



# Public Health Laboratories: Protecting the Public From Influenza

## **How do public health laboratories (PHLs) protect the public from influenza?**

PHLs continuously monitor to determine if flu is present in their community, and, if so, which flu viruses are circulating. They alert health decision makers to unusual flu viruses that could pose a health threat. They also participate in a World Health Organization network that determines when, where and which flu viruses are circulating in the world. This information is used to select strains to be included in the annual flu vaccine. *The public does not often hear about laboratory monitoring of flu viruses, but its importance cannot be overstated.*

## **How did PHLs respond to the H1N1 outbreak in spring 2009?**

During the first month of the H1N1 surge, PHLs received 100,000 samples, nearly the same number as in an average year (120,000 samples in 2007). In Texas, the state PHL normally received 20 flu specimens per day, but within a week, the volume had jumped to 1,000 specimens a day. In many states, the same team of scientists worked around the clock testing for the H1N1 virus.

Beginning in May, 2009, when CDC's new H1N1 test became available, PHLs were able to confirm the presence of H1N1, thus speeding local response to the pandemic and providing needed support to CDC (which had previously been the sole lab providing definitive test results). Before they received the H1N1 test, PHLs conducted testing to detect H1N1 flu viruses that could potentially match the pandemic strain. They forwarded viral isolates to CDC for definitive identification.

## **Why didn't PHLs have a test for the 2009 H1N1 virus early in the pandemic? Were they prepared?**

PHLs had been preparing for an influenza pandemic since 2005 and had tests available

that could quickly confirm the presence of seasonal flu viruses and the H5N1, or "bird flu," virus. However, a test specific for a new virus cannot be developed until the virus emerges. The expectation was that the next pandemic strain would arise in Eurasia, allowing PHLs time to prepare. Instead, H1N1 was first identified in the US, so labs had to gear up quickly to manage a flood of samples. The test for the new virus was developed by CDC, manufactured and deployed to PHLs within two weeks of the emergence of H1N1.

## **Has the role of PHLs changed now that the 2009 H1N1 virus is widespread?**

Yes. PHLs have prioritized testing of hospitalized patients and other people with a potential for complications. Some state PHLs are supporting anti-viral resistance testing to ensure a rapid US response if an anti-viral medication ceases to be effective. When the virus first emerged, PHLs tested every sample they received to determine if the flu virus was present in their community and to learn more about the characteristics of the virus.

**"Maybe H1N1 will be a wake-up call to the federal government to put some money into the [public health] labs before it's too late."**

**Victor Waddell**, Director  
Arizona State Public Health Laboratory

## **Why aren't PHLs testing every flu sample they receive?**

As in a regular flu season, patients can be diagnosed and treated based on their symptoms. Most patients can recover at home or be treated by a family physician. Patients with severe illness or a potential for complications

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can benefit from testing to identify the best course of treatment.

Testing for the 2009 H1N1 virus is very expensive: an average of \$150 per patient. This cost places an enormous strain on public health resources at a time when states and localities are struggling with budget shortfalls. State and local health officials are making decisions about allocation of laboratory resources based on their assessment of conditions in their area.

**Do PHLs have adequate funding to meet the staffing and supply needs presented by H1N1?**

No. PHLs, a critical line of defense in protecting the public's health, are operating on life support, as federal and state funding has declined. In fiscal year 2006, the federal government disseminated \$225 million to states for pandemic influenza preparedness through the Public Health Emergency Preparedness Grant, but PHLs received few of these dollars. No funds were allocated in 2008, and PHLs received no funds through the 2009 stimulus bill either. Meanwhile, states have slashed their budgets as well, resulting in cuts to PHLs averaging \$405,000 each (or \$39 million nationally) in 2008, and cuts have only deepened in 2009. In addition, PHLs lost 10% of their workforce in the last year, and more cuts are anticipated.

**What other challenges do PHLs face that could harm the public's health in the event of a sustained outbreak of 2009 H1N1 or other health emergency?**

Data critical for national disease control are being delayed by outmoded, laborious reporting methods. Presidential Directive #21 calls for a networked system to facilitate data exchange among PHLs, health officials and clinicians, but no such system yet ex-

ists. With a national electronic reporting system, test data would travel instrument-to-instrument. Currently, each test result must be manually entered, which is a slow process that delays reporting of critical public health data and introduces the possibility of human error. During the spring outbreak, the greatest challenge for PHLs wasn't testing; it was reporting of test results.

**How will PHLs respond if the H1N1 virus changes and becomes more virulent, transmissible or resistant to Tamiflu?**



If the virus changes, CDC recommendations for who needs to be tested may change, and PHLs will immediately adapt to any changes in CDC recommendations. PHLs may need to implement a new test if the virus changes so much that the existing test is no longer effective.

PHLs have worked with clinical labs to validate other H1N1 tests (confirm that the test performs accurately on their equipment) to expand diagnostic testing capacity and access to testing. In addition, APHL is working with CDC to increase capacity for antiviral testing if it is needed.

**Is there any planning underway to manage a potential shortage of reagents as a result of worldwide demand for a limited supply?**

CDC is working closely with key reagent manufacturers to help maintain reagent supplies, but shortages may occur for a variety of reasons. PHLs have developed lab-specific pandemic plans to address potential shortages in staff and supplies. Depending on the status of the outbreak, routine monitoring of flu viruses may be reduced and testing targeted to patients who will benefit most from definitive testing.

**MORE INFORMATION**

For more information on the Association of Public Health Laboratories, contact Jody DeVoll, 240.485.2753, [jody.devoll@aphl.org](mailto:jody.devoll@aphl.org); check our website [www.aphl.org](http://www.aphl.org); read our blog <http://www.aphl.org/lablog>  and follow us on Twitter <http://twitter.com/APHLNews> .

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