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**Bioterrorism**  
**SIM Meeting – December 13, 2001**  
**St. Michael's Medical Center**  
**Newark, New Jersey**

**Clinical Laboratory Procedures**

The CDC Laboratory Response Network (LRN), (Oversite By: CDC, FBI, US Army)

- Members (1) Public: Health Labs (Hospitals, State & Local Health Depts.) Federal Labs.
- (2) Non-public Health (voluntary)

- (I) 

<b>Level A</b> <b>(BSL-2)</b> <b>RULE OUT</b> <b>or</b> <b>REFER</b>
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 (1) Largest part of the network (clinical labs)  
(2) Perform simple "rule out" or "refer"  
(3) Refer to level B if presumptive, positive  
(4) Refer all suspect viruses to level B  
Anthrax (a) Gram stain  
(b) Colonial morphology  
(c) Hemolysis  
(d) Motility
- (II) 

<b>Level B</b> <b>(BSL-3)</b> <b>RULE OUT</b> <b>And REFER</b>
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 (1) Mostly Public: Health Labs (State Dept. of Health)  
(2) Confirm level a request  
(3) Extended tests  
(4) Rapid presumptive identification (FA, phage, antimicrobial sensitivity biochemical reactions)  
(5) Confirmatory identification  
(6) Can handle anthrax, (pestis, bot. toxins)  
(7) Refer to level C for critical biological agents (F. Tularensis, Brucella  
Anthrax (a) Phage Variola (a) Serology  
(b) PCR (b) Cell Culture  
(c) Serology (c) Chick Embryo
- (III) 

<b>Level C</b> <b>(BSL-3)</b> <b>RULE IN</b> <b>And REFER</b>
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 (1) Diagnostically more sophisticated  
(2) Nucleic Acid Amplification  
(3) Molecular Typing  
(4) Toxin Testing  
(5) Critical Agents Referred to level D
- (IV) 

<b>Level D</b> <b>(BSL-4)</b> <b>"HOT" Lab</b> <b>CDC</b> <b>Ft. Detrick</b> <b>Los Alamos</b> <b>FINAL</b>
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 (1) Additional forensic work with anthrax (Senator Leahy Letter)  
(2) Additional work with Y.pestis  
(3) VHF Agents (Ebola, Marburg, Lassa)



**TABLE 1 Summary of Recommended Biosafety Levels for Infectious Agents**

Biosafety Level	Agents	Practices	Safety Equipment (Primary Barriers)	Facilities (Secondary Barriers)
1	Not known to cause disease in healthy adults.	Standard Microbiological Practices.	None required.	Open bench top sink required.
2	Associated with human disease, hazard = auto-inoculation, ingestion, mucous membrane exposure.	BSL-1 practice plus: <ul style="list-style-type: none"> <li>Limited access;</li> <li>Biohazard warning signs;</li> <li>"Sharps" precautions;</li> <li>Biosafety manual defining any needed waste decontamination or medical surveillance policies.</li> </ul>	Primary barriers = Class I or II BSCs or other physical containment devices used for all manipulations of agents that cause splashes or aerosols of infectious materials; PPEs: laboratory coats; gloves; face protection as needed.	BSL-1 plus: Autoclave available.
3	Indigenous or exotic agents with potential for aerosol transmission; disease may have serious or lethal consequences.	BSL-2 practice plus: <ul style="list-style-type: none"> <li>Controlled access;</li> <li>Decontamination of all waste;</li> <li>Decontamination of lab clothing before laundering;</li> <li>Baseline serum.</li> </ul>	Primary barriers = Class I or II BSCs or other physical containment devices used for all manipulations of agents; PPEs: protective lab clothing; gloves; respiratory protection as needed.	BSL-2 plus: <ul style="list-style-type: none"> <li>Physical separation from access corridors;</li> <li>Self-closing, double-door access;</li> <li>Exhausted air not recirculated;</li> <li>Negative airflow into laboratory.</li> </ul>
4	Dangerous/exotic agents which pose high risk of life-threatening disease, aerosol-transmitted lab infections; or related agents with unknown risk of transmission.	BSL-3 practices plus: <ul style="list-style-type: none"> <li>Clothing change before entering;</li> <li>Shower on exit;</li> <li>All material decontaminated on exit from facility.</li> </ul>	Primary barriers = All procedures conducted in Class III BSCs or Class I or II BSCs in combination with full-body, air-supplied, positive pressure personnel suit.	BSL-3 plus: <ul style="list-style-type: none"> <li>Separate building or isolated zone;</li> <li>Dedicated supply/exhaust, vacuum, and decon systems;</li> <li>Other requirements outlined in the text.</li> </ul>
Biosafety Level	Agents	Practices	Safety Equipment (Primary Barriers)	Facilities (Secondary Barriers)

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Send us your [Comments](#).

Note: BSL formerly: P1, P2, P3, P4

