



Messenger

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Influenza Season Update

So far in this influenza season, the County of San Luis Obispo Public Health Laboratory (SLO PHL) has received record-setting numbers of specimens and has detected significant activity for influenza type A subtype H3, with fewer numbers of influenza type B virus, subtypes Yamagata and Victoria, and with very few detections of Type A 2009 H1N1 as yet. The fraction of influenza-positive specimens—typically in the 25-30% range—reached 75-85% of submitted specimens, obviating some laboratory surge response options.

Laboratory surveillance ceased on January 5. The magnitude of the surge in specimens coupled with equipment difficulties prompted the cessation of surveillance testing, although it is not certain that transmission activity has crested—a traditional target for cessation of surveillance. State public health officials report activity throughout California as “widespread.”

Preliminary studies have gauged the effectiveness of the vaccine formulation in use this year to be in 30-60% range.

SLO PHL continues to provide diagnostic testing for influenza and other respiratory viruses to hospitals and community healthcare providers.

New Technology for Diagnosis of Infection: Biomarkers

For more than a century, diagnosis of infection has been based on demonstration of an infecting agent within affected tissues coupled with measurement of an agent-specific immune response. Cultivation of microbes by pure culture techniques and measurement of serologic indexes and titers have been the mainstays of laboratory techniques for many decades. Now, molecular amplification methods to detect pathogen nucleic acids are making cultural techniques obsolescent due to speed and accuracy.

Multiplex molecular amplification panels (MAPs) have recently added new strength to the diagnostic effort, but with the frequent finding of multiple molecular signals—challenging clinicians and laboratorians with an interpretative dilemma. When two or more agents are detected, which is significant and, if a drug is available, which do I treat?

To unravel this dilemma, biomarkers—substances that shed light on the presence of infection—are coming into view and practice. Procalcitonin, a unique protein found in the blood of infected individuals, has a firm place in

clinical laboratory, in many cases displacing older inflammation markers such as the erythrocyte sedimentation rate and CRP, or C reactive protein.

Recently scientists in Finland published a study showing that certain messenger RNA molecules can be used in conjunction with MAPs and reveal the identity of the infection agent in the setting of viral respiratory infections in children. Vahya et al (J Infect Dis 216: 1099-1103) examined the value of three messenger RNA—viperin, MxA and TRIM 21—in conjunction with polymerase chain reaction testing of nasopharyngeal swab specimens for a wide array of respiratory viruses. The investigators tested for the three biomarkers in the same specimens that were tested for the viral agents. They found that viperin and MxA messenger RNA were often consistently elevated for children who were clinically ill but not for those in the asymptomatic control. Viperin, a potent antiviral protein, was especially prominent in distinguishing between active infection and asymptomatic carriage of viral agents. Rhinovirus infection was the most frequently identified, following by coronaviruses, RSV, influenza A and parainfluenza viruses.

The authors' strategy to test the specimens for both the agent and the infection biomarkers obviated the need for blood collection and testing, although they qualified their findings with the caveat that serum levels of markers might be more stable in the setting of the rapidly changing gene expression scenario of an acute viral infection.

Medical and public health experts are sure to see further development in this technically complex and advancing field.

Save the Date! Packaging and Shipping Training Saturday, April 14, 2018

**at Hardy Diagnostics in Santa Maria
Free of Charge for Attendees**

Nationally-recognized CDC expert Pat Payne will present a packaging and shipping workshop on Saturday, April 14 in Santa Maria. This one-day program provides a comprehensive overview of regulations applicable to packaging and shipping human and animal specimens for lab testing.

FAA regulations require that individuals who perform packaging and shipping receive training every three years. The FAA is known for performing unannounced site inspections of laboratories and requesting shipping and training records for all staff assigned these duties.

Registration information will be available on the SLO PHL website in the very near future: www.sloPublicHealth.org/Lab. For information, call or email Kyllie Bouget at 805-781-5507 or kbouget@co.slo.ca.us.

The workshop is free of charge to attendees, and lunch will be provided.

Holiday Hours

The County of San Luis Obispo Public Health Laboratory will be closed:

- Monday, February 12
- Monday, February 19

Our courier pick-up will resume on the next scheduled business day.

Questions? Please contact the Laboratory Director by phone at 805-781-5512 or email at jbeebe@co.slo.ca.us.

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