

## PERTUSSIS

### I. DEFINITION:

Pertussis is an acute bacterial disease involving the respiratory tract. The initial catarrhal stage has an insidious onset with a cough, which becomes paroxysmal usually within 1 to 2 weeks. The paroxysmal cough usually lasts 1 to 6 weeks, then tapers off to an extensive convalescent period of 2 to 6 weeks or longer. Immunity is not life-long; therefore it is recommended that adolescents and adults receive one dose of Tdap (Tetanus, Diphtheria and Pertussis) which replaces one tetanus booster dose. The vaccine is not protective for post-exposure prophylaxis (PEP); however, it may be given when indicated to protect an exposed client from future exposures.

### II. ETIOLOGY: See Epi Manual

### III. CLINICAL FEATURES: See Epi Manual

### IV. MANAGEMENT PLAN:

#### A. Laboratory Studies

1. Collect nasopharyngeal (NP) swab for culture and/or PCR for *Bordetella pertussis* when needed for laboratory confirmation of a case. Note that *B. pertussis* is more likely to be cultured from an NP swab if collected within the first three weeks after cough onset.
2. Testing of asymptomatic contacts is not recommended.
3. In outbreak and group settings such as child care centers, obtain specimens on a sample of the suspect cases; prioritize those with the most recent dates of cough onset.

#### B. Azithromycin Dosage:

1. Tablets: Available as “Z-packs” with the full five day dose (250 mg tablets). [Refer to Table 1 for dosage.]
2. Liquid: Oral suspension is supplied to provide 100mg/5mL. The suspension is packaged in a 15 cc bottle. Orders for liquid azithromycin should be rounded up to the next available dosage calculated on the client’s weight using the dosage for chemoprophylaxis regimen table (Refer to Table 2 for dosage calculations).
3. In response to the FDA issued warning regarding azithromycin and fatal irregular heart rhythm; consider using an alternative drug in those patients who have known cardiovascular disease for treatment and/or post-exposure prophylaxis of pertussis.

#### C. An Acute Disease Service (ADS) Epidemiologist consults with the Communicable Disease Nurse (CDN) to discuss identification of contacts and recommendations for prophylaxis.

#### D. Clients who are identified as close contacts and recommended to receive PEP should be directed to an appropriate resource to receive their PEP prescription. The following two options describe where contacts should be referred for their PEP prescription.

1. Post-exposure prophylaxis option #1 (external source):
  - a. Refer client to his/her private physician, OR
  - b. Urgent care center or other “a.m./p.m.” clinic, OR
  - c. The hospital physician treating the source case.

2. Post-exposure prophylaxis option #2. Personnel at the local county health department (CHD) who are legally authorized to prescribe (i.e., medical director, contract physician, physician assistant, family nurse practitioner, pediatric nurse practitioner) may provide prescriptions within the scope of their licensed specialty area if none of the listed resources in option #1 are available. The CDN can coordinate providing a prescription to a pertussis contact with the Regional Director or District Nurse Manager (DNM) and the prescribing person using the following steps:
  - a. Contact the CHD Regional Director and/or the DNM to discuss circumstances involving unavailability of external resources as defined above in option #1.
  - b. If decision is made to provide a prescription for PEP via the CHD, request client(s) to come to the CHD.
  - c. Open a limited service record on each person, unless current record is open.
  - d. Perform an assessment of each individual's allergies, age, and body weight and refer to the dosage for PEP. Obtain name of pharmacy where client will fill prescription.
  - e. The prescribing person will complete an order that includes the contact's name, date of birth, weight, and calculated PEP information (antibiotic name and dose) (ODH 303M). They will then contact the pharmacy designated by the client to inform the pharmacist of the circumstances.
  - f. For clients who are unable to afford costs for antibiotic prophylaxis, the CDN will discuss with the CHD Regional Director or DNM to determine if the course of antibiotics recommended for PEP is available through the CHD.

#### REFERENCES:

- American Academy of Pediatrics. Pertussis (Whooping Cough). In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. *Red Book: 2012 Report of the Committee on Infectious Diseases*. 29<sup>th</sup> ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:553-566.
- Centers for Disease Control and Prevention. Recommended antimicrobial agents for the treatment and postexposure prophylaxis of pertussis: 2005 CDC guidelines. *MMWR* 2005;54(No.RR-14):1-16. Available online at <http://www.cdc.gov/mmwr/PDF/rr/rr5414.pdf>
- Centers for Disease Control and Prevention. Vaccines for Preventable Diseases. Pertussis. Available online at <http://www.cdc.gov/vaccines/vpd-vac/pertussis/default.htm#recs>.
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- U.S. Food and Drug Administration. FDA Drug Safety Communication: Azithromycin (Zithromax or Zmax) and the risk of potentially fatal heart rhythms. Accessed : September 13, 2013. <http://www.fda.gov/Drugs/DrugSafety/ucm341822.htm>
- Centers for Disease Control and Prevention. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. Atkinson W, Hamborsky J, Wolfe S, eds. 12<sup>th</sup> ed., second printing. Washington DC: Public Health Foundation, 2012
- Centers for Disease Control and Prevention. Pertussis. Manual for the Surveillance of Vaccine-Preventable Diseases, 5th ed., 2011.

**Table 1: Dosage for Prophylaxis of Contacts to a Case of Pertussis**

| Age group                                   | Primary Agents   |  |   | Alternate Agent*   |
|---|--|--|---|--|
|   | Azithromycin<br>Recommended agent.   | Erythromycin   | Clarithromycin  | Trimethoprim Sulfamethoxazole (TMP-SMX)  |
| < 1 month                                   | 10 mg/kg per day in a single dose for 5 days*  | 40 mg/kg per day in 4 divided doses for 14 days                            | Not recommended   | Contraindicated for infants < 2 months (risk for kernicterus)  |
| 1-5 months                                  | 10 mg/kg per day in a single dose for 5 days   | 40 mg/kg per day in 4 divided doses for 14 days                            | 15 mg/kg per day in 2 divided doses for 7 days                        | Contraindicated at age < 2 months. For infants $\geq$ 2 months, TMP 8 mg/kg per day, SMX 40 mg/kg per day in 2 divided doses for 14 days |
| Infants (aged $\geq$ 6 months) and children | 10 mg/kg in a single dose on day 1 (maximum 500mg), then 5 mg/kg per day (maximum: 250 mg) on days 2-5 | 40 mg/kg per day (maximum: 1-2 g per day) in 4 divided doses for 7-14 days | 15 mg/kg per day in 2 divided doses (maximum: 1 g per day) for 7 days | TMP 8 mg/kg per day, SMX 40 mg/kg per day in 2 divided doses for 14 days   |
| Adults                                      | 500 mg in a single dose on day 1 then 250 mg per day on days 2-5                                       | 2 g per day in 4 divided doses for 7-14 days                               | 1 g per day in 2 divided doses for 7 days                             | TMP 320 mg per day, SMX 1,600 mg. per day in 2 divided doses for 14 days   |

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

\* Trimethoprim sulfamethoxazole (TMP-SMX) can be used as an alternative agent to macrolides in patients aged >2 months who are allergic to macrolides, who cannot tolerate macrolides, or who are infected with a rare macrolide-resistant strain of *Bordetella pertussis*.

Source: American Academy of Pediatrics. [Pertussis (Whooping Cough)]. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. *Red Book: 2012 Report of the Committee on Infectious Diseases*. 29th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2012:[553-566]

**Table 2: Dosage Calculations for Oral Suspension of Pertussis  
Chemoprophylaxis Regimen**

| <b>Azithromycin Liquid Suspension 5-day Regimen</b>                                |            |                      |                       |                               |                               |
|--|------------|----------------------|-----------------------|-------------------------------|-------------------------------|
| <b>Dosing Calculated on 10 mg/kg/day for Day 1, and 5 mg/kg/day for Days 2 – 5</b> |            |                      |                       |                               |                               |
| <b>Weight</b>  |            | <b>100 mg/5 ml</b>   |                       | <b>Total ml per Treatment</b> | <b>Total mg per Treatment</b> |
| <b>Kg.</b>   | <b>Lb.</b> | <b>Day 1</b>         | <b>Days 2 - 5</b>     |                               |                               |
| 5  | 11         | 2.5 ml<br>(1/2 tsp.) | 1.25 ml<br>(1/4 tsp.) | 7.5 ml                        | 150 mg                        |
| 19   | 22         | 5 ml<br>(1 tsp.)     | 2.5 ml<br>(1/2 tsp.)  | 15 ml                         | 300 mg                        |
| 20   | 44         | 10 ml<br>(2 tsp.)    | 5 ml<br>(1 tsp.)      | 30 ml                         | 600 mg                        |
| 30   | 66         | 15 ml<br>(3 tsp.)    | 7.5 ml<br>(1 ½ tsp.)  | 45 ml                         | 900 mg                        |
| 40   | 88         | 20 ml<br>(4 tsp.)    | 10 ml<br>(2 tsp.)     | 60 ml                         | 1200 mg                       |
| 50+  | 110+       | 25 ml<br>(5 tsp.)    | 12.5 ml<br>(2 ½ tsp.) | 75 ml                         | 1500 mg                       |

Source: Centers for Disease Control and Prevention. Recommended antimicrobial agents for the treatment and postexposure prophylaxis of pertussis: 2005. CDC guidelines. MMWR 2005;54 (No. RR-14): p. 10. Available at <http://www.cdc.gov/mmwr/pdf/rr/rr5414.pdf>.