

## PERTUSSIS IN OREGON INFORMATION AND GUIDELINES FOR CLINICIANS

### How contagious is pertussis?

1. Pertussis cases are *contagious* for the first two weeks of illness (during the catarrhal period when cases have cold-like symptoms), before the onset of the classic paroxysmal whooping cough. Cases are contagious, though less so, for up to three weeks after the paroxysmal cough begins.
2. Pertussis is not airborne; it is spread by respiratory droplets that tend to fall to the ground a few feet from a person coughing, laughing, talking, shouting or singing.
3. Pertussis is quite contagious among "close contacts," usually:
  - a. everyone who lives with the case;
  - b. persons who were face-to-face and within "spitting distance" of a case for more than one hour while the case was contagious (*above*);
  - c. persons who had direct contact with respiratory, oral, or nasal secretions while the case was contagious (*above*).

### How good is the current pertussis vaccine for young children?

1. The four-dose series of acellular pertussis vaccination protects about 80% of recipients from pertussis in small children.
2. Immunity wanes after 5–10 years, so that most adolescents and adults are susceptible.
3. Vaccination does not guarantee that the recipient will not be colonized with *Bordetella pertussis*.
4. The primary vaccination series is given as tetanus, diphtheria, and acellular pertussis (DtaP) at 2, 4, 6, and 15–18 months. Booster vaccination with adolescent-adult formulation (Tdap was FDA-approved in 2005 and is recommended at 11–12 years of age and as "catch-up" for those 13–18 years who have not already received Tdap or a Td booster.

### Should adolescents and adults be vaccinated?

1. The ACIP recommends that Tdap formulated for those over age 11 be used for the following groups:
  - a. All adolescents at age 11-18 should receive a single dose of Tdap
  - b. Adolescents who received a Td booster should receive Tdap if a 5 yr interval has elapsed. Tdap may be given at an interval of less than 5 years if the benefits of protection outweigh the risk of an adverse reaction

2. The ACIP recommendations include:
  - a. A single dose of Tdap is recommended for adults if Td was received at least 10 years earlier; an interval of less than 10 years is acceptable if necessary to protect against pertussis or if close contact with an infant less than 12 months of age is anticipated (i.e. parents, nurses, etc.)
  - b. Routine post-partum vaccination with Tdap for women who last received Td more than two years ago; shorter intervals can be used

### **Whom should I test for pertussis?**

1. Anyone with an acute cough of at least 2 weeks duration.
2. Close contacts of a known case with an acute cough of any duration.
3. Any person in whom pertussis is highly suspected clinically — e.g., because of cough with whooping, gasping, or post-tussive emesis. In infants only, a lymphocyte count of over 20,000/ $\mu$ l in the setting of respiratory tract infection or apnea is highly suggestive of pertussis.

### **Who should be isolated and how?**

1. Cases should be isolated at home until the correct antibiotic (*below*) has been taken for at least 5 days.
2. At the discretion of the local health authority, inadequately immunized household contacts may be excluded from school and day care for 21 days after the last exposure.

### **Why Treat Cases?**

1. Treatment with appropriate antibiotics will eliminate *B. pertussis* from the nasopharynx; symptoms unfortunately often continue.
2. Treatment, especially early in illness, will help limit further spread to close contacts.

### **What should be used for treatment?**

The antibiotics and dosages used for treatment and post-exposure disease prevention are the same. Antibiotics given early in the catarrhal stage may attenuate the disease; when given during the paroxysmal stage communicability is reduced but there is little effect on the course or duration of illness. Azithromycin, erythromycin, clarithromycin and trimethoprim-sulfamethoxazole eradicate *B. pertussis* from the nasopharynx; infectivity is probably minimal 5 days after starting treatment with any of these agents. Azithromycin and erythromycin are both pregnancy category B (minimal risk); clarithromycin and trimethoprim-sulfamethoxazole are category C and should be used in consultation with prenatal care provider.

1. Azithromycin (Zithromax<sup>®</sup>)  
Azithromycin (total dose 30mg/kg for kids or 1.5 grams for adults) is as effective as a 10-day course of erythromycin; greater convenience and tolerability is accompanied by a high price (typically over \$50 for an adult course). Because of its very long half-life the recently released 1 and 3-day courses of azithromycin (same total dose of 30mg/kg for kids or 1.5 grams for adults) are likely to be as effective as the 5-day course but have not yet been studied for pertussis. The most frequently reported side effects are gastrointestinal; drug interactions are uncommon but always inquire about other concurrent medications.
2. Clarithromycin (Biaxin<sup>®</sup>)  
A 7-day course of clarithromycin is as effective as a 10-day course of erythromycin; again greater convenience and tolerability come at a higher price. Although uncommon, the most frequently reported side effects are gastrointestinal; drug interactions occur so inquire about concurrent medications.
3. Erythromycin (many brands and generic)  
Erythromycin, especially the estolate preparation, has long been the recommended drug for pertussis treatment and prophylaxis. Patient compliance with the cumbersome 4-times-daily, 14-day course is poor and gastrointestinal side effects are common. A lower dose, shorter duration regimen that is more tolerable and equally effective is now recommended (see table). Use of erythromycin in infants can be complicated by infantile hypertrophic pyloric stenosis; parents and providers should be made aware if clients in this age group receive erythromycin. Overall, serious side-effects are rare with erythromycin UNLESS the patient is taking other medications; be sure to ask and consult with a pharmacist if there is any concern about interactions.
4. Trimethoprim-Sulfamethoxazole, TMP-SMX (Bactrim<sup>®</sup>, Septra<sup>®</sup>, generic):  
TMP-SMX also appears to be effective in eradicating *B. pertussis* from the nasopharynx; it is the recommended as an alternative antibiotic for patients who cannot tolerate any of the above macrolides. This drug can cause nausea, vomiting, and rash.

**Table 1. Dosages of Antibiotics used for pertussis treatment and prophylaxis**

<b>Drug</b>	<b>Children</b>	<b>Adults</b>
<b>Azithromycin</b>	<p><b>Minimum age: all ages *</b></p> <p>Age 0-5 months: 10 mg/kg p.o. x 5 days</p> <p>Age:&gt;6 mo: 10 mg/kg day 1, then 5mg/kg days 2-5 (maximum 500 mg/dose) **</p>	500 mg p.o. in a single dose day 1; then 250 mg p.o. as single daily dose on days 2 through 5 **
<b>Clarithromycin</b>	<p><b>Minimum age: 1 months *</b></p> <p>20 mg/kg/day p.o. in 2 divided doses for 7 days (maximum 1 g/day)</p>	500 mg p.o. twice daily for 7 days
<b>Erythromycin ***</b>	<p><b>Minimum age: not preferred under age 1 month</b></p> <p>40 to 50 mg/kg/day p.o. in 3 divided doses for 7 days (maximum 1 g/day)</p>	1 g per day in 3 divided doses for 7 days
<b>Trimethoprim-Sulfamethoxazole (TMP-SMX)</b>	<p><b>Minimum age: 2 months</b></p> <p>4 mg/kg (TMP component) p.o. twice daily for 14 days (maximum 320 mg/day TMP component)</p>	One double strength tablet (160 mg TMP component) p.o. twice daily for 14 days
<p>* Use at age under 6 months is not FDA approved.</p> <p>** 1 and 3 day courses of 30 mg/kg total dose for children and 1.5 gram total dose for adults likely to be as effective as the studied 5 day course.</p> <p>*** When prescribing erythromycin to infants under 3 months of age providers should inform parents about the possible risks for infantile hypertrophic pyloric stenosis (IHPS) and counsel them about signs of developing IHPS.</p>		

## Who should get prophylaxis?

Oregon public health officials currently recommend that the following individuals receive prophylaxis. N.B.: Much broader prophylaxis is recommended in some other parts of the U.S.

Most pertussis in adults and adolescents is neither diagnosed nor reported and antibiotic prophylaxis does not control the transmission of pertussis when it is widespread in the community. The effort to provide antibiotic prophylaxis for pertussis must focus on infants under age 1 year, since serious complications and death are limited to this group. Recommend prompt antibiotic prophylaxis for close contacts of confirmed, presumptive, and suspect cases who are:

- infants < 1 year of age
- pregnant women in the 3rd trimester, (since they will soon have contact with an infant).
- ALL household contacts of a case **IF** there is an infant < 1 year of age or a pregnant woman, even if the infant in the household is the case.
- woman in the 3rd trimester in the same household
- ALL those attending or working in a childcare setting (i.e. same room) of a case **IF** there is an infant < 1 year of age or a pregnant woman (3rd trimester) in the setting.
- Other contacts at the discretion of the Local Health Authority (e.g. pediatric healthcare workers, unimmunized contacts, other pregnant women, high-risk contacts of *suspect* cases).

Note: Recommend prophylaxis for high-risk contacts who have been exposed within 42 days (2 maximum incubation periods); beyond this time pertussis is very unlikely to develop.

Also see the article in the [CD Summary: Pertussis Prophylaxis—Passé?](#)