



Wisconsin State
Laboratory of Hygiene
UNIVERSITY OF WISCONSIN-MADISON



Warheads...



Monkeypox the LRN's Next Battle

2022 WCLN Regional Meetings

9/2/22, 9/21/22, 9/22/22

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Outline

- What is the LRN
- Review of the purpose and history of the LRN
- LRN expectations of clinical labs
- LRN expectations of public health labs
- Past LRN responses
- Current and future LRN response
- Challenges to the LRN



What Does LRN Stand For?

- A. Laboratory Research Network
- B. Limited Resources Network
- C. Learning Resource Network
- D. Laboratory Resource Network
- E. Laboratory Response Network



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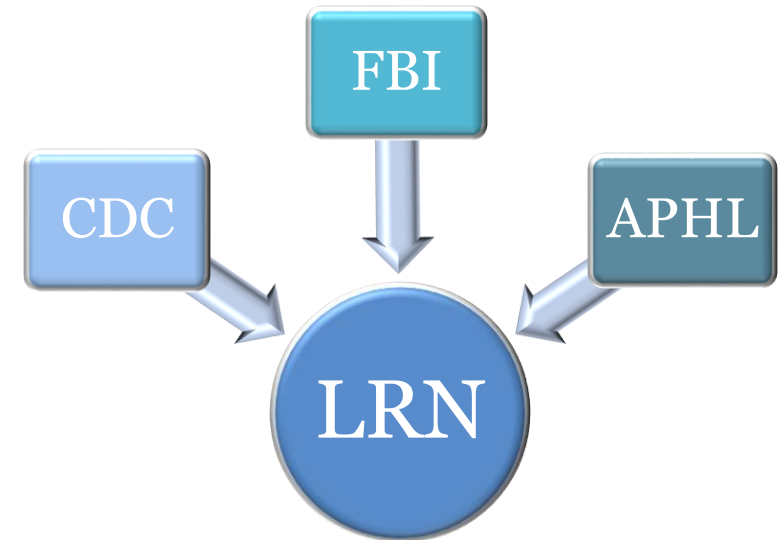
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The Laboratory Response Network (LRN) Mission



- Founded by the CDC, FBI and APHL in 1999
- The LRN is a national security asset that, with its partners, will develop, maintain, and strengthen an integrated domestic and international network of laboratories to respond quickly to biological and chemical threats and other high-priority public health emergencies through training, rapid testing, timely notification, and secure messaging of laboratory results.
- Expanded in 2001 just weeks after terrorist attack on the World Trade Center and the Pentagon, when letters containing spores of anthrax infected 22 people, killing 5





The LRN is often depicted by what specific 3 dimensional shape?

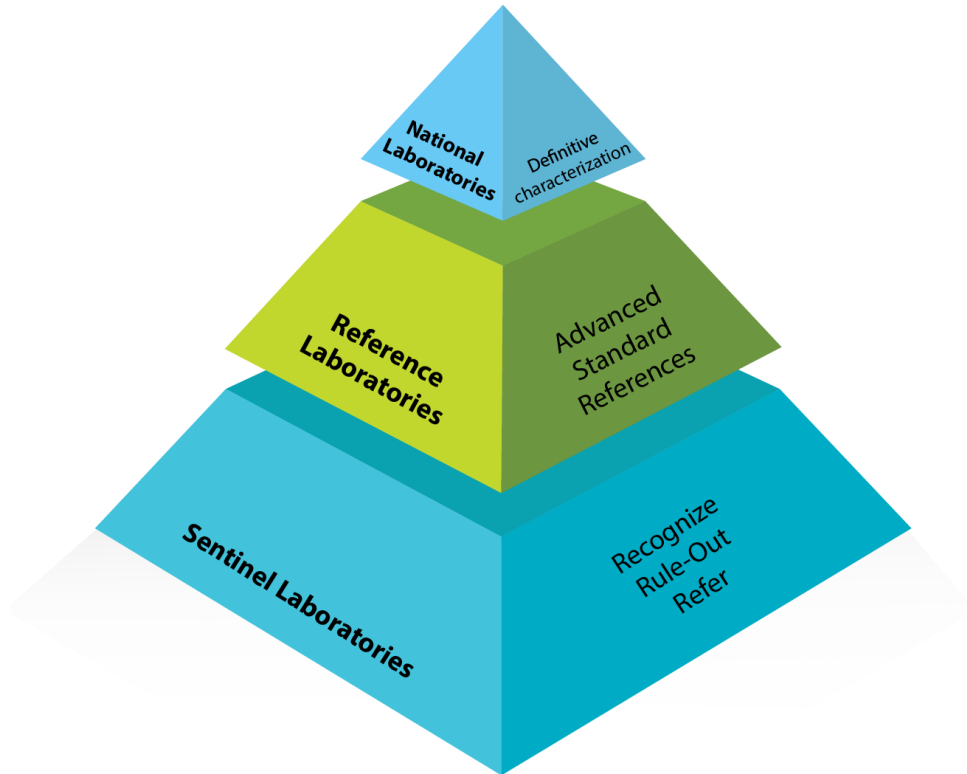
- A. Sphere
- B. Pyramid
- C. Cylinder
- D. Block
- E. None of the above



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Emergency Response and Preparedness (LRN B – Biological Threat Response)



<https://emergency.cdc.gov/lrn/index.asp>
Photo Courtesy of CDC DLS OneLab

- Strength of LRN is it's tiered capability construct
 - CDC, USAMRID, and NMRC at the top
 - State and Local PHLs in the middle
 - Essential broad base comprised of sentinel laboratories
- Sentinel laboratories play a key role in recognizing and alerting the LRN



Sentinel laboratories are what types of laboratories?

- A. Veterinary labs
- B. Food labs
- C. Clinical labs
- D. Military labs
- E. All of the above



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LRN Members

Map of LRN-B Reference Labs



*At least one in every state, 120+ total labs

- The LRN network consist of the following types of labs:

- Federal (CDC, USDA, FDA, etc.)
- State and Local PHLs
- Military
- Food Testing
- Environmental
- Veterinary
- International
- Clinical Laboratories
 - Private, commercial, and hospital-based labs



LRN-B Mission

To provide a rapid laboratory response to biological threats to inform critical decisions about public health and safety

- Producing data for smart public health decisions
- Maintaining and improving national laboratory capacity
- Strengthening national security
- Testing for old and new diseases
- Ensuring high standards, enabling high confidence in results





Do I Have to Participate in the LRN?

- A. No, membership is voluntary like joining a health club
- B. No, there is no CLIA regulation that mandates participation
- C. No, not if I don't have time
- D. No, my laboratory doesn't perform microbiology testing
- E. Yes, because my laboratory receives patient specimens for testing and may spot unusual results, I am automatically part of the LRN



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Sentinel Laboratory

- *"In the broadest sense, all laboratories capable of analyzing or referring specimens or samples that may contain microbial agents, biological toxins, chemical agents, chemical agent metabolites, or radiological agents function as sentinels in the public health laboratory system."*

<https://www.aphl.org/aboutAPHL/publications/Documents/Definition-Sentinel-Clinical-Laboratories.pdf>





Sentinel Laboratory

"Sentinel labs are the thousands of private, commercial, and hospital-based labs that test patient specimens as part of their daily routine. These labs are in a unique position to spot unusual results, alert public health and law enforcement authorities, and refer suspicious specimens to LRN reference laboratories for confirmatory testing."

<https://emergency.cdc.gov/labissues/substanceresponse.asp>





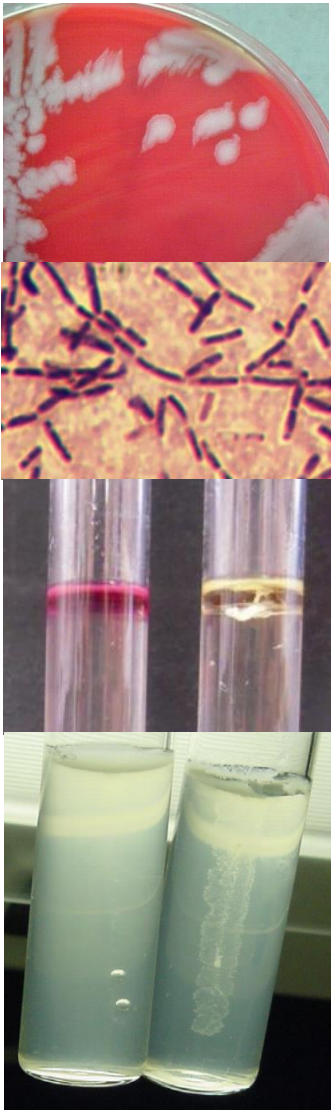
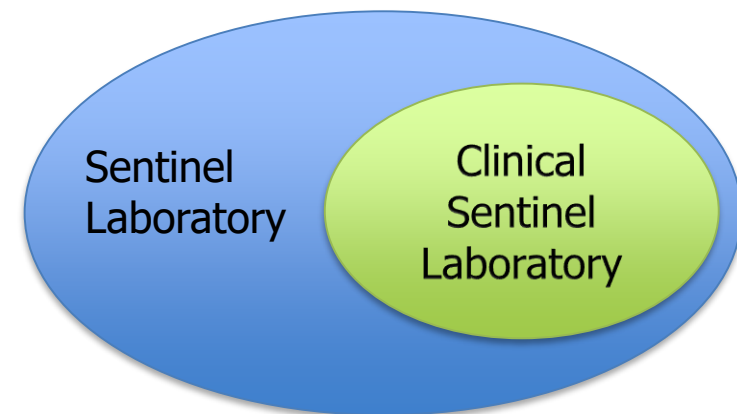
Are Sentinel Laboratories the Same as Clinical Sentinel Laboratories?

- A. Yes
- B. No
- C. It depends
- D. Is this a trick question?
- E. I don't know

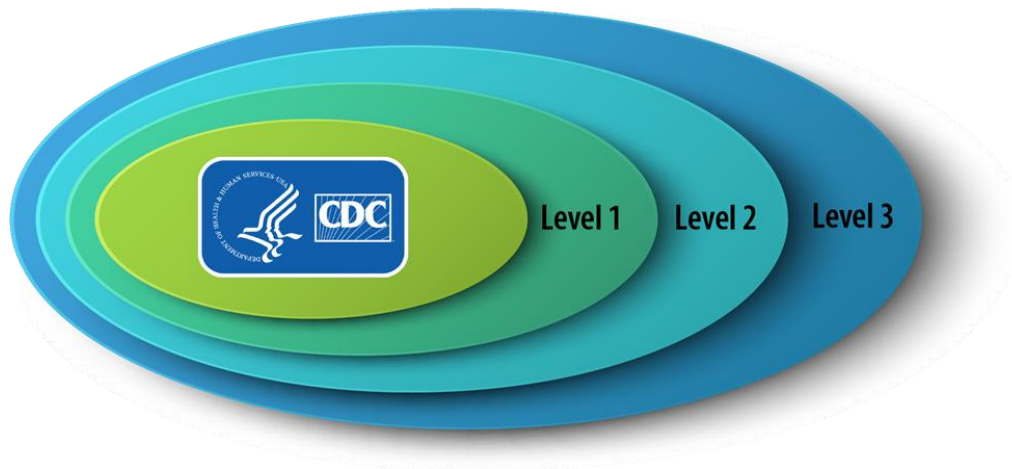


Clinical Sentinel Laboratories

- Are a subset of sentinel laboratories
- Are certified to perform high complexity testing under CLIA
- Laboratory in-house testing includes Gram stains and at least one of the following: lower respiratory tract, wound or blood cultures.
- Perform rule-out testing



Emergency Response and Preparedness (LRN C – Chemical Threat Response)



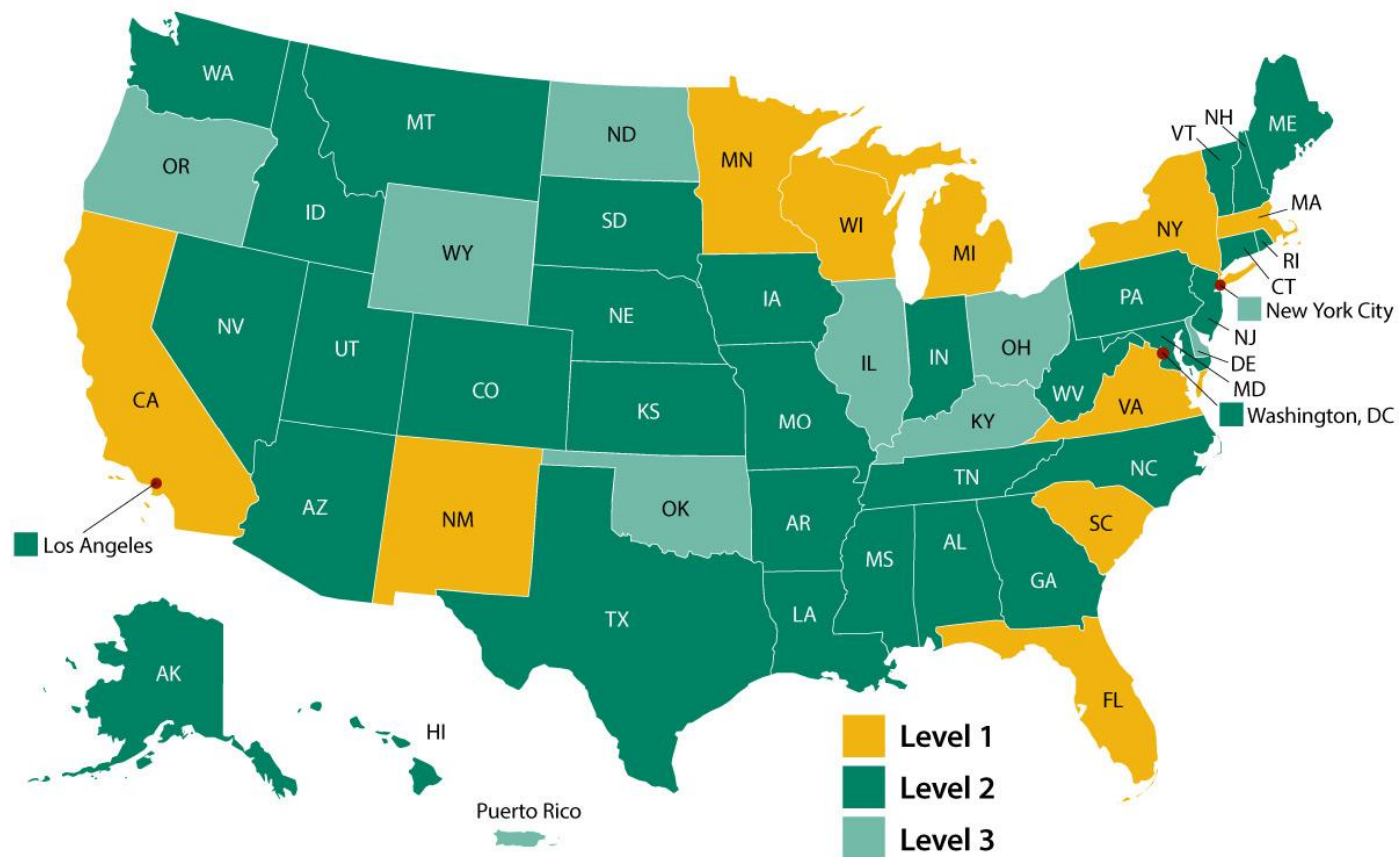
<https://emergency.cdc.gov/chemical/lab.asp>

Picture Courtesy of CDC DLS OneLab

- The 3-tiered LRN-C system is capable of rapidly detecting and responding to a wide range of chemical threat agent exposures.
- Clinical laboratories play a crucial role in chemical emergencies by collecting, packaging, and shipping specimens to confirm chemical exposure
 - Blood
 - Urine



LRN-C Labs





LRN Expectations of Sentinel Labs

- Notify public health of any unusual event
 - Unusual isolate
 - Unusual volume of patients ill with similar symptoms
- Perform rule-out testing
- Maintain packaging and shipping certification
- Provide emergency response contact information
- Participate in communication exercises
- Participate in rule-out exercises
- Establish culture of biosafety and routinely perform risk assessments



LRN Expectations of Public Health Labs



- 24/7 – emergency pager
- Contact database
- Effective communications
- Advanced testing capabilities for biothreat agents
- Communication and biothreat exercises
- Packaging and shipping proficiency
- Continual biosafety and biosecurity risk assessment
- Assures training for sentinel laboratories in:
 - Biothreat agent recognition, rule-out, and refer testing
 - Packaging and shipping
 - Biosafety/biosecurity





Development of the Wisconsin Clinical Laboratory Network (WCLN)

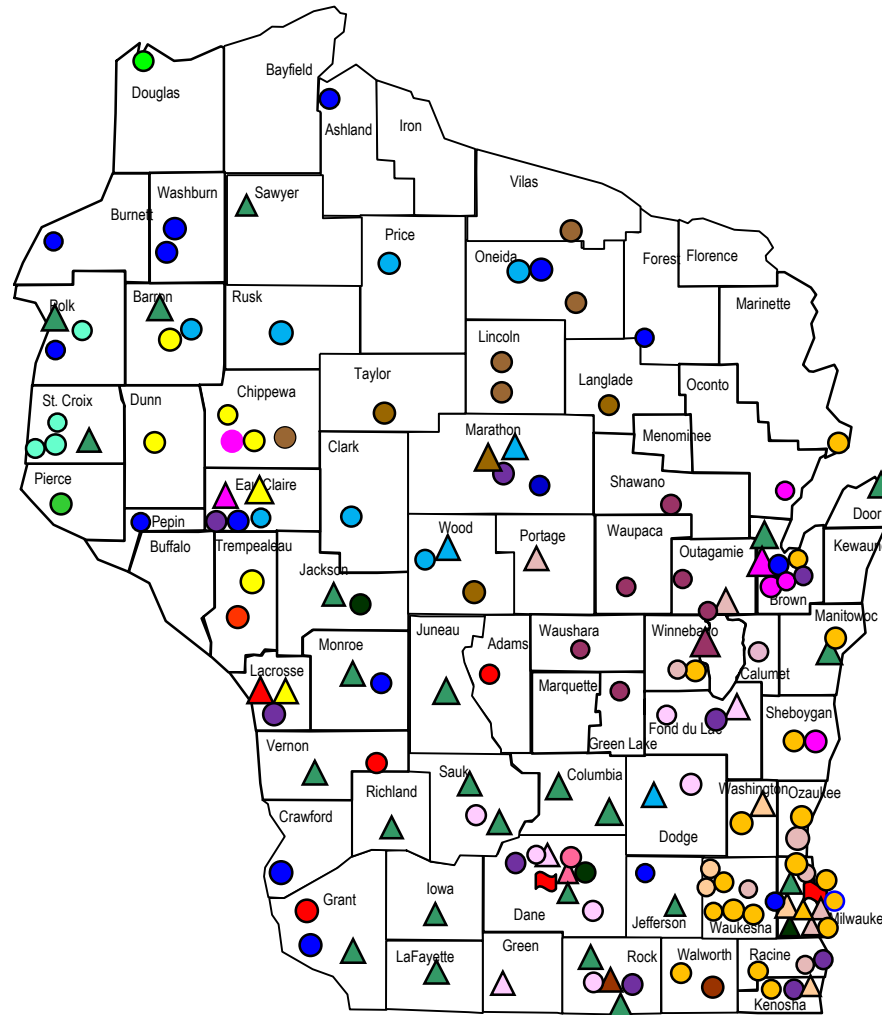
- The WCLN is comprised of ~135 clinical and public health laboratories
- About 45 laboratories meet the "Sentinel Clinical Laboratory Definition" and perform rule-out-testing for bioterrorism agents.
- WCLN is a partnership of clinical and public health labs that is coordinated by the Wisconsin State Laboratory of Hygiene.
- WSLH partners with and is supported by a Laboratory Technical Advisory Group (LabTAG)
- WCLN Statement of Purpose
- WCLN listserve
- WCLN exists for emergency preparedness and response, but also to serve the WCLN members



Wisconsin Clinical Laboratory Network - 2021



- Local Public Health Laboratories
- Independent Clinical Laboratories
- Gundersen Health System
- Mayo Clinic Health system
- Mercy Health System
- Marshfield Clinic Health System
- SSM Health System
- Ascension Healthcare
- Aspirus Healthcare
- Health Partners, MN
- Allina Health, MN



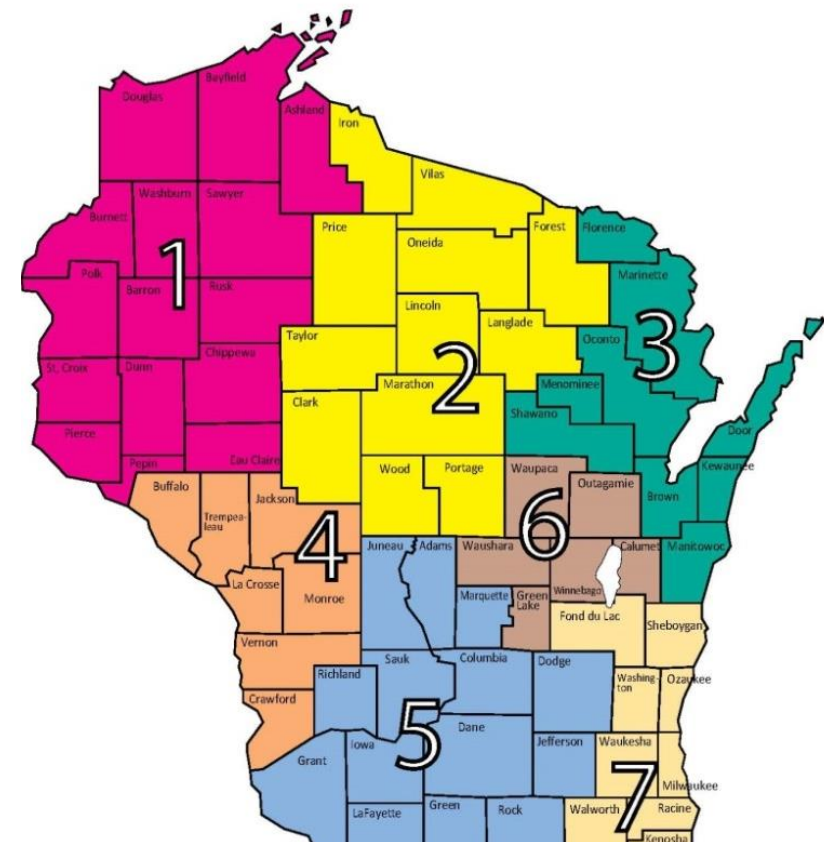
- Hospital Sisters Health System (HSBS)
- Advocate Aurora Health System
- Essentia Health System, MN
- ThedaCare Healthcare
- UW Hospital System
- VA Hospital System
- Froedtert Health
- Reference Laboratories
- Independent Sentinel Clinical Laboratories

WCLN Laboratory Technical Advisory Group (LabTAG)



- One member from each of the seven emergency preparedness regions plus three or more additional at-large members
- Member diversity reflects the diversity of the various types of laboratories in the state ranging from small rural critical access hospitals to large multi-facility healthcare systems
- Member educational degrees are also diverse, representing all levels from bench-level laboratory scientists, to Ph.D. Directors
- Meet annually for an all day face to face meeting
- Have monthly, or as needed conference calls
- Written mission, objectives, and expectations

Map of WCLN Regions





When Does the LRN Respond?

- A. When a pandemic is declared
- B. When there is a new emerging pathogen that impacts public health
- C. When you identify a suspect select agent
- D. When a known pathogen behaves differently causing different more serious symptoms
- E. All of the above

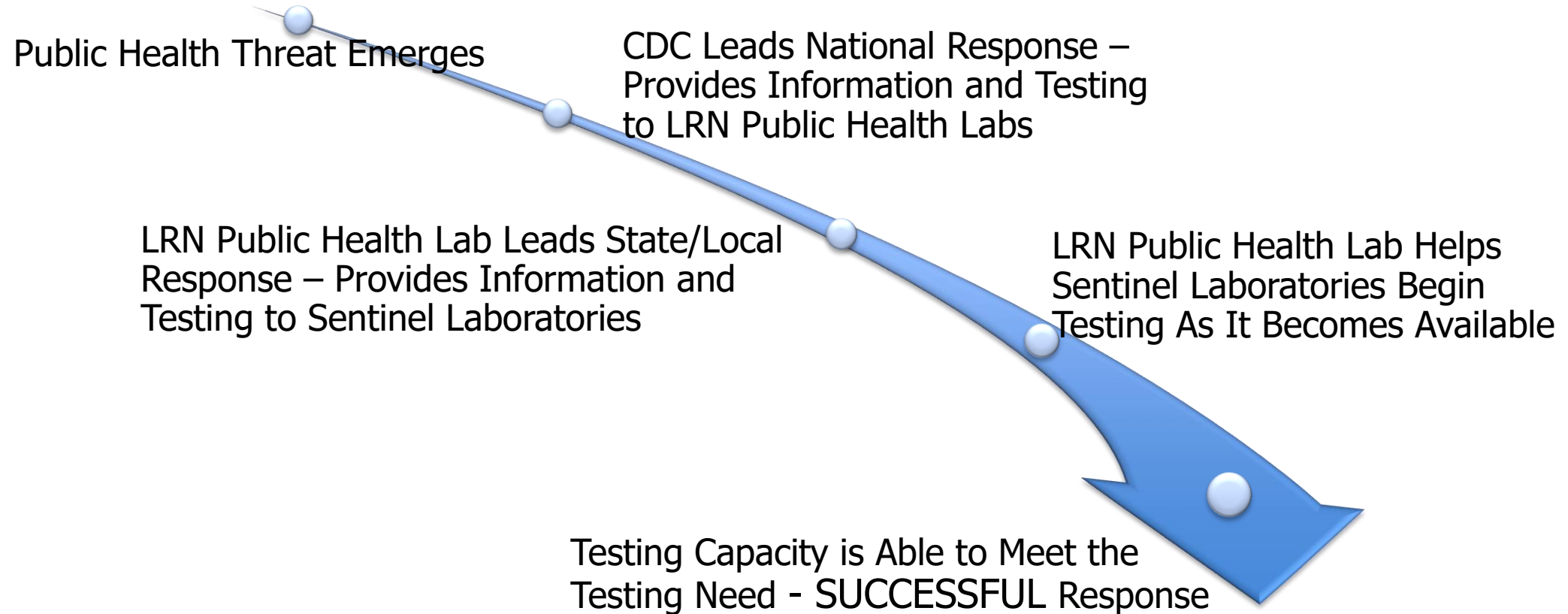


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LRN Workflow



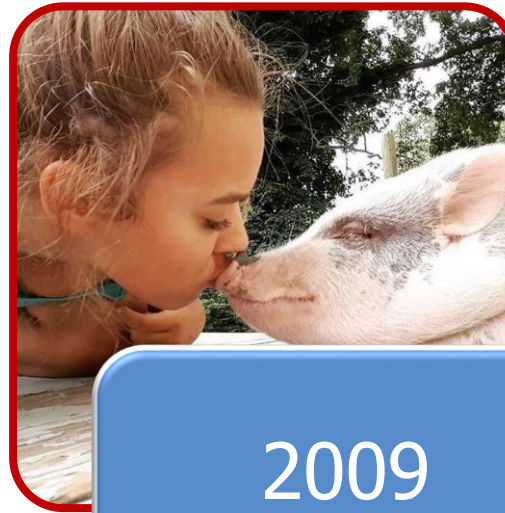


LRN Past Responses

It's not just about bioterrorism select agents



2001
Anthrax
Bioterrorism
Attacks



2009
Novel
H1N1
Pandemic



2012
MERS CoV



LRN Past and Current Responses

It's not just about bioterrorism select agents



2014
Ebola



2015
Zika



2020s
Sars-CoV-2
Pandemic

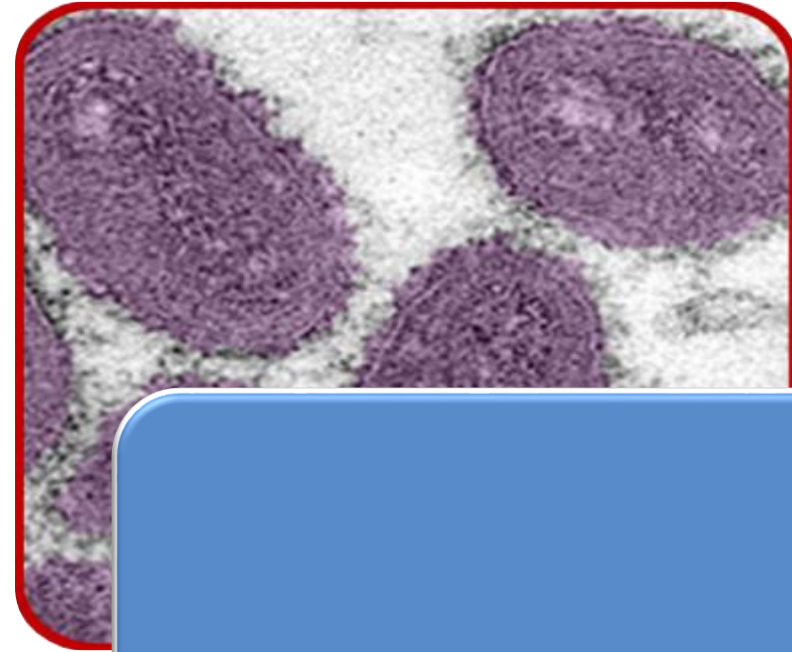


LRN Past and Current Response

Past



Current



2003 Monkeypox

2022 Monkeypox

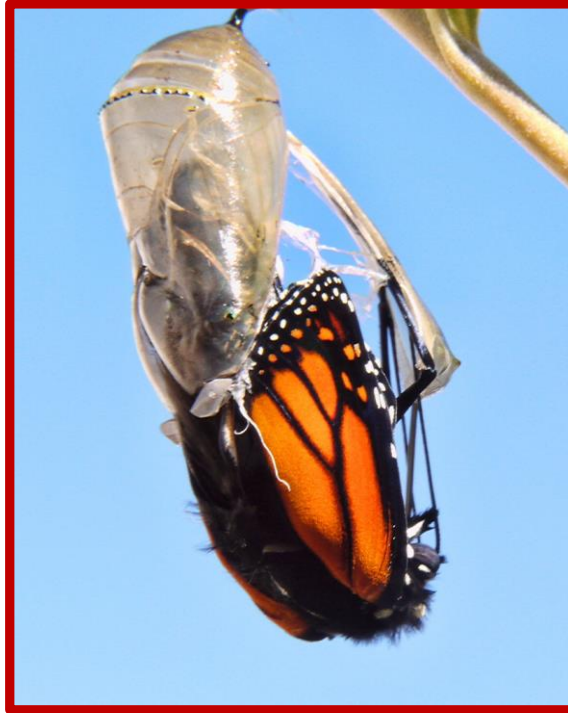


LRN Future Response?

Pathogens to keep an eye on

Emerging Diseases

- SARS-CoV-2 and other novel coronaviruses
- Avian Influenza
- Drug resistance
- Candida auris
- Tick borne diseases
 - Lyme, Anaplasma and Ehrlichia
- Nipah virus
- Acute Flaccid Myelitis



Re-emerging Diseases

- Malaria
- Tuberculosis
- Cholera
- VPDs (measles, mumps, pertussis)
- Gonorrhea

What Will Emerge or Re-emerge?



We Must Always Be Watchful

We don't know what, where, or when, but we know that another emerging pathogen is coming





Build and Maintain Partnerships to Develop the Respect and Trust Necessary For a Coordinated Response

How?

- Communicate transparently and honestly
- Regularly keep in touch
- Share information
- Collaborate
- Support each other
- Be inclusive and honor diversity



An emergency is not the time to exchange business cards.



Who Are My Partners In Emergency Preparedness and Response?

- A. Other Clinical Laboratory Professionals
- B. Infection Control
- C. Local and State Public Health
- D. WSLH
- E. All of the above



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How Do We Prepare?

Biosafety:

We protect our most valuable asset – our staff

- We pay attention to biosafety every day by putting on our biosafety glasses as part of our PPE
- We ensure we have biosafety plans inclusive of a good occupational health program and update them as needed
- We regularly perform risk assessments, review them at least annually and revise as needed
- We train our staff not just on testing but also on biosafety

Prepare



Protect



How Do We Prepare?

Communication:

Utilize the tools we have to rapidly communicate

- Read and widely share laboratory messages
- Share information and ask questions on the WCLN listserv
- Attend WCLN in person events and network
- Use email or telephone to contact individuals at the WSLH or your regional LabTAG representative
- 24/7 emergency pager always is available





Challenges for the LRN

We understand that the clinical labs are challenged by:

- Difficulty maintaining adequate staffing levels
- Frequent staff turn-over
- Emergency preparedness/response not seen as a priority by hospital administration
- No CMS/CLIA/CAP/Joint Commission/ etc. regulation
- Never enough time
- Everyone is working at high stress level



But think about the consequences of not being prepared?



There is Power in Our WCLN!



WCLN Laboratory Superheroes



Who will you Nominate This Year?

Peter A Shult Award





Thank you!

- Alana Sterkel
- CDC DLS OneLab

