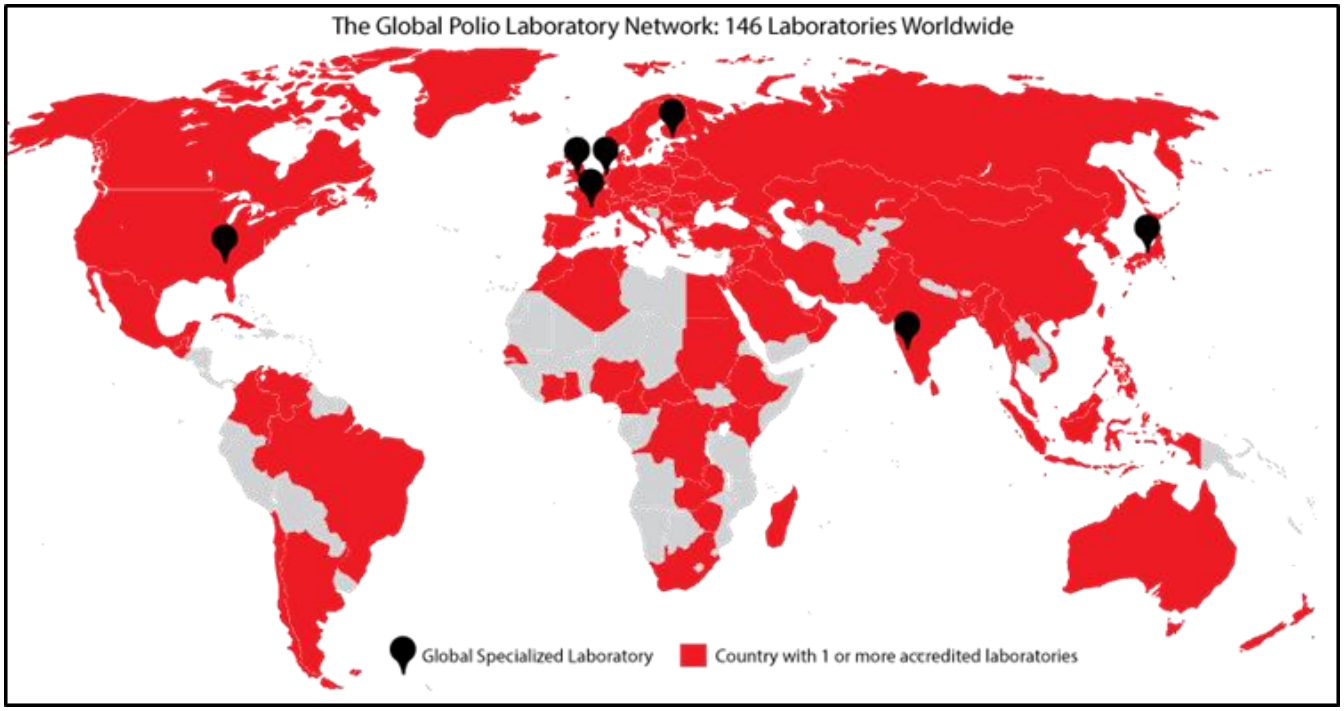
June 29, 2015

Dear Colleagues,

Surveillance is crucial to detect and track polio and to certify when it is gone. The WHO Global Polio Laboratory Network (GPLN) has been an integral part of polio eradication efforts and acute flaccid paralysis (AFP) surveillance for the past 25 years and is an unprecedented global collaboration to establish a state-of-the-art global lab network. The GPLN has enabled timely and effective response to polio outbreaks by detecting poliovirus in people with AFP, identifying which poliovirus strain is present (wild or vaccine-derived), and tracking the virus using genetic fingerprinting to pinpoint its geographic origin. Genetic fingerprinting identified the origin of newly introduced poliovirus strains in Central Africa, the Horn of Africa, and the Middle East in 2013, and demonstrated transmission of poliovirus strains across the Afghanistan-Pakistan border in both directions in 2014.

The GPLN includes seven global specialized laboratories and 139 national or regional laboratories. The network emphasizes close integration of epidemiology and laboratory surveillance and collaboration with national immunization programs. This is crucial to ensure that the evidence required to document interruption of wild poliovirus (WPV) and vaccine-derived poliovirus (VDPV) transmission is available, and, ultimately, to certify that the world is polio-free.



All the global specialized laboratories and most regional laboratories are proficient in molecular techniques, including high-throughput poliovirus genetic characterization. Virologists produce and distribute phylogenetic trees showing current, detailed patterns of WPV and VDPV transmission. An example of the performance excellence of the GPLN is the Regional Reference Lab in Pakistan, which I recently visited. The laboratory identified the core polio-endemic reservoirs in Pakistan and Afghanistan, isolated orphan viruses that have circulated

undetected for several years, and documented the progressive reduction in poliovirus strains as the program has had more success. These laboratory results help guide program decision-making about how and where to best concentrate resources.

The GPLN depends on continuous scientific innovation. Network scientists develop new testing methods to keep one step ahead of the poliovirus. In 2014, the GPLN developed a new test to quickly and accurately identify VDPVs. This test was deployed to nearly two-thirds of network laboratories. In 2015, laboratories are evaluating new tests to directly detect poliovirus in stool samples, potentially accelerating detection of the virus – and deployment of control measures – by approximately one week.

The GPLN also conducts environmental surveillance for polioviruses and processes sewage samples collected at more than 150 sites around the world. For example, the lab in Pakistan used environmental surveillance to confirm ongoing WPV transmission in the country. These results have helped guide vaccination responses in both endemic and outbreak countries over the past two years.

As we switch from trivalent oral polio vaccine (OPV) to bivalent OPV in 2016, the GPLN will be critical to characterize each poliovirus strain and ensure prompt identification of any type 2 poliovirus still circulating. GPLN laboratories will also participate in the containment of polioviruses as we near eradication. In addition, as the Endgame Strategic Plan is implemented, we have an opportunity to create a legacy for the GPLN by helping countries keep the GPLN infrastructure and laboratory workforce to strengthen prevention and control of other diseases. For example, the GLPN laboratories in India, China, and Bangladesh have provided useful infrastructure and capacity for establishing surveillance for Japanese encephalitis.

I thank the dedicated scientists and technicians staffing the network worldwide for their work on polio eradication.

Thomas R. Frieden, MD, MPH
Director, U.S. Centers for Disease Control and Prevention
Chairman, Polio Oversight Board