Guidelines for

The Public Health Management of Cases of Whooping Cough and their Contacts

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Policy Reference: HP 1.0
Date of Issue: September 2008
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Date of Review: September 2010
Lead Reviewer: Helen Tissington
Version: 2.0
Authorised by: Area ICC
Date: 4 September 2008

Distribution

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- All Paediatricians
- Infection Control Teams
- Microbiologists
- Community Nurse Teams

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Version: 1
Date of Issue: September 2008
Page: 1
Date of Review: September 2010
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Introduction

Whooping cough, or pertussis, is a bacterial respiratory infection caused by *Bordetella pertussis*, a gram-negative bacillus. The incubation period is seven to 13 days, and it is highly contagious, transmitted through close contact, mainly via droplets. *B. pertussis* is unable to survive for long in the environment, and there is no evidence of a chronic carrier state. Infection results in a protracted cough that lasts six to eight weeks or longer, even when treated with antibiotics, most severe in infants and young children. Complications are more common in children under six months of age, and traditionally young children have been the focus for prevention of illness. However, there is also increasing evidence that pertussis is responsible for a prolonged cough illness in adolescents and adults. Miller et al (2000) found that of patients attending their general practitioner (GP) with a history of a cough illness lasting three or more weeks, 28% (40/145) had serological evidence of recent pertussis infection.

Although the course of disease may be ameliorated by the use of antibiotics, high routine coverage with effective vaccine is the mainstay of prevention. Although immunity from natural infection is long lasting, that provided by vaccination persists for approximately 3 to 5 years, and in the following 6 to 10 years progressively declines, becoming almost non-existent after 12 years. Adolescents and adults therefore gradually become susceptible again. Whilst suffering mild disease (sometimes not recognised), they are capable of transmitting infection to vulnerable contacts.

Case definitions

Box 1.

**Clinical case definition**
A person with a cough lasting at least 2 weeks **with at least one of the following**:
- Paroxysms (i.e. fits) of coughing
- Inspiratory “whooping”
- Post-tussive vomiting (i.e. vomiting immediately after coughing) without other apparent cause.

**Laboratory criteria for diagnosis**
- Isolation of *Bordetella pertussis*, or
- Detection of genomic sequences by polymerase chain reaction (PCR), or
- Positive paired serology

**Case classification**

**Suspected:** A case that meets the clinical case definition, but is not laboratory confirmed

**Confirmed:** A case that meets the clinical case definition and is laboratory confirmed.

(WHO 2003)

In addition, someone who is coughing for any duration and is also linked epidemiologically to a confirmed case can be considered a suspect case, (Dodhia et al 2002).
Laboratory testing in Highland

Culture
This is the preferred method, and the only available on-site test. *B. pertussis* is difficult and slow (3 – 5 days) to culture. However, bacterial culture also allows the isolate to be serotyped, and thus provide valuable epidemiological information. A pernasal swab should be obtained as soon as possible after the onset of coughing, and the correct swab and transport medium can be obtained on request from your local microbiology laboratory. The swab is on a wire, and has to be inserted via the nose as far as comfortably possible. The laboratory needs to know that you are intending to submit a sample to ensure they have the correct culture medium. These swabs do go out of date, so it is best to obtain one when required.

Serology
Serologic testing (examination of sera for anti-*pertussis* toxin IgG) can only provide late or retrospective diagnosis, (though it is more sensitive than culture, Fry et al 2004). It may be of use where the following criteria are met: paired sera or single samples taken > 3 weeks after onset from any individuals with prolonged cough. Please contact the microbiology laboratory if you require this service, as samples must be referred to another laboratory. Turnaround times are usually greater than one week. Please note that this service is not suitable for assessment of immune status.

Specialist investigations
The microbiology department can occasionally access other off-site specialist investigations, for example PCR detection of *pertussis* in nasopharyngeal aspirates (NPA). Under these circumstances the department must be contacted for advice before the sample is sent.

Notification
Paediatric staff and general practitioners are requested to notify the Health Protection Team (tel 01463 704886) promptly of all cases, whether suspected or confirmed (see above), by telephone.

Treatment of case(s) to minimise transmission
If suspected and/or confirmed case(s) are within 21 days of onset of symptoms, treat with erythromycin for seven days. Otherwise treat symptomatically. The main purpose of this is to prevent secondary cases, though it may also ameliorate illness in the case.

<table>
<thead>
<tr>
<th>Age</th>
<th>Dosage</th>
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<tbody>
<tr>
<td>Children 1 month - 2 years</td>
<td>125 mg 6 hourly</td>
</tr>
<tr>
<td>Children 2 – 8 years</td>
<td>250 mg 6 hourly</td>
</tr>
<tr>
<td>Children &gt; 8 years and adults</td>
<td>250 – 500 mg 6 hourly</td>
</tr>
<tr>
<td>Neonates</td>
<td>12.5 mg/kg 6 hourly (BNF for Children, PFC 2005). N.B. The use of erythromycin in infants increases the risk of developing infantile hypertrophic pyloric stenosis, Risk ranges from 1 in 20 to 1 in 100 (Dodhia et al 2002)</td>
</tr>
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Pregnant women
Treat for seven days, preferably starting at least three days prior to delivery.

Immunisation
If < 10 years old and not fully immunised as per UK childhood schedule, complete immunisation once recovered.

Exclusion of case
Exclude from nursery/school until five days after starting appropriate antibiotic therapy. If no appropriate antibiotic given, exclude for 21 days from onset of paroxysmal cough.

Chemoprophylaxis and immunisation in persons exposed to pertussis

Chemoprophylaxis should be restricted to:
- vulnerable contacts (see Box 2),
- adults and children > 5 years who did not receive a pre-school booster, who are in close household contact with both a case and a vulnerable contact
- Household type contacts (e.g. “sleepover”) who continue to be in household type contact with a vulnerable individual

Children < 5 years who have completed their primary immunisation (i.e. 3 doses of pertussis containing vaccine) do not require chemoprophylaxis, but should be given a booster if > 3 years from completion of primary course.

Box 2.

A vulnerable contact is:
- Someone who lives in the same house or who has stayed overnight in the same room in an institutional setting (e.g. hospital ward) as the case

AND is one of the following categories:
- newborn infant born to symptomatic mother
- neonate
- infant/child with no or incomplete protection from vaccine (i.e. has not received three doses)
- someone with chronic illness – e.g., asthma, congenital heart disease
- someone who is immunocompromised who is not fully vaccinated

To be effective chemoprophylaxis must be given:
- within 21 days of onset of illness in the primary case
- in adequate dosage
- for the correct duration (seven days)
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Immunisation of contacts
Complete vaccination as per UK schedule.

Exclusion
Asymptomatic contacts do not require exclusion from school or nursery.

Summary of actions:

1. Determine whether the case meets the case definition (Box 1)
2. Notify the Health Protection Team (tel 01463 704886)
3. Contact local microbiology laboratory re specimen collection
4. Prescribe chemoprophylaxis as required
5. Arrange for completion of vaccination schedules for cases and contacts
6. References


