



Pertussis

Information for Health Care Providers (GPs) on Clinical and Public Health Management

May 2008

1. INFECTIOUS AGENT

Bordetella pertussis (a bacterium)

2. CLINICAL FEATURES

Infants and Young Children

Pertussis (whooping cough) usually begins with mild upper respiratory tract symptoms (runny nose and eyes, malaise, low-grade fever) that progress over 2-7 days to a dry, non-productive cough that becomes paroxysmal, often with a characteristic inspiratory "whoop" and followed by vomiting (in children). Apnoea is more common in infants <6 months of age, and paroxysmal coughing is less common in older children and adults. Without treatment, pertussis symptoms usually last 6-10 weeks. Complications include seizures, pneumonia, encephalopathy, and death. However, death due to pertussis is rare in persons over 10 years of age, but the case fatality rate in unimmunised infants under 6 months of age is estimated to be 0.8%.

Older Children and Adults may have atypical or milder symptoms, but cough typically persists for several weeks.

3. EPIDEMIOLOGY

Occurrence is worldwide. Epidemics can occur every 3-4 years in immunised populations. The disease is more common in spring/summer, and there is an estimated 80% attack rate in susceptible household contacts. Symptoms are usually milder in older children and adults. The case fatality rate in unvaccinated infants <6 months of age is estimated to be 0.8%. In Australia between 1993 and 2005, 4 epidemics of pertussis occurred and more than 84,000 cases were reported during this time resulting in an annual incidence of 22.8 to 57.4 cases per 100,000 population. A total of 18 deaths were attributed to pertussis, all but 2 in infants < 12 months of age. An outbreak in WA in 2004/5 affected mainly children aged 10-19 years and younger children who were incompletely or not immunised.

4. MODE OF TRANSMISSION

Respiratory droplets.

5. INCUBATION PERIOD

Six to 21 days (average 7-10 days, rarely >14 days).

6. INFECTIOUS PERIOD

From onset of symptoms (about 1 week before onset of cough) up to 3 weeks after onset of cough and gradually decreases to negligible after 3 weeks.



7. IMMUNITY

Susceptibility is general. Immunity following infection or immunisation decreases after about 5 years.

8. CASE MANAGEMENT

8.1 Clinical evidence

8.1.1 A coughing illness lasting two or more weeks, and

8.1.2 Paroxysms of coughing OR inspiratory whoop OR post-tussive vomiting.

Early diagnosis and treatment is essential in order to minimise transmission to non-immune contacts.

8.2 Diagnosis

- **PCR**

For reported cases presenting <21 days from onset of coughing a nasopharyngeal specimen should be taken for PCR/culture, either by aspiration (preferable) or with a blue-topped rayon swab (not a cotton swab) which has a flexible metal shaft. The swab should remain in the posterior nasopharynx for 10 seconds before removal. If nasopharyngeal aspirates and swabs (above) are not available, a dry nose and throat swab should be sent.

For PCR studies the swab should be re-inserted into the holder; if viral culture is also requested the swab tip should be placed in viral transport medium. PCR is most reliably positive for 14 days from the onset of coughing or up to 5 days of antibiotic treatment but sensitivity declines after this. Culture is less sensitive than PCR testing.

- **Serum IgA (performed at PathWest)**

In addition to PCR testing acute and convalescent IgA serology can be performed. For cases presenting more than 14 days after onset of coughing, the diagnosis may still be confirmed by positive pertussis IgA serology. However, a negative pertussis serum IgA result does not exclude pertussis, and another pertussis IgA serology test is recommended 7-10 days later. IgM or IgG pertussis serology are not available. (Note: Princess Margaret Hospital performs IgA testing on nasopharyngeal specimens, provided at least 1 ml of fluid is available).

9. TREATMENT

The recommended antimicrobial therapy and chemoprophylaxis regimens for Pertussis in infants, children and adults is listed below in Table 1.

Antibiotic treatment is not recommended if the duration of paroxysmal cough is >21 days.

10. EXCLUSION OF CASES

Exclude cases from child care, school or health-care settings for 21 days from the onset of cough **OR** until they have completed at least 5 days of appropriate antibiotic treatment.

11. CONTACT MANAGEMENT

11.1 Prophylaxis

Prophylaxis is only recommended for contacts in those settings where the benefit is greatest. These settings are best defined by the chance of transmission and the high risk of severe complications should transmission occur.

Based on these principles, prophylaxis is recommended for the following high risk contacts of pertussis cases:

- All household members when the household includes any child <24 months of age who has received less than 3 doses of pertussis vaccine (i.e. commenced at 6 weeks of age with at least a 4 week interval between doses, and the last dose given at least 14 days previously).
- Any women in the last month of pregnancy, regardless of vaccine status.
- Where a case worked in a maternity ward or newborn nursery for more than an hour while infectious, then all babies in that ward should receive antibiotics.
- All other children and adults in the same care group if the case, regardless of immunisation status attended child care for more than 1 hour while infectious and that care group includes 1 or more children <24 months of age who has received less than 3 doses of pertussis vaccine.
- Healthcare staff, regardless of vaccination status, working in maternity hospital or newborn nursery. Chemotherapy is not recommended routinely for healthcare staff caring for older infected children or adults.





- Where a case worked in a maternity ward or newborn nursery for more than an hour while infectious, then all babies in that ward should receive antibiotics.

Table 1:

The recommended antibiotics and dosages for the prophylaxis of high risk contacts is the same as those for the treatment of pertussis (see **below Table 1**).

| Age group | Azithromycin | Clarithromycin | Erythromycin | TMP-SMX* |
|----------------------------------|---|--|--|---|
| <1month | 10mg/kg single dose for 5 days+ | Not recommended | If azithromycin is unavailable; ≤7 days old: 10mg/Kg/dose 12-hourly for 7 days;+ 8-28 days old: 10mg/Kg/ dose 8-hourly for 7 days | Not recommended in infants <2 months of age unless macrolides cannot be used |
| 1-5 months | 10mg/Kg single dose for 5 days | 7.5mg/kg/dose twice daily for 7 days | 10mg/Kg/dose 6-hourly for 7 days | ≥2 months of age; TMP:4mg/Kg twice daily, SMX: 20mg/Kg twice daily for 7 days |
| Infants (≥6 months) and Children | 10mg/Kg single dose on day 1, then 5mg/Kg single dose for 2-5 days (maximum 250 mg/day) | 7.5mg/kg/dose (up to a maximum dose of 500 mg) twice daily for 7 days (maximum 1g/day) | 10mg/Kg/dose (up to a maximum dose of 250 mg) 6-hourly for 7 days (maximum 1 g/day) | TMP:4mg/Kg, SMX: 20mg/Kg twice daily for 7 days (maximum 160 mg TMP and 800 mg SMX 12-hourly) |
| Adults | 500mg single dose on day 1, then 250 mg dose for days 2-5 | 500mg twice daily for 7 days | Erythromycin: 250 mg 6-hourly for 7 days; Erythromycin ethyl succinate (EES): 400mg 6-hourly for 7 days | TMP: 160mg twice daily, SMX: 800mg twice daily for 7 days |

* Trimethoprim (TMP)-sulfmetoxazole (SMX)

+Azithromycin is preferred for this age because of an association between erythromycin prophylaxis for pertussis and infantile hypertrophic pyloric stenosis.

11.2 Antibiotic prophylaxis is not recommended:

- In other settings such as primary schools, high schools, tertiary institutions and work places (unless maternity hospital or newborn nursery).
- If more than 21 days from contact with an infectious case has elapsed.
- Routinely for health care workers caring for infected adult patients. Additional infection control precautions should be utilised for hospitalised cases.

12. EXCLUSION OF CONTACTS

High risk contacts (see **Prophylaxis**) should be excluded from contact with other high risk persons (e.g. in their child care or health care facility) for 14 days from the last day of their contact with the infectious case **OR** until they have completed 5 days of appropriate antibiotic prophylaxis. Exclusion of high risk contacts protects them from further exposure to pertussis (e.g. if there is ongoing transmission in their facility) and also prevents the case from transmitting pertussis to other high risk persons.

13. IMMUNISATION

The immunisation status (age-appropriate) of high risk contacts should be checked and if not completed, DTPa immunisation should be offered as per recommended WA schedule. Missed doses are available free, including dTpa (**Boostrix™**) for Years 7-12 school students (see also “catch up” section of Australian Immunisation Handbook 9th Edition, 2008).





14. PUBLIC HEALTH UNIT FOLLOW-UP

Public Health Nurses working within the local Public Health Units will follow up all notified cases of pertussis, this involves contacting GPs to determine immunization status of the case and to determine if contact tracing has been undertaken.

15. INFORMATION FOR CONTACTS

Provide advice to close contacts (parents of) on the signs and symptoms of pertussis and to consult a doctor if symptoms of pertussis develop within 14 days of last contact with a confirmed or clinical suspect case.

16. PERTUSSIS IN PREGNANCY

Treatment of pregnant women with pertussis within one month of delivery is important to prevent neonatal pertussis. Erythromycin is safe to use in pregnancy (category A). There are limited data on the use of azithromycin in pregnancy (category B1). In addition, if the onset is within 3 weeks of delivery, the newborn should receive antibiotic therapy, as per Table 1.

17. MORE INFORMATION

See the Australian Immunisation Handbook 9th Edition. 2008, also available at www.immunise.health.gov.au/, or telephone your local Population Health Unit.

Public Health Units

| Public Health Unit | Telephone | Public Health Unit | Telephone |
|--------------------|-----------|---------------------|-----------|
| Kimberley | 9194 1630 | Great Southern | 9842 7531 |
| Midwest/Gascoyne | 9956 1985 | Pilbara | 9172 8333 |
| Southwest | 9781 2350 | Wheatbelt | 9956 1985 |
| Goldfields | 9080 8200 | North Metro (upper) | 9345 7100 |
| South Metro | 9431 0200 | North Metro (Lower) | 9224 1603 |

