State of California—Health and Human Services Agency
California Department of Public Health

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Director

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August 3, 2010 AFL 10-24

TO: All General Acute Care Hospitals (GACHs)

SUBJECT: Pertussis (aka Whooping Cough)
1) Recent Infant Deaths Associated with Delayed Diagnosis
2) Immunization of Patients, Health Care Workers and Others

The California Department of Public Health (CDPH) is dedicated to protecting the health and well-being of the people in California. Pertussis (whooping cough) is currently an epidemic in California. Pertussis during early infancy is frequently severe and potentially fatal. Seven California infants, all younger than three months of age, are known to have died from pertussis so far in 2010. In most of the fatal cases, pertussis was not diagnosed until after multiple visits to outpatient clinics, the emergency room, or inpatient wards. CDPH is sending this letter to facilities to support the timely diagnosis of pertussis.

Symptoms

The diagnosis of pertussis in young infants is often delayed because its onset – coryza (runny nose) with little or no fever or cough -- is deceptively mild. These symptoms are followed by coughing spells, often unrecognized, that may lead to apnea, hypoxia and seizures. Severe pertussis in infants can progress rapidly. Therefore, pertussis should be considered in infants with:

- Cough illness
- Post-tussive vomiting
- Gagging, gasping
- Facial color changes (blue, purple or red) when coughing or breathing impaired
- Respiratory distress
- Apnea
- Seizures

Diagnosis

Blood cell count: Leukocytosis with lymphocytosis (a white blood cell count of ≥ 20,000 cells/mm^3 with ≥ 50% lymphocytes) in any young infant with cough illness is a strong indication of pertussis. Almost all fatal cases develop extreme leukocytosis ('leukemoid reaction') with lymphocytosis over 12 or more hours, but this may not be apparent on

initial testing. The white blood cell count of infants with suspected pertussis should be monitored.

Pulmonary findings: Although pneumonia is always present in severe pertussis, co-infection with common respiratory viruses, such as adenovirus or respiratory syncytial virus, can cause concurrently the air trapping and expiratory wheeze of bronchiolitis, confusing the diagnosis. Most severe cases will have pulmonary hypertension.

Recommended Actions

If pertussis is a possible diagnosis in a young infant, immediately:

- Obtain diagnostic testing by culture and/or polymerase chain reaction (PCR) on a properly collected nasopharyngeal swab or aspirate[1] and
- Start treatment with azithromycin (unless contraindicated).

Infants 3 months old or younger with suspected pertussis should typically be hospitalized, and many will require intensive care. Because the severity of illness is unpredictable and clinical decline is often rapid, hospitalization in a facility with a higher-volume pediatric intensive care unit is advised.

Caregivers of infants discharged from outpatient or inpatient settings with cough or cold symptoms should be informed how to promptly seek medical assistance should symptoms worsen.

CDPH Pertussis Immunization Recommendations

Immunity to pertussis from either disease or vaccine wears off over time, leaving fully immunized children susceptible again by adolescence. Unfortunately immunization rates are low for the recommended 'Tdap' pertussis booster vaccine, which has been available since 2005. The most recent CDC survey data indicates that 44% of adolescents in California and only 6% of adults nationwide had received a Tdap booster shot by 2008.

In response, CDPH has released broader recommendations for immunization against pertussis[2]. [also at CDPH additional resources link listed below].

In summary,

1) CDPH is strongly recommending a Tdap booster shot for all adolescents and adults (10 or more years of age) who have not yet received a documented dose, including those older than 64 years of age, regardless of when they received their last Td booster.

2) Immunization with Tdap is especially important for

[1] http://www.cdph.ca.gov/programs/immunize/Documents/CDPH_Pertussis%20laboratory%20testing_March2010.pdf
[2] http://eziz.org/PDF/CDPH%20Pertussis%20Immunization%20Policy%20July%202010.pdf

- Women of childbearing age – preferably before pregnancy, else during or immediately after pregnancy;
- Other close contacts of infants, including other family members and caregivers;
- Health Care Workers, particularly those who have direct contact with infants and pregnant women;
- Patients with wounds 7 years and older should receive Tdap instead of Td or TT when immunization is indicated to prevent tetanus.

3) CDPH strongly recommends that all children receive their recommended doses of DTaP on time. The first dose has been typically given at 2 months of age but may be given as early as 6 weeks to begin protecting infants sooner. Children 7-9 years of age who did not receive all of their routine childhood DTaP vaccine doses are recommended to receive Tdap to help protect them against pertussis.

As a reminder, effective September 1, 2010, the Cal/OSHA Aerosol Transmissible Disease Standard[3] requires all hospitals, outpatient medical facilities, and other employers covered by the standard to offer Tdap immunization to their employees who may be exposed to pertussis. Employees who decline to be vaccinated must sign a declination form.

Additional clinical resources

The California Chapter of the American Academy of Pediatrics has posted expert clinical guidance[4] on the care of infants with pertussis. The guidance includes access to Infectious Disease and Critical Care consultation available around the clock.

We also recommend that you review and display the poster entitled: Pertussis is Epidemic in California: Protect Infants, Adolescents & Adults![5]

This and other CDPH resources for health care providers and patients[6] are also available at: http://www.cdph.ca.gov/HealthInfo/discond/Pages/Pertussis.aspx

If you have any questions about the Pertussis epidemic please contact CDPH Immunization Branch at (510) 620 3737 or Kathleen.Harriman@cdph.ca.gov.

Thank you for your efforts to protect Californians from pertussis.

Sincerely,

Original Signed by Kathleen Billingsley, R.N.

Kathleen Billingsley, R.N.
Deputy Director
Center for Health Care Quality

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[3] http://www.dir.ca.gov/Title8/5199.html
[4] http://www.aap-ca.org/clinical/pertussis/pertussis_in_young_infants.html
[5] http://eziz.org/PDF/IMM-1015H.pdf
[6] http://www.cdph.ca.gov/HealthInfo/discond/Pages/Pertussis.aspx