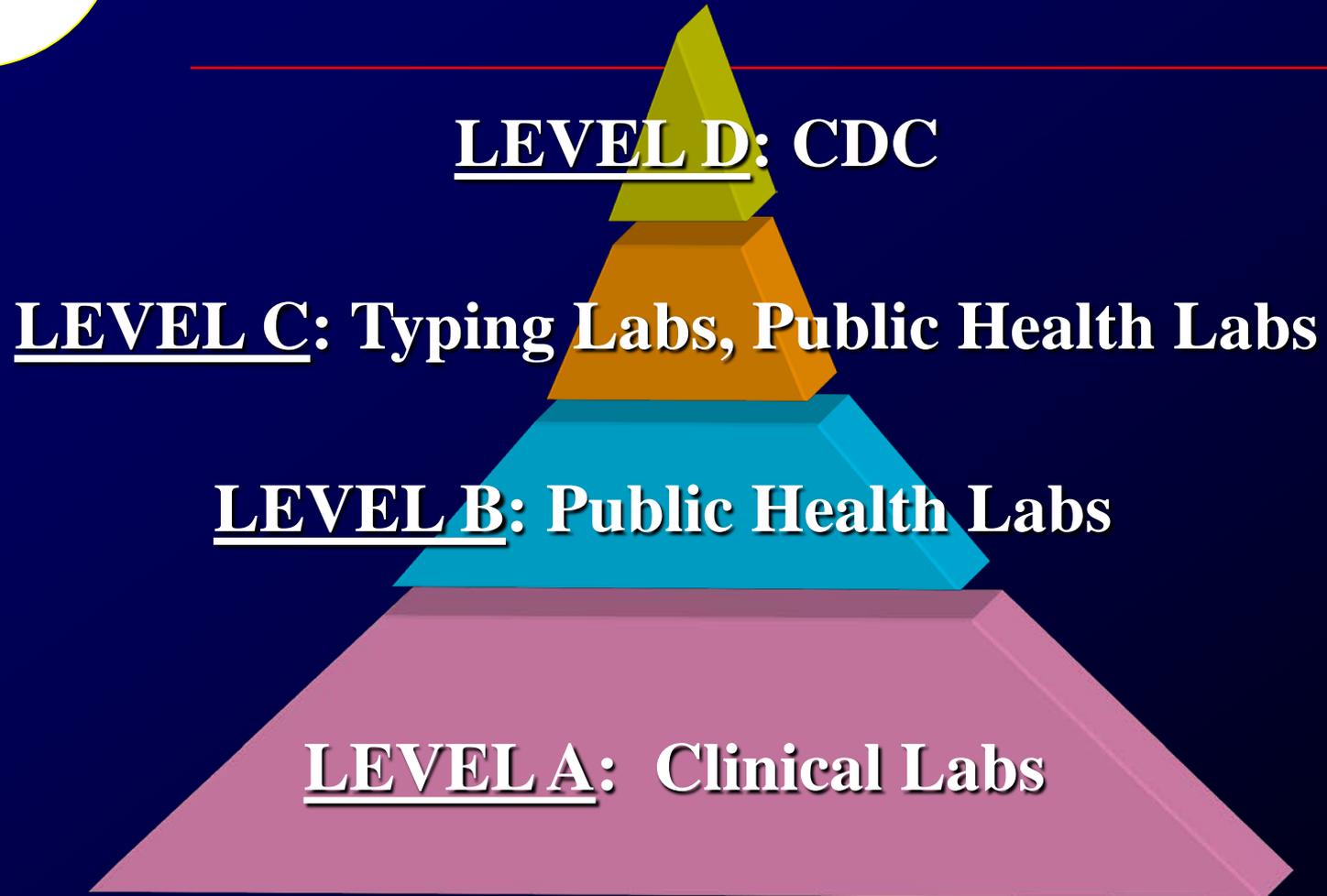
---

- 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...

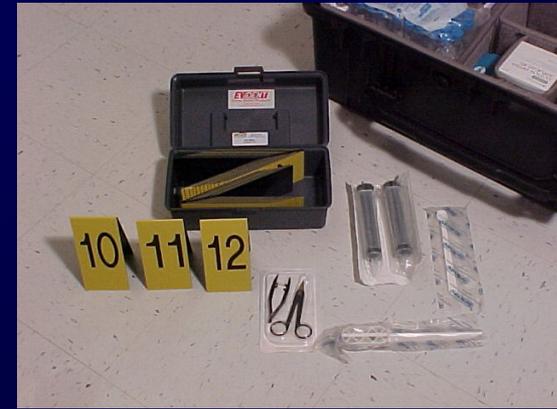


Insert seal  
or logo here

# 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

