COUNTY OF SAN LUIS OBISPO
PUBLIC HEALTH LABORATORY

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IN THIS ISSUE

Legionellosis- Capabilities Growing at the County Public Health Lab

The October issue of the Messenger announced the availability at the County of San Luis Obispo Public Health Laboratory (SLOPHL) of a new molecular amplification testing panel for the detection of multiple agents of lower respiratory tract illness. The Pneumonia PCR panel #6620 allows medical providers to submitting a sputum or bronchoalveolar lavage specimen to the SLOPHL and receiving the results of 34 targets the same day the specimen arrives.

Legionella is one important agent of pneumonia—Legionnaires disease (LD) whether community acquired, travel- associated or health-care associated (nosocomial). Pneumonia usually means an infection process, but Legionella also causes Pontiac Fever, a condition whereby inhalation of dead Legionella cells causes fever and cough.

Legionella pneumophila, L. micdadei, L. bozemannii, L. dumoffii and L. longbeachae, as well other Legionella species are found ubiquitously in natural and man-made water supplies and are transmitted by inhalation of aerosolized bacteria. Reported sources of outbreaks include hot water taps and shower heads, cooling towers, grocery misters, spas and swimming pools, and decorative fountains. As Legionella can be found in so many water sources and can have an incubation period of 2 to 10 days, determining the source of infection can be elusive in public health investigations.

Laboratory diagnosis is typically performed by the medical community while public health officials monitor case reports to detect outbreaks. Detection methods includes serology, PCR and culture with special media, but the most common method is a test of urine by enzyme immunoassay for a 10,000 dalton protein is produced by serogroup 1 of L. pneumophila (Lp), the most common cause of Legionnaire's disease.

However, the CDC recommends both culture of sputum and the urine antigen test (UAG) because (1) the UAG protein is only produced by serogroup 1 of L. pneumophila and rarely by the other 15 Lp serogroups or other Legionella species, (2) the sensitivity of the many commercial versions of the UAG can vary considerably, and (3) the UAG is modestly effective in detection of travel associated LD, but inferior in detection of nosocomial LD.

Further, the exclusive use of the UAG confounds the molecular linking of environmental isolates of L pneumophila to a source of human infections. This liability was underscored by reports of three outbreaks of LD in the Bronx borough of New York City in 2015 when isolates from cooling towers had to be linked by molecular methods including whole genome sequencing to a few

human case isolates.

A combined city and state effort identified 55 cooling towers in in the outbreak zone that were screened by PCR for the presence of L. pneumophila and those that were positive by PCR were cultured. Twenty-two cooling towers were PCR-positive and 14 were culture-positive. Twenty-three (21%) of the 108 outbreak zone resident case-patients were culture-positive, and the patient isolates were indistinguishable by molecular typing methods to an environmental isolate obtained from a single hotel cooling tower. No human isolate matched to any other cooling tower isolate. The hotel cooling tower was remediated ending the outbreak.

Influenza testing the County Public Health Lab

The SLOPHL is detecting Influenza A and B strains that are represented by the current vaccine. State-wide activity transitioned from “local” to “widespread” in the past week.

Mumps virus testing the County Public Health Lab

The SLOPHL recently assisted medical staff at the Federal Penitentiary in Lompoc by rapid detection of Mumps virus using the CDC-developed real time reverse transcription PCR assays. This rapid response brought the outbreak under control /

Questions?

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