

# PERTUSSIS

## NATIONAL GUIDELINES FOR PUBLIC HEALTH UNITS

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<b>Revision history</b>			
<b>Version</b>	<b>Date</b>	<b>Revised by</b>	<b>Changes</b>
1.0	19 February 2009	VPDS, OHP	Updated URL links and addition of link to state and territory legislation

# 1. Summary

## Public health priority

High for cases notified within 5 weeks of onset of symptoms who are:

- aged <5 years, or
- of any age who are nucleic acid test (NAT) or culture confirmed or
- reported to have close contacts who may be at high risk for pertussis.

No action is required for cases notified > 5 weeks after date of onset of cough or > 5 weeks after the date of the laboratory result, unless they are reported to be part of a cluster.

## Case management

It is the responsibility of the treating doctor to treat infectious cases. For cases under 5 years of age or cases of any age who are NAT or culture confirmed, contact the treating doctor and the case to identify contacts at high risk of disease, and advise infectious cases against mixing with vulnerable contacts, and to identify risk factors. Exclude infectious cases from work, school, preschool and childcare. For other cases, an advisory letter may be sent to the treating doctor, as required.

## Contact management

For cases under 5 years of age or cases of any age who are NAT or culture confirmed, or cases reported to have close contacts who may be at high risk for pertussis, counsel contacts at risk of disease and facilitate preventive therapy. Recommend that contacts' immunisations be updated if need be. Exclude unimmunised children from preschool and childcare.

# 2. The disease

## Infectious agents

The bacillus *Bordetella pertussis*.

## Mode of transmission

Pertussis is transmitted by droplet infection and direct contact with discharges from respiratory mucous membranes of infected persons.

## Timeline

The incubation period ranges from 6 to 20 days, but on average is 7 to 10 days.

## Infectious period

Pertussis is highly communicable in the catarrhal and early coughing stage. Communicability gradually decreases thereafter and is negligible 3 weeks after onset of cough. For practical purposes, a case is considered non-infectious 3 weeks after onset of cough, or until they have completed 5 days of a course of effective antibiotics.

## Clinical presentation

The usual clinical presentation is an initial catarrhal stage with an irritating cough and sneezing, which gradually becomes paroxysmal. The paroxysms become more severe, and may end in vomiting, cyanosis and/or a characteristic high-pitched inspiratory "whoop". The cough may last >3 months after resolution of the infection. Infants <6 months old, immunised children and adolescents and adults often do not show a typical clinical picture. Classical whooping is more likely in unimmunised children. In adult index cases, paroxysmal cough is often the main symptom but in adult contacts, a cough may be non-specific. Note that sub-clinical infections may occur.

### **3. Risk assessment**

#### **Routine prevention activities**

Pertussis immunisation, as part of DTPa vaccine, is recommended for all Australian children at ages 2, 4, and 6 months, with a DTPa booster at 4 years of age and dTpa booster at 12 –17 years of age. Since 2003, dTpa vaccine has been recommended for health care workers and people working or living with small children, including parents, grand parents, those planning pregnancy and child care workers who have not previously had a dose of the acellular vaccine.

#### **Threat and vulnerability**

Pertussis was very common in infants before immunisation programs were introduced into Australia in the 1940s with death rates reported to be >4/100,000. Infants may not be protected until they have received the primary vaccine series. An individual's immunity wanes after a few years, and so a booster dose is required at age 4 years. Pertussis has only been recently recognised widely as a common disease of older children and adults and lower-dose vaccines suitable for use in this age group have only been available since 2001. Despite improved rates of childhood vaccination, pertussis notifications in babies <6 months of age have changed little, and deaths are occasionally reported in this group (nine were reported nationally in the 1996-7 outbreak). Studies of cases notified in NSW in 2004 and 2006 found that cases aged <5 years (followed by 5 to 9 year olds) were the age group most likely to have to have close contacts eligible for preventive therapy.

#### **Risk mitigation**

The main aim of public health measures against pertussis is to protect those at risk for most severe disease and death, i.e., infants who have not received the primary vaccination series. For infants younger than 6 months, protection through immunisation of likely contacts, and reducing exposure to persons with cough are the only available strategies. Persons with coughing illnesses should be encouraged to seek medical attention and treatment if pertussis is diagnosed (to reduce infectiousness). Preventive antibiotic therapy is of limited benefit and best focussed on those most likely to be infectious and in contact with vulnerable infants.

Because children <5 years of age are most likely to have high risk contacts who will benefit from preventive therapy, and cases of any age who are NAT or culture positive are most likely to be infectious to other people, these cases have priority for follow up.

### **4. Surveillance objectives**

- To reduce the spread of disease from those cases most likely to have close contacts at risk of severe disease, or who may transmit pertussis in settings such as households and childcare
- To monitor the epidemiology of the disease, including the impact of immunisation, and so inform better prevention strategies.

### **5. Data management**

Within 3 working days of notification, enter confirmed, and probable cases onto the notifiable diseases database. Vaccination status, including "number of doses", and "last dose verified by", must be completed for all cases under 5 years of age. ACIR should be entered as the verification method where available. If not available, then GP record or Blue book (as quoted by the doctor or parent) should be entered.

### **6. Communications**

Within 1 working day of a death from pertussis:

- Notify the state/territory Communicable Diseases Branch of the case's age, sex, date of onset, vaccination history, laboratory status, likely source of infection, other people at risk of infection and follow up action taken.
- The state/territory Communicable Diseases Branch should notify the case details to the CDNA secretariat.

## 7. Case definition

The current national surveillance pertussis case definition can be found at:

<http://www.health.gov.au/casedefinitions>

## 8. Laboratory testing

### Testing guidelines

Routine testing of patients is at the discretion of the treating doctor. Where a probable case who has neonatal contacts is reported, the PHU should encourage testing to confirm the case.

The best tests to confirm the diagnosis of pertussis varies according to age.

- For children under 2 years old, nucleic acid testing (NAT) is preferred and can be positive up to 5 weeks after onset. If not available, culture can be done, up to 1 week after onset of paroxysmal cough. Serology is not recommended.
- For people 2 years and older, NAT and culture are also suitable, and IgA serology (ideally both acute and convalescent) can also be done, although its interpretation can be problematic (see below). In settings where extensive follow up of contacts may be required, seeking confirmation by NAT, culture or even Western Blot can be helpful.

### Nucleic acid testing (NAT)

- Polymerase chain reaction (PCR) is largely replacing culture for the diagnosis of pertussis. It is useful for diagnosis early in the course of the disease, more sensitive than culture, and may remain positive for a longer period (up to 4 to 5 weeks) after the onset of symptoms and for some time after commencement of treatment.
- A positive result is less dependent on specimen quality than culture and the test can be performed on throat swabs (although nasopharyngeal swabs or aspirates are preferred).
- Swabs used for PCR for pertussis diagnosis should be dacron or rayon tipped swabs on flexible metal or (preferably) plastic sticks. Wooden swab sticks and calcium alginate tips inhibit Taq polymerase and are unsuitable for PCR. Metal ions can leach out from aluminium swab sticks if stored in liquid media for more than 48 hours. Swabs should be sent to the laboratory dry – not in transport medium.

### Culture

- The sensitivity of nasopharyngeal culture decreases with time after onset and is highly dependent on specimen quality. Cultures are rarely positive after 2 weeks from the onset of the catarrhal stage of the illness, or one week of paroxysmal cough, or for more than a few days after starting antibiotics.
- Cultures may take as long as 2 weeks, so results may not be clinically useful.
- Nasopharyngeal (not throat) cultures should be collected either by aspiration or with a flexible, per-nasal swab. The swab should be inoculated directly onto special pertussis culture media or into transport medium, or both (contact the laboratory for media and specific instructions).

### Serology

- Serological testing of pertussis has not been standardised but is widely used. *B. pertussis*-specific IgA is the most widely used test. Serological testing could be useful for adults and adolescents who present late in the course of their illness, when both culture and NAT are likely to be negative. Its sensitivity is low and it is not suitable for use in children <2 years old, but may be useful for

confirmation in persons >2 years old with a clinically compatible illness as long as it is remembered that a negative test does not exclude the diagnosis.

- IgA may be elevated for an unknown period [possibly 6 months to 2 years] in an adult or adolescent after vaccination, therefore caution should be taken in interpreting IgA results in a vaccinated person in these groups.
- IgA may be detected in persons who are asymptomatic or have been vaccinated, and should only be interpreted as being indicative of disease when symptoms are present.
- Serum taken early in the illness may be falsely negative for IgA. A second serum sample taken 7 to 10 days later may be useful.
- The absence of specific IgA in serum at the level suggested by the kit manufacturer does not exclude the diagnosis.
- IgM serology is not considered useful. IgG and IgA rise during acute infection, and seroconversion or a significant increase in titre in paired sera is indicative of recent infection. Although “in-house” IgG tests against either whole cell or specific (e.g. pertussis toxin) antigens are available in some laboratories, validated cut-off levels indicative of recent infection in a single specimen of serum have not been published. An anamnestic response to *B. pertussis* IgA may occur with other infections.
- Immunoblot (or Western Blot) analysis available in reference centres may be used to confirm that the antibody rise is due to *B. pertussis* toxin rather than other antigens such as filamentous haemagglutinin which can cross react other organisms such as *Mycoplasma pneumoniae* and *Haemophilus influenzae*.

### **IgA on respiratory samples**

- Some laboratories test respiratory samples for pertussis IgA. While this test may be helpful clinically when done by experienced personnel using validated methods, substantial experience is required to achieve repeatable results, and the results are subject to the limitations of serology (see above). These tests are not recommended for public health purposes.

### **Direct fluorescent antibody (DFA)**

- Direct fluorescent antibody (DFA) testing has a high rate of false-positive and false-negative results and should only be used in laboratories skilled in its use.

## **9. Case investigation**

### **Response times**

#### ***Investigation***

Begin the investigation within 1 day of notification of a probable or confirmed case who is:

- under 5 years of age or
- of any age who is NAT or culture confirmed or
- reported to have close contacts who may be at high risk for pertussis.

No action is required for cases notified > 5 weeks after date of onset of cough or > 5 weeks after the date of the laboratory result, unless they are reported to be part of a cluster.

### **Response procedure**

#### ***Case investigation***

*Cases aged under 5 years of age or cases of any age who are NAT or culture confirmed or cases reported to have close contacts who may be at high risk for pertussis*

Only these cases need be investigated by PHU staff, unless assistance is requested. The response to a notification will normally be carried out in collaboration with the case's doctor. PHUs should contact the treating doctor and the patient (or carer) if need be and:

- Provide advice on case and contact management
- Investigate the case using the Pertussis Investigation Form.
- Arrange follow up of close contacts as outlined below.

- To assist the doctor, the PHU may send a letter and Fact Sheet to the treating doctor recommending case and contact management (sample attached).
- PHU staff should ensure that primary vaccination status (including source of verification) is recorded. PHUs should check the case's vaccination status using the ACIR. If not available then PHUs should verify vaccination status by asking the case's carer or doctor to quote the results from a written record.

#### *Cases aged 5 years and older who are not NAT or culture confirmed*

For these cases, follow up may be limited to sending a letter and Fact Sheet to the treating doctor with recommended follow up actions. The offer for PHU staff to assist may be made where either high risk contacts or clusters are identified by the treating doctor. Follow up letters to the treating doctor are not required routinely if the PHU believes that the doctor is aware of the information in the letter.

#### **Case treatment**

Antibiotics given early in the catarrhal stage may attenuate the disease but may have little effect on symptoms if given later. Importantly, antibiotics reduce the period of communicability and should be initiated as soon as possible and within three weeks of the onset of the cough.

Treatment is the responsibility of the attending doctor. For recommended treatment see the latest edition of *Therapeutic Guidelines: Antibiotic*. In 2006 this was updated to:

- clarithromycin 500 mg (child >1 month: 7.5 mg/kg up to 500 mg) orally, 12-hourly for 7 days
- azithromycin 500 mg (child ≥6 months: 10 mg/kg up to 500 mg) orally on day 1, then 250 mg (child ≥6 months: 5 mg/kg up to 250 mg) orally, daily for a further 4 days (child <6 months: 10 mg/kg orally, daily for 5 days); or
- erythromycin 250 mg (child >1 month: 10 mg/kg up to 250 mg) orally, 6-hourly for 7 days.
- If an alternative is needed, use trimethoprim + sulfamethoxazole 160+800 mg (child: 4+20 mg/kg up to 160+800 mg) orally, 12-hourly for 7 days.

In babies <1 month old, erythromycin is not recommended because of concerns it may cause pyloric stenosis, and clarithromycin is not recommended because safety data are not available.

*Therapeutic Guidelines: Antibiotic* notes that there is currently insufficient clinical evidence to recommend the use of roxithromycin for the management of pertussis.

#### **Education**

The case or relevant care-giver should be counselled about the nature of the infection and the mode of transmission. Emphasis should be placed on minimising exposure to susceptible persons, especially infants. The Fact sheet is useful for this purpose.

#### **Isolation and restriction**

Cases should be excluded from work, school, preschool, and childcare, and should be advised not to attend other settings, especially where there are young children, until they are no longer infectious (i.e., for 21 days from the onset of cough, or until they have completed 5 days of a course of effective treatment).

#### **Active case finding**

None routinely required, except in special situations (see 12).

## **10. Control of environment**

None routinely required.

## **11. Contact management**

#### **Identification of contacts**

The aim of identifying contacts is to:

- Alert them to the possibility that they could develop disease
- Recommend that a subset be offered preventive antibiotics if they are at high risk (i.e., young infants, children not fully vaccinated and women at the end of their pregnancy) or live or work in settings where transmission could occur to those at high risk (see “Antibiotic prophylaxis” below).

Direct contact with respiratory secretions from the case is generally considered significant. However, it is necessary to take into account the degree of risk to the individual contact and the nature of exposure. For example, a high probability of infection could be assumed for an infant who remained in the same room as a case for an hour or a newborn directly exposed to a case coughing. Children <1 year old are at the greatest risk from pertussis and its complications, especially if they have received fewer than three doses of DTP vaccine. Because pertussis is spread by droplets rather than by airborne particles, contacts who have been within 1 metre of the case are at highest risk. High-risk activities include kissing, mouth-to-mouth resuscitation, dental examination or medical examination of the nose, mouth or throat.

### **Contact definition**

Contacts are defined as people exposed to an infectious cases in the previous 3 weeks who are in the following categories:

- Household members
- Very close friends (i.e., who have repeatedly had >1 hour per day of contact with the case)
- All children and staff at family day care, childcare, and preschool attendees in the same classroom where the case spent >1 hour (see section 12)
- Children under 24 months of age and women in the last month of pregnancy who were in contact with a case (within 1 metre) for >1 hour while infectious
- Neonates directly cared for by an infectious case (see section 12)
- People sharing the same dormitory as the case.

These contacts should be alerted to the possibility that they could develop disease. Note that the PHU can inform contacts via a third party (eg, doctor, parent or friend) where the PHU is confident that accurate information will be conveyed to the contact by the third party. Where the PHU becomes aware of settings with multiple cases, the PHU should inform others in the group at risk by organising for them to receive a letter and Fact Sheet (see section 12).

### **Prophylaxis**

#### ***Passive immunisation***

Normal human immunoglobulin (NHIG) is not effective against pertussis.

#### ***Active immunisation***

Since a primary course of 3 or more injections is required to protect against pertussis, infant vaccination cannot be effectively used to control an outbreak. However, incompletely vaccinated contacts and others who are routinely recommended to receive adult pertussis vaccination (such as healthcare workers and others in regular contact with young children) are likely to benefit in the future if they receive pertussis vaccination.

#### ***Antibiotic prophylaxis***

There is little evidence that preventive antibiotics reduce secondary transmission outside of household settings. The recommended antibiotics may have associated side effects (especially gastrointestinal) that reduce compliance. Therefore preventive antibiotics should be limited to those close contacts of cases who may either develop severe complications of pertussis or transmit pertussis in settings such as childcare facilities or healthcare facilities. If a case occurs in childcare settings, where there is a child under 12 months of age, the rationale for prophylaxis is to protect both the individual and stop transmission to vulnerable child(ren). If a case occurs in a care group that does not contain a child under 12 months the primary rationale is to protect the individual.

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

- All household members when the household includes any child < 24 months of age who has received less than 3 effective doses of pertussis vaccine (i.e. commenced after 6 weeks of age with at least a 4 week interval between doses, and the last dose given at least 14 days previously),
- Any woman in the last month of her pregnancy, regardless of her vaccination status
- Where the case attended childcare for more than 1 hour while infectious and their care group contains 1 or more children <12 months of age who have received fewer than 3 effective doses of pertussis vaccine, then all other children and adults in the same care group should receive antibiotics regardless of their vaccination status
- Where the case attended childcare for more than 1 hour while infectious and their care group does not contain children <12 months of age who have received fewer than 3 effective doses of pertussis vaccine, then other children in the same care group who have received fewer than three effective doses of pertussis vaccine, and staff who have not received a pertussis vaccine in the previous 10 years, should receive antibiotics.
- All babies in a ward who were exposed to a health care worker who worked in the maternity ward or newborn nursery for more than an hour while infectious. Refer to Section 12 for further details.
- Health care workers in a maternity hospital or newborn nursery, regardless of vaccination status, who were exposed to an infectious case. Refer to Section 12 for further details.

Antibiotic prophylaxis is not considered valuable in other settings such as primary schools, high schools, tertiary institutions and work places.

The antibiotics, doses and duration are the same as for cases (Section 9). Antibiotics should only be given if they can be commenced within 21 days of the last contact with an infectious case.

Prophylaxis is usually arranged through the contacts' usual doctor, to ensure that the contacts are provided with medical support and follow up. However it should be noted that Azithromycin, especially the syrup form, may be difficult and/or expensive to obtain and that specific assistance may be required.

Prophylaxis may be recommended for each new episode of exposure satisfying the above criteria unless the contact was receiving prophylaxis at the time.

### **Education**

PHU staff should manage the distribution of information to contacts (usually in the form of a letter and Fact Sheet) through the treating doctor, or if required, directly, or via the case or other intermediary (e.g., director of the childcare centre, school principals, hospital infection control staff, etc).

### **Isolation and restriction**

Child contacts in the same room as the case who have not received 3 effective doses of vaccine should be excluded from preschool and childcare until the expiry of 14 days from their last exposure to the infectious case, unless they have already completed 5 days of a course of effective antibiotic treatment, in which case they may return.

## **12. Special situations**

### **Cases among children at school or in childcare**

In addition to usual case investigation, it is important to emphasise to parents, school principals and directors of childcare facilities the need to verify each child's immunisation status and the need for parents to remain alert for symptoms and to comply with the recommended immunisation schedule.

It is also important to recommend that the facility remain alert for respiratory illness within 21 days of last contact with the infectious case and to recommend appropriate management of any further cases.

The PHU should prepare a letter for distribution through the school or childcare facility detailing the risk and actions to take (sample attached) to be sent with a Fact sheet to parents of children attending the same class as the case.

Antibiotic prophylaxis recommendations for other children and adults in the same classroom as the case are listed in Section 11.

### **Case in a health care worker in a maternity ward or newborn nursery**

For probable or confirmed cases, consult immediately with facility management and staff from infection control or staff health to institute a management plan appropriate to the facility. This should include procedures for:

- Confirming the diagnosis through expert clinical review and laboratory testing (ideally by PCR or culture. Western Blot test may be useful to confirm antibody rise due to *B. pertussis* toxin). Concurrently investigating alternative diagnoses (e.g. *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, viral [such as adenovirus, metapneumovirus, parainfluenza, influenza A and B, rhinovirus, RSV], non-infectious causes) will assist in interpretation of equivocal or indeterminate results or where there may be co-infection. Staff may have received DTPa which could account for an elevated IgA (see Section 8)
- Making recommendations for case management
- Defining and identifying contacts
- Keeping infectious patients in respiratory isolation until they are no longer infectious (i.e. until they have received at least 5 days of a course of recommended treatment)
- Ensuring that staff follow standard and droplet precautions (including wearing a surgical mask) during close contact with cases.
- Carrying out active surveillance for pertussis among exposed inpatients, staff, students, volunteers and visitors
- Investigating staff members presenting with a coughing illness and if pertussis is suspected, ensuring that the affected person stays away from work for 21 days from the onset of the cough or until they have received at least 5 days of a course of effective antibiotics
- Reviewing staff health records to ensure that all have been protected in line with current immunisation recommendations.

The decision to administer post exposure prophylaxis is made after considering the infectiousness of the patient, the intensity of the exposure (within a distance of a metre and cumulative exposure for more than one hour is usually required for infection), the potential consequences of severe pertussis in the contact and the possibilities for secondary exposure of person at high risk from the contact (i.e. infants). In light of this, prophylaxis is usually recommended for:

- neonates who have been cared for (within 1 metre) by the infected staff member for any length of time
- parents/primary carers exposed to the infected staff member
- health care workers who have been exposed to the infected staff member who are to care for neonates in the next 3 weeks, regardless of vaccination status.

### **Contacts among pregnant women**

Maternal antibodies may not protect newborn babies against pertussis. For this reason, pregnant women with pertussis onset within a month of expected delivery should be given oral erythromycin (250 mg 4 times daily for 7 days). If the baby is born within 3 weeks of the mother's onset of cough, then the baby and all household contacts should receive preventive therapy.

### **Outbreaks**

Where outbreaks of pertussis are identified, then additional control measures should be considered. Depending on the people affected and nature of the setting, control strategies may include:

- Case finding

- Epidemiological studies to determine risks for infection
- Distribution of information letters and Fact sheets
- Referral of cases into treatment services
- Review of immunisation status of those at risk
- Alerts to doctors in the community
- Alerts to the wider community through the media.

Key messages to be communicated usually include:

- Awareness
- Updating immunisation
- Early case findings and treatment
- Contact tracing
- Avoid exposing others, especially small children, to coughing people.

Use of antibiotic prophylaxis beyond the groups recommended in section 5 is difficult to justify.

If an outbreak occurs in a health care facility, an outbreak management team should be convened, including a senior facility manager, PHU staff, an infection control practitioner and appropriate clinical staff.

### **13. Additional sources of information**

- Australian Immunisation Handbook (current edition)
- Control of Communicable Diseases Manual
- Victorian DHS Blue Book

### **14. Appendices**

- PHU Checklist
- Pertussis investigation form
- Factsheet "Pertussis"
- Sample letter

## 15. Jurisdiction specific issues

### Links to State and Territory Public Health Legislation and the Quarantine Act

<http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-state-legislation-links.htm>

#### NSW

##### Legislation

NSW Public Health Act 1991

Pertussis is to be notified by:

- Medical practitioners and hospital CEOs on diagnosis (on the day diagnosis suspected)
- Laboratories on microbiological confirmation (on the day of diagnosis)
- School principals and directors of childcare facilities (phone on the day of notification).

##### Policies

Occupational Assessment, Screening & Vaccination Against Specified Infectious Diseases  
PD2007\_006

Cases aged 5 to 19 years are followed up by public health units to verify their case status and immunisation history and consequently the impact of the school-based immunisation program.

#### Follow up of cases 5-19 years of age

In NSW, to assess the impact of high school based adolescent pertussis immunisation program cases aged 5-19 years are also followed up by PHUs; and to assess whether additional population-based control measures may be required to prevent infection in infants, the likely source of infection in children <2 years old is sought.

- For cases 12-19 years of age, receipt of a second booster should be recorded for cases aged between 12 and 19 years. PHU staff should verify that the case received a school aged vaccination status by sighting a copy of the child's vaccination record, or having a third person sight the record and quote the batch number. Note that for verification purposes PHUs may check school based immunisation records in batches (at least 6-monthly).
- For cases aged <2 years old, PHUs should ask whether other close contacts have been diagnosed with pertussis, or had a coughing illness, and enter the most likely source of infection into NDD (see Data entry above). In NDD, the field "Most likely source of infection" must be completed. Specify one of: parent, grandparent, sibling, other household contact (excluding parent, grandparent or sibling), health care worker, child at childcare centre, overseas, other (specify), unable to be identified on interview, or unable to be interviewed. In Clinical Notes, for the most likely source of infection specify the source's age group and immunisation status (see form). If not known specify that it is not.

**PHU Checklist for pertussis cases notified with 5 weeks of date of onset who are:**

- <5 years of age or
- of any age who are nucleic acid test (NAT) or culture confirmed
- reported to have close contacts who may be at high risk for pertussis

Patient ID number: \_\_\_\_\_

**Contact the patient's doctor to:**

- Obtain patient's history
- Confirm results of relevant pathology tests

**Contact the patient's care giver to:**

- Identify likely source of infection
- Review vaccination status
- Confirm onset date and symptoms of the illness
- Recommend exclusions and restrictions
- Identify contacts and obtain contact details
- Complete *Pertussis Investigation Form*
- Provide with *Pertussis Factsheet*

**Contact ACIR to:**

- Verify immunisation status

**Confirm case**

- Assess information against case definition

**Contact patient's contacts to:**

- Assess risk of pertussis (susceptibility, exposure history)
- Determine current symptoms
- Recommend antibiotics or not
- Explain symptoms and restrictions (child care)
- Provide with *Pertussis Factsheet*

**Other issues:**

- For a death, report details to state/territory CDB
- Assess and arrange best method for delivering intervention to contacts
- Where defined groups of people have been exposed (eg, schools, childcare), contact the person in charge to explain the situation and to provide letters to exposed people
- Enter case data onto notifiable diseases database

## Sample letter to doctors who diagnose pertussis in a case aged 5 years or older who is not NAT or culture confirmed

**Confidential**

Dear Doctor,

We recently received a notification from <notifier> that one of your patients <name> tested positive for pertussis on <date>. In patients who have symptoms consistent with pertussis, a positive test can help confirm the diagnosis. If your patient has pertussis, the following recommendations can help prevent further spread of pertussis to your patient's close contacts.

### Step 1. Case management

Specific antibiotics are recommended to treat pertussis. These are useful to reduce the patient's infectiousness and may also reduce symptoms if given early. **Antibiotics are not required if more than 3 weeks has elapsed since onset of coughing.**

Cases should be treated with clarithromycin, azithromycin or erythromycin. If an alternative is needed, use: trimethoprim+sulfamethoxazole (see: *Therapeutic Guidelines: Antibiotic* for details).

### ***Advice to the patient:***

Advise the patient to stay away from susceptible people -- especially infants or young children -- until he/she is no longer infectious (i.e., the first 5 days of a course of treatment, or for 21 days after the onset of the cough.)
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### Step 2. Identification of close contacts who may be at high risk

It's important to identify other people who may be at high risk of pertussis in whom infection could be severe, as these will require preventative antibiotics. These people include any woman in the last month of her pregnancy regardless of her vaccination status, and all household members if the household includes a child aged <24 months who has not had 3 effective doses of pertussis vaccine.

Antibiotic prophylaxis may be recommended for other contacts too. **Please call the public health unit** to help follow up contacts, including those in institutions, if your patient:

- has household contacts who meet the above criteria, or
- is a child care worker, or
- is a health care worker.

Immunisation is the mainstay of pertussis control. Adults who have contact with young children should be offered immunisation against pertussis.

A fact sheet about pertussis is attached for your patient. Please ask your patient to share this information with any other household members or close friends that may have been exposed.

Pertussis is a notifiable disease and doctors should notify patients diagnosed with pertussis by telephoning the local public health unit as soon as the diagnosis is suspected.

If you believe that your patient has contacts at high risk of pertussis in whom infection could be severe, is part of an outbreak or you would like further advice on the public health management of pertussis, please call the public health unit on <telephone>. Thank you for your help in this important matter.

Yours sincerely,

<Name> <Director, xxx PHU> <date>

## Sample letter to doctors who diagnose pertussis in a case within 5 weeks of date of onset who is <5 years of age or of any age and nucleic acid test (NAT) or culture confirmed

### Confidential

Dear Doctor,

We recently received a notification from <notifier> that one of your patients <name> tested positive for pertussis on <date>. In patients who have symptoms consistent with pertussis, a positive test can help confirm the diagnosis. If your patient has consistent symptoms, the following recommendations can help prevent further spread of pertussis to your patient's close contacts.

#### Step 1. Case management

Specific antibiotics are recommended to treat pertussis. These are useful to reduce the patient's infectiousness and may also reduce symptoms if given early. **Antibiotics are not required if more than 3 weeks has elapsed since onset of coughing.**

Cases should be treated with clarithromycin, azithromycin or erythromycin. If an alternative is needed, use: trimethoprim+sulfamethoxazole (see: *Therapeutic Guidelines: Antibiotic* for details). [In babies <1 month old, erythromycin is not recommended because of concerns it may cause pyloric stenosis, and clarithromycin is not recommended because safety data are not available.]

#### Advice to patient and parent

Advise the patient to stay away from school, preschool, childcare or other settings where there may be susceptible young children until he/she is no longer infectious (i.e. the first 5 days of a course of recommended treatment, or for 21 days after the onset of the cough.)

#### Step 2. Identification of close contacts who may be at high risk

It's important to identify other people who may be at risk of pertussis in whom infection could be severe, as these will require preventative antibiotics. These people include any woman in the last month of her pregnancy regardless of her vaccination status, and all household members if the household includes a child aged <24 months who has not had 3 effective doses of pertussis vaccine.

Antibiotic prophylaxis may be recommended for other contacts too. **Please call the public health unit** to help follow up contacts, including those in institutions, if your patient:

- has household contacts who meet the above criteria, or
- is a child care worker, or
- is a health care worker.

A public health unit staff member will contact you directly to assist in the public health follow up of this patient. If you require information sooner, please call the unit on **<telephone>**.

Immunisation is the mainstay of pertussis control. Adults who have contact with young children should be offered immunisation against pertussis.

A fact sheet about pertussis is attached for your patient. Please ask your patient or the parent to share this information with any other household members and close friends that may have been exposed.

Pertussis is a notifiable disease and doctors should notify the diagnosis by telephoning the local public health unit as soon as the diagnosis is suspected.

Thank you for your assistance in this important matter.

Yours sincerely,

<Name> <Director, xxx PHU> <date>

## **Sample letter to parents of a child in a childcare facility or preschool with pertussis**

Dear Parent,

### **Pertussis (whooping cough)**

A child from the [name of the particular class at the particular facility] has been diagnosed with pertussis (whooping cough). I am writing to provide advice and to ask that you watch out for the symptoms of pertussis in your child, especially over the next 3 weeks.

#### **What is pertussis?**

Pertussis is an infection of the throat that can cause bouts of coughing, and sometimes breathing difficulties and vomiting. It can be a very serious infection in small children. The illness can last for many weeks. It usually starts with a snuffle or a cold.

#### **What should people sick with pertussis do?**

If your child develops symptoms, please take your child and this letter to your local doctor as soon as possible. Your doctor can advise whether pertussis is likely and arrange for early treatment if needed. Treating people who have pertussis with antibiotics can stop the infection spreading, but is more effective if started early.

To help prevent this infection spreading, people who have been diagnosed with pertussis should not attend [the facility] until they have completed the first 5 days of a course of the recommended antibiotics. If antibiotics cannot be taken, then they must stay away for 3 weeks after onset of the cough.

#### **How is it prevented?**

Vaccination is the most important way of reducing pertussis in our community. It is important to double check that your child is fully up to date with his or her immunisations against pertussis. If in doubt, please ask your doctor to check.

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*Option 1: If the child care group includes a child <12 months who have received fewer than 3 effective doses of pertussis vaccine*

Small children can have severe disease, and we recommend that all children in the class take special antibiotics to help **prevent** pertussis. While the pertussis vaccination greatly reduces the risk of disease, there is still a chance your child could get pertussis even if they have been fully vaccinated. Given that there is a high chance your child has been exposed to the disease while at childcare, we recommend that he/she takes antibiotics even if he/she has been vaccinated. Antibiotics have been arranged through [the child's own doctor, or other arrangement].

-----  
*Option 2: If the child care group does not have a child < 12 months who have received fewer than 3 effective doses of pertussis vaccine*

We recommend that children who are not fully vaccinated against pertussis in the class take special antibiotics to help prevent infection.

-----  
If your child is unable to take the antibiotics and is not fully vaccinated, he/she should not attend the [facility] until [14 days after exposure].

#### **Need more information?**

For more information, please see the attached Pertussis Fact sheet, or call <name> at the Public Health Unit on <phone>.

Yours sincerely

Director, Public Health Unit

# PERTUSSIS INVESTIGATION FORM

## Case details

Surname		Given name		NDD no.	
DOB	_/_/___	Age	___ yrs/mth	Sex	M   F
Address					
Suburb		Postcode		Telephone	
Other contact				Telephone	
Occupation/school				Telephone	
Indigenous	<input type="checkbox"/> Aboriginal <input type="checkbox"/> Torres St Islander <input type="checkbox"/> both Aboriginal and TSI <input type="checkbox"/> not Indigenous <input type="checkbox"/> not stated	Country of birth	<input type="checkbox"/> Australia <input type="checkbox"/> Other: <i>specify</i> _____ _____	Language	<input type="checkbox"/> English <input type="checkbox"/> Other: <i>specify</i> _____ _____

## Disease

Symptomatic	Y   N	Onset date	_/_/___		
Cough	Y   N	Duration	___ days		
Paroxysms	Y   N	Whoops	Y   N	Post-tussive vomiting	Y   N
Rx Antibiotics	Y   N	Type	<input type="checkbox"/> Erythromycin <input type="checkbox"/> Other _____	Date begun	_/_/___

Notes

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Definition       probable       confirmed

## Laboratory

Lab confirmed	Y   N	Specimen	<input type="checkbox"/> serum <input type="checkbox"/> aspirate <input type="checkbox"/> swab	Specimen date	_/_/___
Organism	<i>B. pertussis</i>				_/_/___
Suborganism	N/A	ID method	<input type="checkbox"/> Ig A serology <input type="checkbox"/> culture <input type="checkbox"/> PCR/NAT	<input type="checkbox"/> pos <input type="checkbox"/> pos <input type="checkbox"/> pos	<input type="checkbox"/> neg <input type="checkbox"/> neg <input type="checkbox"/> neg

## Notification

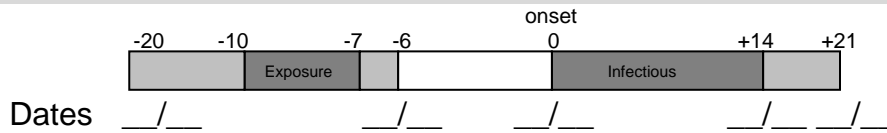
First notifier		Telephone		Fax	
Notifier type	___ Lab ___ Doctor ___ Hospital (not lab) ___ Other _____	Notified date	_/_/___	Received date	_/_/___
No. in order of receipt		Telephone		Postcode	
Treating doctor				Fax	
Address					

## Outcome

Hospitalised	Y   N	Admitted	_/_/___	Discharged	_/_/___
Hospital/s				MRN	
Hosp doctor		Telephone		Address	
Pneumonia	Y   N   U	Seizures	Y   N   U	Encephalopathy	Y   N   U
Deceased	Y   N	Death date	_/_/___	Death from pertussis?	Y   N   U

**Risk factors**

**Infection timeline**



**Exposures in 6 to 20 days before onset:**

**Specify**

**For cases <5 years old:**

Vaccination against pertussis	Y	N	U	Dose #	Date	Verified by
				_____	___/___/___	<input type="checkbox"/> ACIR <input type="checkbox"/> other _____
				_____	___/___/___	<input type="checkbox"/> ACIR <input type="checkbox"/> other _____
				_____	___/___/___	<input type="checkbox"/> ACIR <input type="checkbox"/> other _____
				_____	___/___/___	<input type="checkbox"/> ACIR <input type="checkbox"/> other _____
				_____	___/___/___	<input type="checkbox"/> ACIR <input type="checkbox"/> other _____

**If not vaccinated, why not?**

- history of pertussis
- age < 2 months
- forgot
- chose not to
- other

**Contact management (persons exposed from prodrome to 21 days after onset)**

Case advised about reducing spread to others	Y	N			
Close contacts	Relationship	Age/DOB	Telephone	Intervention	By whom?
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

**No. contacts recommended for prophylaxis**

**Administration**

Completed by \_\_\_\_\_ Date finalised \_\_\_/\_\_\_/\_\_\_ PHU \_\_\_\_\_