UNMET NEEDS

- Increase CDC Public Health Emergency Preparedness (PHEP) funding for public health laboratories to prepare for and respond to all threats
- Provide resources to build and maintain a competent public health laboratory workforce, ensure outreach, training and coordination with sentinel clinical and other laboratories
- Increase funding at CDC to support the nation's Laboratory Response Network (LRN) which ensures a robust system for the detection of chemical, biological and emerging threats
- Provide funding to CDC to improve States' ability to detect radiological exposure in humans

BACKGROUND

In accordance with Presidential Decision Directive 39, the Centers for Disease Control and Prevention (CDC), the Federal Bureau of Investigation (FBI) and the Association of Public Health Laboratories (APHL) formed the LRN in 1999. This network is the nation's premier system for identifying, testing and characterizing potential agents of biological and chemical terrorism as well as emerging threats. The LRN's integrated system of state and local public health, federal, military and international laboratories enables it to respond quickly to all threats.

State and local public health laboratories comprise approximately 70% of the 146 LRN Biological Reference Laboratories and almost 100% of the LRN Chemical Laboratories. These laboratories produce high-confidence test results that are the basis for threat analysis and intervention by both public health and law enforcement authorities.


The Public Health Emergency Preparedness (PHEP) cooperative agreement has supported preparedness and response efforts in state, local, tribal and territorial public health departments since 2002. This funding ensures that public health departments, including public health laboratories within the LRN, have the capacity and capability to effectively respond to all-hazard threats, such as infectious disease outbreaks, natural disasters, and biological, chemical, nuclear and radiological emergencies.

LRN FOR BIOLOGICAL THREAT PREPAREDNESS (LRN-B)

A primary concern of the global public health community is emerging infectious diseases such as Zika, Ebola, Middle East Respiratory Syndrome (MERS) and novel influenza viruses. In 2015, Zika virus, closely related to dengue, yellow fever and West Nile virus, emerged in the Americas where the outbreak has reached pandemic levels. Although Zika virus rarely causes death, it is potentially linked to infant microcephaly and a rare immune disorder called Guillain-Barré syndrome (GBS). As of February 18, 2016, the World Health Organization (WHO) reported a total of 2602 laboratory-confirmed cases of Zika virus, statistics that have kept the WHO and CDC vigilant and the public

health community prepared to respond. CDC has utilized polymerase chain reaction (PCR) testing, IgM Enzyme-Linked Immunosorbent Assay (ELISA) and Plaque Reduction Neutralization Test (PRNT) for the laboratory confirmation of potential cases. The CDC leveraged the LRN-B to implement these testing capabilities in public health laboratories across the country.
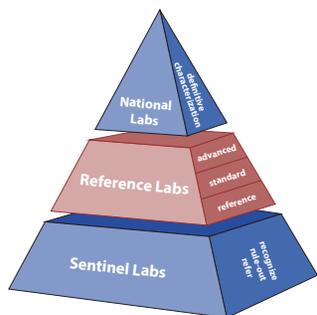
LRN-B Pyramid

The LRN-B is a critical public health asset which offers standardized testing and rapid, high confidence test results for biological threat agents and emerging infectious disease. Response to Zika has not been the first time the LRN-B has been called into action; in 2014 the network was leveraged to respond to one of the largest outbreaks of Ebola in history. The LRN-B has also responded to other public health threats such as anthrax, West Nile virus, H1N1, SARS and MERS. The distributed model of the LRN-B ensures nationwide capacity to rapidly respond and implement testing capabilities for threats.

The ability of our nation to prepare for and respond to global threats is made possible due to CDC PHEP funding, which supports over 800 laboratorians in the 50 state, District of Columbia, and Puerto Rico public health laboratories. In 2015, this funding allowed these public health laboratories to test thousands of samples for various threat agents. The ability to rule out threats is equally important for global health security as demonstrated in the ongoing response to Zika Virus. However, as PHEP funding declines, there is an erosion of skilled laboratory workforce which is difficult to rebuild while constantly responding to threats.

LRN FOR CHEMICAL THREAT PREPAREDNESS (LRN-C)

Through continued PHEP funding, the 53 laboratories that comprise the LRN-C maintain capabilities to respond to local events in a quick and efficient manner to calm public fears or drive treatment regimens. LRN-C laboratories,
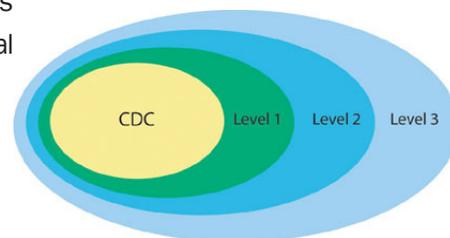

CDC FUNDING
PHEP
(Dollars in millions)

FY 2016: $660
FY 2017: $660 (requested)
FY 2017: $750 (required)

however, struggle to maintain and replace aging equipment and train employees: in 2014, five public health laboratories were forced to decrease their chemical threat capability, thus affecting rapid response to public health threats.

When over 5,000 gallons of the industrial chemical 4-methylcyclohexane methanol (MCHM) were leaked into West Virginia's Elk River in January 2014, over 300,000 people in the local area found themselves without safe drinking water. Used to wash coal, MCHM can cause a range of symptoms like headaches, eye and skin irritation, and difficulty breathing with exposure to high concentrations. Local authorities trying to determine when the water was safe to use relied heavily on the water testing expertise of the West Virginia Public Health Laboratory. The Drinking Water personnel provided 24/7 support and used the LRN-C equipment to mount an effective response. The WV Public Health Laboratory allowed reported results three times faster than the other non LRN-C laboratories. ■

LRN-C

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