

## Orange County Infant Pertussis Death

April 19, 2019

Orange County Health Care Agency has recently confirmed a pertussis-related death in an infant. The case is the first pertussis-related death reported in Orange County since 2007.

### Key Points:

- **Severe pertussis disease is primarily seen in infants under 6 months of age.**
- **All pregnant women should be vaccinated during the third trimester (weeks 27 to 36) of pregnancy, preferably during the early part of this period. Tdap should be given during every pregnancy, regardless of prior history of receiving Tdap.**
- **Clinicians should give five doses of diphtheria, tetanus, and acellular pertussis (DTaP) to children 2 months through 6 years of age, and one dose of Tdap at 11 or 12 years of age.**

### Background

During 2018, 171 cases of pertussis were reported to Orange County Public Health, including eight cases in infants under three months of age. Seven of those eight cases (88%) required hospitalization. Only one of eight had Tdap (adult tetanus, diphtheria, acellular pertussis) provided to mom during the third trimester of pregnancy.

Maternal vaccination during pregnancy has been found to be 90% effective in preventing pertussis disease in children under two months of age. Vaccination during this time stimulates production of maternal antibodies that are passed on to the infant, offering protection to the baby against pertussis during the first few months of life. The most effective way to assure vaccination during pregnancy is for the prenatal care provider to stock vaccine and give it during a clinic visit.

### Symptoms and Transmission:

- Symptoms of pertussis usually develop within 5 to 10 days after exposure, but can sometimes take 3 weeks.
- Early signs and symptoms include runny nose, low-grade fever and mild cough, and pauses in breathing patterns.
- Later-stage symptoms may include paroxysms (sudden attacks) of rapid coughing followed by a high pitched “whoop,” vomiting during or after coughing fits, and exhaustion.
- Pertussis is highly contagious. Transmission typically occurs when a susceptible person inhales aerosolized droplets from the respiratory tract of an infected person. Persons  $\geq 1$  year of age are considered infectious from the onset of cold-like symptoms until after 5 days of treatment or until 21 days after cough onset if no (or partial) treatment is given. Infants  $< 1$  year are considered infectious for 6 weeks without treatment.

# CD HEALTH ALERT

Critical Communicable Disease Information for Orange County Medical Providers

## Laboratory Testing:

The primary method of diagnosis is *B. pertussis* polymerase chain reaction (PCR) testing of a sample obtained by aspiration or swabbing of the posterior nasopharynx. PCR has optimal sensitivity during the first 3 weeks of cough.

## Treatment:

Antimicrobial therapy generally does little to alleviate symptoms, but does make an infected person noninfectious more quickly (See table below for treatment options).

### Pertussis Postexposure Prophylaxis

CDC and AAP recommend that all close contacts to pertussis cases receive PEP. Orange County Public Health will focus its efforts in providing prophylaxis to cases in contact with infants under one year of age.

RECOMMENDED TREATMENT AND POSTEXPOSURE PROPHYLAXIS, BY AGE GROUP				
Age group	Azithromycin	Erythromycin*	Clarithromycin	Alternate agent: TMP-SMX†
<1 month	Recommended agent for infants <1 month of age; 10 mg/kg per day in a single dose x 5 days§.	40–50 mg/kg per day in 4 divided doses x 14 days.	Not recommended.	Contraindicated in infants <2 months of age (risk for kernicterus).
1–5 months	10 mg/kg per day in a single dose x 5 days.	See above.	15 mg/kg per day in 2 divided doses x 7 days.	Contraindicated in infants <2 months of age. For infants aged ≥2 months of age, TMP 8 mg/kg per day; SMX 40 mg/kg per day in 2 divided doses x 14 days.
Infants aged ≥6 months and children	10 mg/kg as a single dose on day 1 (maximum 500 mg); then 5 mg/kg per day as a single dose on days 2–5 (maximum 250 mg/day).	40 mg/kg per day in 4 divided doses for 7–14 days (maximum 1–2 g per day).	See above (maximum 1g/day).	See above.
Adolescents and adults	500 mg as a single dose on day 1 then 250 mg as a single dose on days 2–5.	2g/day in 4 divided doses x 14 days.	1g/day in 2 divided doses x 7 days.	TMP 320 mg/day, SMX 1600mg/day in 2 divided doses x 14 days.

From: The American Academy of Pediatrics Red Book – 2018 Report of the Committee on Infectious Diseases.

\*Some experts prefer erythromycin estolate over erythromycin stearate or ethylsuccinate because it achieves higher serum levels with equal doses.

†Trimethoprim-sulfamethoxazole (TMP-SMX) can be used as an alternative agent to macrolides in patients ≥2 months of age who are not pregnant or nursing and are allergic to, cannot tolerate, or are infected with a rare macrolide-resistant strain of *B. pertussis*.

§Preferred macrolide for this age because of risk of idiopathic hypertrophic pyloric stenosis associated with erythromycin.

## Contact Information:

For questions or concerns please contact the **Epidemiology and Assessment Program** at 714-834-8180.