



# Development of Public-Private Laboratory Systems

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# The Old Paradigm

- A loose association of public health (state, county and city), hospital, and independent laboratories throughout the country.



# System Design



- Strategic Planning
  - ❖ Internal
  - ❖ With APHL, ASCP and ACLA
- Guidance
  - ❖ Steering Committee
  - ❖ CLIAC Updates
  - ❖ Comprehensive CDC-wide planning
- Formative Research

# Timely Opportunities



- Bioterrorism
  - ❖ “Develop a plan to improve working relationships and communication between Level A (clinical ) laboratories and Level B/C laboratories, (i.e. Laboratory Response Network laboratories) as well as other public health officials.”
- Threat of Chemical Terrorism
- Emerging Threats
- OIG Report
- OSCAR Database

# System Components



- Measurables
  - ❖ Core Functions
  - ❖ Healthy People 2010
  - ❖ OTPER Performance Goals
  - ❖ Performance Standards

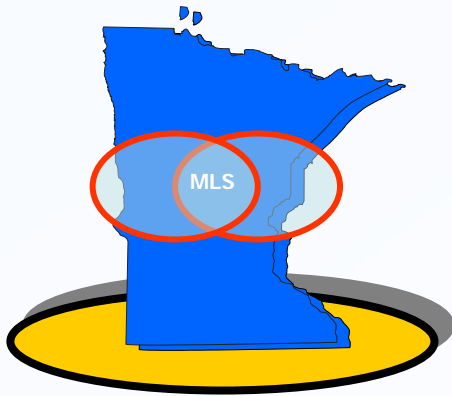
*“What Gets Measured Gets Done”*

# System Components (cont)



- Tools
  - ❖ National Center for PH Laboratory Leadership
  - ❖ Laboratory Program Advisor
  - ❖ APHL Clearinghouse
  - ❖ National Laboratory Database
  - ❖ Site visits by CDC staff
- Extrapolations from “lessons learned”
  - ❖ Specific
  - ❖ General

# Leveraging What Works



MINNESOTA LABORATORY SYSTEM  
A PUBLIC AND PRIVATE COLLABORATION

- Surveying Clinical Labs
- Establishing linkages
- Education
- Proficiency Testing

# Educational Tools

The poster features four columns, each representing a different bioterrorism agent. Each column includes a petri dish with characteristic bacterial growth patterns, a corresponding micrograph showing the bacteria's morphology, and a list of key characteristics. The background is a dark purple gradient with a large, faint biohazard symbol.

Agent	Micrograph Description	Key Characteristics
<i>Bacillus anthracis</i>	Micrograph showing long, thin, rod-shaped spore-forming bacilli.	<ul style="list-style-type: none"><li>• Large, gram positive, spore forming bacilli</li><li>• Non-hemolytic</li><li>• Non-motile</li><li>• Catalase positive</li></ul>
<i>Francisella tularensis</i>	Micrograph showing small, coccobacilli.	<ul style="list-style-type: none"><li>• Pivotal staining, tiny gram negative coccobacilli</li><li>• Slow growing, requires cysteine</li><li>• Oxidase negative</li><li>• Urea negative</li><li>• Nitrate negative</li></ul>
<i>Yersinia pestis</i>	Micrograph showing bipolar gram negative bacilli.	<ul style="list-style-type: none"><li>• Bipolar gram negative bacilli</li><li>• Lactose negative</li><li>• Urea negative</li></ul>
<i>Brucella</i> species	Micrograph showing small, gram negative coccobacilli.	<ul style="list-style-type: none"><li>• Pivotal staining, tiny gram negative coccobacilli</li><li>• Slow growing</li><li>• Oxidase positive</li><li>• Urea positive</li></ul>

**BIOTERRORISM**

Recognize the agents of bioterrorism.  
You are the first line of defense.

**612-676-5253**  
AFTER REGULAR HOURS CALL 612-676-5414



# Educational Tools

**blood**

Hydrogen Cyanide  
Phosgene Chlorine  
Cyanogen Chloride  
Cyanogen Bromide  
Cyanogen Sulfide

**nerve**

Sarin  
Tabun  
VX  
Novichok

**blister**

Sulfur Mustard  
Phosgene Chlorine  
Nitrogen Mustard

**choking**

Phosgene  
Hydrogen  
Chlorine

**metal**

Diethylmercury  
Lead  
Copper  
Mercury  
Arsenic  
Cadmium

**Hydrogen Cyanide**  
SYMPTOMS INCLUDE:  
- Nausea  
- Tachycardia  
- Tachypnea  
- Cyanosis  
- Flu-like symptoms  
- Non-specific neurological symptoms

INDICATIVE TESTS\*  
- Increased anion gap  
- Metabolic acidosis  
- Narrow pH difference between arterial and venous samples

**Sarin**  
SYMPTOMS INCLUDE:  
- Diarrhea, dyspnea  
- Dizziness  
- Miosis  
- Bradycardia, brachycardia, tachycardia  
- Drowsiness  
- Lacrimation  
- Salivation

INDICATIVE TESTS\*  
- Decreased cholinesterase  
- Increased anion gap  
- Metabolic acidosis

**Sulfur Mustard**  
SYMPTOMS INCLUDE:  
- Itching  
- Erythema  
- Indolent blisters  
- Flu-like symptoms  
- Delayed eye irritation

INDICATIVE TESTS\*  
- Thiobarbitol present in urine

**Phosgene**  
SYMPTOMS INCLUDE:  
- Upper respiratory tract irritation  
- Rhinorrhea  
- Rhinitis  
- Coughing  
- Choking  
- Delayed pulmonary edema

INDICATIVE TESTS\*  
- Decreased pCO<sub>2</sub>  
- Decreased pCO<sub>2</sub>

**Diethylmercury**  
SYMPTOMS INCLUDE:  
- Cough  
- Metallic taste  
- CNS effects  
- Shortness of breath  
- Flu-like symptoms  
- Visual disturbances

INDICATIVE TESTS\*  
- Proteinuria  
- Blood mercury  
- Urine mercury

**CHEMICAL TERRORISM**

Call Poison Control 24/7 For Treatment Information  
**1-800-222-1222**

\* Call the MDH Clinical Chemists for appropriate specimen collection, packaging and shipping information at 01.2.676.5763

AFTER HOURS PLEASE CALL MEXI AT 01.3476.5414

# Lessons Learned – PPLIP - Information Technology

- Connecticut
  - ❖ Plan a new LIMS compatible with the CT electronic disease surveillance system
- Iowa
  - ❖ Implement automated fax system to reduce TAT and complement electronic reporting for reportable disease
  - ❖ Survey effectiveness of autofax system
- Nebraska
  - ❖ Develop and assess communication using secure information exchange (including image transmission of isolates) using STATpack®
  - ❖ Add videoconferencing
  - ❖ Conduct “challenge” exercise of an event using a bioterrorism mimic
- Rhode Island
  - ❖ Create a centralized clearinghouse for electronic reporting
  - ❖ Build capacity to link into the National Electronic Disease Surveillance System

# Lessons Learned – PPLIP - Communication

- Arkansas
  - ❖ Increase awareness of role of SPHL in 84 hospital-based labs using promotional material and training
- North Dakota
  - ❖ Develop and promote SPHL website for laboratory information; post agent specific quizzes and proficiency testing results
- Michigan
  - ❖ Promote statewide adoption of glomerular filtration rate calculation to monitor kidney function
  - ❖ Improve reporting of diseases identified by non-culture methods (i.e. serology, molecular)

# Lessons Learned – PPLIP – Environmental Lab Networks



- Minnesota

- ❖ Improve knowledge and laboratory practices in private and municipal water treatment laboratories
- ❖ Promote epidemiological investigation of coliforms
- ❖ Provide professional development for laboratory personnel

- Wisconsin

- ❖ Establish a public health and environmental protection laboratory system
- ❖ Conduct a survey of laboratory capacity and needs to open dialogue with laboratories
- ❖ Address professional training needs

# Lessons Learned – Michigan Integration Program

- Clinical laboratory added or modified an existing procedure due to state laboratory intervention

	Added N (%)	Changed N (%)
GBS Screening of pregnant women	7 (9%)	20 (26%)
GBS AST	9 (12%)	8 (11%)
Vancomycin screening agar for VRSA	45 (59%)	21 (28%)
D-zone test for inducible clindamycin resistance in Staphylococcus	29 (38%)	12 (16%)
Diseases/isolate/test results that are reportable to the state health department	17 (22%)	15 (19%)

# Lessons Learned – Systematic Research - Jon Counts, DrPH



- Laboratory survey
  - ❖ Effect of various interventional strategies on AST
  - ❖ Utilization of voluntary lab practice guidelines
  - ❖ Their opinion of microbiology services provided by the WA laboratory delivery system
- 5000 physicians to be surveyed
  - ❖ Use of laboratory practice guidelines
  - ❖ ID specialists will be surveyed regarding AST and reporting

# Lessons Learned – Systematic Research



- What factors affect implementation of voluntary guidelines?
- Focus groups to explore why labs can or cannot implement MMWR recommendations for prevention of Perinatal Group B Strept Infection
- Capture general lessons to help CDC and others better craft voluntary guidelines in the future

# National Laboratory Database



- Updated OSCAR data
- Searchable online
- Registration information
- Proficiency testing enrollment
- New-
  - ❖ Patient Treatment Data
  - ❖ Testing Capacity Based upon CPT-coded billing





# The Future is Bright



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