PERTUSSIS

Based on the MoH Communicable Diseases Control Manual 2012 – Pertussis update 2017

Associated Documents

- Pertussis case report form (ESR): Y:\CFS\Quality\ApprovedDocuments\ProtectionTeam\ComDisAssocDocs\PertussisCaseReportForm.pdf
- Pertussis notification fax form: on EDMS here
- Fact sheet: K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\PertussisFactSheet.pdf
  Ministry of Health pamphlet: K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\Pertussis100412_MoH.pdf
- Fact sheet for pharmacists: K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\PertussisFactSheetForPharmacists.pdf

The Illness

An acute bacterial infection of the respiratory tract caused by *Bordetella pertussis*. Infection is most often severe in young infants, in whom prolonged periods of apnoea may result in cyanosis, anoxic encephalopathy, seizures and death. Infants aged less than three months have the highest rate of notification and hospitalisation.

The initial catarrhal stage, which is the most infectious period, has an insidious onset with rhinorrhoea and an irritating cough that can progress to severe paroxysms of coughing. The catarrhal stage usually lasts 1-2 weeks and is followed by the paroxysmal stage, characterised by a series of short expiratory bursts, followed by an inspiratory gasp or typical whoop, and/or vomiting. Presentation varies with age, immunisation status and previous infection. Between 12 - 37 percent of school-aged children, adolescents and adults with persistent cough have evidence of recent *B. pertussis* infection. The most common complications of pertussis are secondary infections, such as otitis media and pneumonia, and the physical sequelae of paroxysmal coughing (eg, subconjunctival haemorrhages, petechiae, epistaxes, central nervous system haemorrhages, pneumothoraces and herniae).

Epidemiology

New Zealand has continued to experience cyclic outbreaks of pertussis, occurring every few years, in recent decades. This is in part due to historically low immunisation rates and because immunity from both natural infection and immunisation wanes over time.

The objectives of surveillance for pertussis are:

- to monitor and analyse the epidemiology of the disease, with emphasis on those at high risk of severe disease or complications, particularly infants
- to monitor the impact of immunisation
- to report on findings to inform effective and efficient prevention strategies.

The priority of the prevention strategies against pertussis is to protect infants by passive immunity transfer from their mothers with booster immunisation during each pregnancy, and timely immunisation of infants.

There are epidemics every 3-5 years in New Zealand superimposed on an endemic background incidence. Older siblings, adolescents and adults transmit the infection to infants. In highly immunised populations the deaths occur in the first two months of life. Young age, lack of immunisation, low socioeconomic status, premature gestation, low birth weight and female gender are significantly associated with an increased risk of fatal pertussis. Hospital admission rates are higher for Maori and Pacific people. The highest rate for hospitalisation is in infants under 1 year old and since 2000 has been three times that in Australia and the US. There were eight deaths from 2000 to 2014.

CASE DEFINITION

Clinical description

A clinically compatible case characterised by cough and one or more of:

- paroxysms of cough
- cough ending in vomiting, cyanosis or apnoea
- inspiratory whoop.

Infants are less likely to have the inspiratory whoop and are more likely to present with gagging, gasping, cyanosis, apnoea, or non-specific signs such as poor feeding or seizures.

Adults and children partially protected by vaccination can present with illness ranging from a mild cough illness to classic pertussis.

Transmission: Droplets of respiratory, oral or nasal secretions. Indirect spread via contaminated objects occurs rarely.

Infectivity: Highly communicable in the catarrhal stage before the paroxysmal cough stage, and during the first 2 weeks of the paroxysmal stage of the cough. Transmissibility gradually decreases after that.

- For control purposes, the communicable stage lasts from the catarrhal stage to 3 weeks after the onset of paroxysmal cough in a case not treated with antimicrobials. When treated with an effective antibiotic (for example, erythromycin), infectivity lasts until 5 days of antibiotics have been taken. This can be shortened to 2 days if azithromycin is used.[1]
- **Incubation period:** ranges from 5-21 (usually 7-10) days.
- **Prevention**: On-time immunisation is the key preventive measure. Other public health measures are aimed at preventing spread to infants aged less than one year and other vulnerable persons.

[1] A epidemiological link is established when there is: contact between two people at a time when one of them is likely to be infectious (from the catarrhal stage, approximately 1 week before, to 3 weeks after onset of cough) AND the other has an illness which starts within 5 to 21 days after this contact AND at least one case in the chain of epidemiologically linked cases (which may involve many cases) is a confirmed case with either laboratory definitive or laboratory suggestive evidence.

Notification Procedure

Attending medical practitioners or laboratories must immediately notify the local medical officer of health of suspected cases. Notification should not await confirmation.

CASE CLASSIFICATION

Under investigation: A case that has been notified, but information is not yet available to classify it as suspect, probable or confirmed.

Suspect (in children under 5 years of age): Any paroxysmal cough with whoop, vomit or apnoea for which there is no other known cause.

Probable: A clinically compatible illness where the cough is lasting longer than 2 weeks. However in situations where serology has been requested after consultation between the Medical Officer of Health and the local microbiologist, a clinically compatible illness with laboratory suggestive evidence will also be considered as probable.

Confirmed: A clinically compatible illness accompanied by laboratory definitive evidence, or is epidemiologically linked[2] to a confirmed case.

Not a case: A case that has been investigated and subsequently found not to meet the case definition.

[2]..Although Public Health England guidelines (updated 9 December 2016) recommend an exclusion of 2 days for all excluded cases (www.gov.uk/government/publications/pertussis-guidelines-for-public-health-management), the clearance of B. pertussis with other antibiotics may not be as rapid.

Laboratory Testing

Laboratory definitive evidence for a confirmed case requires: isolation of *Bordetella pertussis* or detection of *B. pertussis* nucleic acid, preferably from a nasopharyngeal swab.

Laboratory suggestive evidence for a probable case requires: *B. pertussis* toxin IgG test of > 100 IU/ml or a significant increase in antibody levels between paired sera at the same laboratory[3]. Serology should only be requested for public health purposes after consultation between the Medical Officer of Health and the local microbiologist.

[3]. A 'significant increase' is generally taken as a fourfold rise in titre, however interpretation of serology results should be discussed with the testing laboratory or ESR.

Canterbury Health laboratory Testing

- CHL only does PCR and serology. PCR is recommended up to 4 weeks after the onset of symptoms. Serology is done after that (but is not a confirmatory test.
- Turnaround time for PCR testing is 24-36 hours.
- Samples for pertussis (bacteria) PCR testing should be collected using a **dry** nasopharyngeal swab. Do **not** use viral transport media or charcoal swabs.

SCL/Medlab testing

- Culture if within 5 days of onset
- PCR if within first 2 weeks of onset and has permission of clinical microbiologist (eg. Richard Doehring) or MOH.
- serology if over 2-3 weeks.

Notes

There are several laboratory tests available for the diagnosis of pertussis and the timing of the test impacts on its sensitivity. Appropriate tests and specimens should be discussed with the testing laboratory or ESR. A negative test does not necessarily rule out pertussis: consider exposure, clinical compatibility, the test used and the timing of the test.

Polymerase Chain Reaction (PCR)
PCR should be considered the **diagnostic method of choice**, unless the presentation is delayed until 4 weeks after onset of symptoms, or 3 weeks after the onset of paroxysmal cough. After that sensitivity declines as the amount of bacterial DNA in the nasopharynx diminishes. PCR is 2–3 times more likely to be positive than culture when symptoms of classic pertussis are present (eg, 2 weeks of paroxysmal cough). PCR can be affected by specimen collection but is less affected by prior antibiotic therapy since the organism does not need to be viable to be positive by PCR.

Culture
Culture is only useful during the catarrhal and very early paroxysmal phase of illness. The sensitivity of nasopharyngeal culture decreases rapidly after the onset of cough.
Culture sensitivity is reduced by antibiotic treatment, immunisation, duration of illness and can also be affected by specimen collection, transportation and isolation techniques. Cultures are rarely positive after 2 weeks from the onset of the catarrhal stage of the illness, or 1 week of paroxysmal cough, or for more than a few days after antibiotic treatment. Cultures may also take up to 2 weeks to be finalised, so the results may not be clinically useful.

Serology
The sensitivity and specificity of serology is low. Serology cannot be used as a confirmatory test. Therefore the use of serology is not recommended, except for public health purpose after consultation between the Medical Officer of Health and the local microbiologist. Serology can then sometimes be used late in the course of illness, generally when the patient is no longer infectious. Serologic tests measure antibodies that could result from either infection or vaccination. Anti-pertussis toxin IgG is the best serological marker of infection. IgA assays lack adequate sensitivity and specificity and should not be used for diagnosis.

Management of Case

Investigation
The highest priority for public health action should generally be given to cases known to have close contacts particularly vulnerable to pertussis, including those who work or attend a setting with such persons.

In consultation with the attending medical practitioner, ascertain pertussis immunisation status and determine whether there are close contacts for whom chemoprophylaxis is appropriate.

Christchurch and South Canterbury

Fax GP requesting he/she download the one page Pertussis notification fax form from the HealthPathways site: HealthPathways> Pertussis (Whooping cough)> Request> Notify Medical Officer of Health> Request> pertussis form

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a) If diagnosis suspected, probable or confirmed**:**

- action on the day of notification.
- phone patient to complete details, provide information and follow up management of case and contacts.
- determine whether there are close contacts for whom chemoprophylaxis is appropriate.
- determine whether case attends school, early childhood centre or other institution.
- Ideally, a nasopharyngeal swab should be collected from all suspected cases of pertussis. However, testing may not be necessary or appropriate for cases with an epidemiological link to a confirmed case, or in outbreak situations. In this regard, previous advice to GPs (during the 2011-2013 epidemic) has been as follows

(PHIQ July 2012 and January 2018):

Test if: there are few cases in the region and the diagnosis is unsure, or the patient is an index case in a family or cluster (PCR or culture), or a retrospective diagnosis is necessary (serology).
Don't test if: the patient has a clinically compatible illness and either, is a contact of a case, or the result won't influence the management of the case or contacts.

b) If diagnosed by serology:
- post information to patient. No other follow-up because presumed to be no longer infectious.

Relevant letters

Letters are found in:

Y:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Pertussis\FormsStdLettersQuest

West Coast (the Public Health Nurses follow up these notifications)
- action on the day of notification.
- phone patient to complete details, provide information and follow up management of case and contacts.
- determine whether there are close contacts for whom chemoprophylaxis is appropriate.
- determine whether case attends school, early childhood centre or other institution.

Restriction
- Exclude the case from school, early childhood services, other institutions or work until they have received at least 2 days[4] of azithromycin treatment, or exclude them for 3 weeks from the date of onset of typical paroxysms of cough or until the end of the cough, whichever comes first.
- Cases should also be advised to stay away from community gatherings for the same periods.

[4] This must be extended to 5 days if erythromycin or other antibiotic is used. Although Public Health England guidelines (updated 9 December 2016) recommend an exclusion of 2 days for all excluded cases (www.gov.uk/ government/publications/pertussis-guidelines-for-public-health-management), the clearance of *B. pertussis* with antibiotics other than azithromycin may not be as rapid.

Treatment
- The treatment of pertussis is primarily supportive, although antibiotics may modify the clinical course of the illness if administered during the catarrhal stage or the early paroxysmal stage (usually the first 2 weeks).
- Antibiotic treatment is not effective if taken more than 21 days after the onset of symptoms.
- Antibiotics reduce infectivity by eradicating the organism from secretions.

Recommended antibiotics (HealthPathways) are azithromycin (5 day course), and co-trimoxazole (14 day course)..
- Azithromycin (5-day course) is funded for all ages (and is the preferred antibiotic for infants aged less than 1 month) for treatment or post-exposure prophylaxis
- For dosages see HealthPathways [http://www.healthpathways.org.nz/ <Antibiotics for Pertussis>

- Infants must be kept under close observation while on treatment with any of these drugs. Macrolides (including azithromycin) are associated with hypertrophic pyloric stenosis in infants in the first 6 weeks of age, especially in the first 2 weeks. Monitoring for complications is therefore recommended for 4 weeks after completion of treatment. For more details see the

Immunisation Handbook 2017, the New Zealand Formulary[5], and medicine data sheets, including the use of antibiotics during pregnancy[6], or consult an infectious diseases physician or obstetrician.

- Pregnancy (inserted 4/10/2018): the Immunisation Handbook 2017 recommends antibiotic treatment for women diagnosed with pertussis in the third trimester of pregnancy, even if 6-8 weeks have elapsed since the onset of cough (section 14.8.4), and antibiotic prophylaxis for pregnant women, especially in the last month of pregnancy, who are contacts of a case (section 14.8.5). The New Zealand Formulary states that azithromycin is acceptable for use in pregnancy and not associated with an increased risk of pyloric stenosis[5].

5 New Zealand Formulary for Children: www.nzfchildren.org.nz/nzf_3150.html
New Zealand Formulary for Adults: www.nzf.org.nz/nzf_3150.html

6 Medicines and use in pregnancy. Medsafe.
http://medsafe.govt.nz/profs/PUArticles/June2013MedsInPregnancy.htm

Oral Contraceptives

Unless the antibiotic causes a stomach upset or diarrhoea (in which case the person should speak with their doctor regarding alternative contraception) azithromycin[7] is not thought to have an effect on oral contraceptives. However co-trimoxazole does have an effect on oral contraceptives and barrier contraception is required when taking that medication.[8]

7 Zithromax. Consumer medical information. http://www.medsafe.govt.nz/Consumers/cmi/z/Zithromax.pdf Accessed 13 December 2017.

8 EMC (electronic medicines compendium (UK/Europe)
https://www.medicines.org.uk/emc/medicine/30691#PREGNANCY

Alternative Antibiotic Treatment

(Refer to the Immunisation Handbook 2017 Table 14.3, page 392 for details)

- Erythromycin (14-day course of the succinate).
- Clarithromycin (7-day course) is also suitable for persons aged over 4 weeks but is not funded for treatment or post exposure prophylaxis in NZ and requires specialist approval for subsidy.
- TMP-SMX (trimethoprim-sulfamethoxazole) (14 day course).

Counselling

- The case should be advised of the nature of the infection and its mode of transmission.
- The case should be advised to avoid contact with vulnerable persons including young children especially those less than 1 year, pregnant women in the last trimester, healthcare and preschool workers.
- A fact sheet is available:
K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\PertussisFactSheet.pdf

A Ministry of Health pamphlet is also available:
K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\Pertussis100412_MoH.pdf

Management of Contacts

For summary see Appendix.

Identify contacts to alert them to the possibility that they could develop disease, for restriction, immunisation and chemoprophylaxis as appropriate.

Definition
A contact can be defined as someone who has been in close proximity (within 2 metres) of the index case for 1 hour or more*, during the case's infectious period. Contacts include household members, those who have stayed overnight in the same room, and those who have had face-to-face contact with the case.

* "In the absence of evidence concerning the minimum duration of exposure required to lead to infections in neonates, a neonate exposed to an infectious case for less than one hour may warrant being considered a close contact." (footnote K, Table 2, Pertussis control guideline. NSW Health (see References).

- Intensive public health follow-up of all contacts is not usually necessary or effective in preventing community transmission, although raising general awareness and promoting on-time immunisation is important.
- The primary goal of public health follow-up for pertussis contacts is to protect infants, pregnant women, and people at high risk of severe or complicated illness.
- Public health staff are responsible for community contacts being identified and receiving information about pertussis and advice regarding prophylaxis

High priority contacts for public health follow-up are therefore:

1. children under 12 months old
2. children and adults who live with, or spend much of their time around a child under 12 months old, including health care and education settings
3. pregnant women (particularly in the last month of pregnancy)
4. individuals that are at high risk of severe illness or complications because a pre-existing health condition that may be exacerbated by a pertussis infection (for example those with chronic respiratory conditions, congenital heart disease or immunodeficiency).

Factors to consider when determining public health follow-up and intervention include:

- degree of exposure. Most contacts at early childhood services, schools or work or who have only shared vehicle space or only had casual contact are not usually considered contacts for the purposes of public health follow-up, other than providing information and observation
- immunisation status. For example whether there is clearly documented full immunisation history or recent boosters[9]
- the health status of the contact
- side effects of prophylactic antibiotics.

9 The Immunisation Handbook 2017 currently recommends boosters (funded) for pregnant women between 28–38 weeks gestation in each pregnancy and boosters (not funded) at 10–yearly intervals for certain groups (pp. 383–385). Recommended timing will be kept under review, given that immunity wanes after 5–10 years from the last pertussis vaccine dose (MMWR Vol. 54 No. RR-14 December 9, 2005).

Investigation
Children and staff at early childhood services, especially partially immunised children, should be observed for respiratory tract symptoms for 3 weeks after last exposure to an infectious case.

Restriction

- Any contacts (high priority or otherwise) should be advised to avoid attending early childhood services, school, work or community gatherings if they become symptomatic. It is important to clearly explain that the early stage of pertussis is catarrhal, with symptoms that are indistinguishable from those of minor respiratory tract infections, and is highly contagious.
- In general, susceptible contacts[10] working or living with someone particularly vulnerable to pertussis (in particular: young child with < 3 doses of pertussis-containing vaccine, woman in the last month of pregnancy or person with a pre-existing health condition that may be exacerbated by a pertussis infection) should be given prophylaxis with antibiotics and not be excluded while taking prophylaxis as long as they don't have any symptom, or, in the absence of prophylaxis, be excluded/avoid close contact for 14 days after the last exposure to an infectious case.
- Additional restrictions may be advised by the local Medical Officer of Health, in particular where there is a significant risk of transmission to high priority individuals. For example health care workers who work with children under 12 months old (such as on paediatric and maternity wards).

10 Susceptible contacts are defined as those who are not fully immunised for their age, or if they are over 16 years of age and have not received a booster of pertussis-containing vaccine in the last 5 years.

Prophylaxis

a) Antibiotics

Recommended antibiotics and dosages are the same as for case treatment.

Evidence for the effectiveness of chemoprophylaxis of contacts is limited. Therefore, antibiotics are only recommended for high priority contacts[δ] and if administered within 3 weeks of exposure to an infectious case.

[δ] **High priority contacts** for public health follow-up are therefore:

- children under 12 months old
- children and adults who live with, or spend much of their time around a child under 12 months old, including health care and education settings
- pregnant women (particularly in the last month of pregnancy)
- individuals that are at high risk of severe illness or complications because a pre-existing health condition that may be exacerbated by a pertussis infection (for example those with chronic respiratory conditions, congenital heart disease or immunodeficiency).

b) Immunisation

- Unless current immunity is likely, high priority contacts should be offered a dose of a pertussis containing vaccine[11] (only doses on the national immunisation schedule are funded, including the 11 year old booster and boosters for pregnant women between 28–38 weeks gestation).
- Advise any unimmunised or partially immunised individuals to be fully immunised.
- Pregnant women should receive a dose of Tdap (funded) from 28 to 38 weeks' gestation. This should be given during each pregnancy.
- Vaccination after exposure does not decrease the risk of infection from that exposure.

11 Pertussis vaccine should be offered in every pregnancy (currently funded for pregnant women between 28-38 weeks gestation). Vaccination of pregnant women is likely to result in increased immunity in the newborn infant, as well as in the mother (also see Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Vaccine (Tdap) in Pregnant Women — Advisory Committee on Immunization Practices (ACIP), 2012. MMWR. Vol. 62, No. 7, 22 February 2013).

Tdap is **recommended but not funded** for:

- Lead maternity carers and other health care personnel who work in neonatal units and other clinical settings (such as GPs and practice nurses), where they

are exposed to infants, especially those with respiratory, cardiac, neurological or other co-morbid conditions (with a booster dose at 5-10 year intervals).
- Household contacts of newborns, including adult household and other close contacts (contacts who are aged under 18 years and who are unimmunised or incompletely immunised for their age can receive funded pertussis vaccine).
- Early childhood workers (with a booster dose at 5-10 year intervals), although the priority is to ensure all children attending child care have received age-appropriate vaccination.

Outbreak Or Epidemic

- consider pertussis boosters for other people in the community who are vulnerable.
- infants as young as 4 weeks of age can commence pertussis immunisation.
- In a school/institutional outbreak, ask the principal/senior management to inform the parents and others at risk including staff.
- C&PH to inform local medical practices, public health nurses and dental nurses (contact the Clinical Nurse Specialist, Infection Prevention & Control, Older Persons Health & Rehabilitation & Community, Burwood Hospital, for details of dental nurses).

Outbreak in a preschool:

- Due to the variety of childcare settings where two or more cases may be epidemiologically linked and the absence of strong evidence for the effectiveness of antibiotic prophylaxis in these settings, a case by case assessment will usually be required to determine the appropriate response. (CDNA, National Guidelines for Public Health, Australia – see References).
- If repeated events in an early child care facility, advise prophylaxis only to the vulnerable contacts ie.:
  i) children <12 months old,
  ii) pregnant women ≥36 wks, and
  iii) individuals at risk because of a pre-existing health condition (eg. those with chronic respiratory conditions, congenital heart disease or immune deficiency).

See foot note of the APPENDIX for more detail.

Counselling and Advice

For anyone associated with a case of pertussis:

- Give information about pertussis.
- A fact sheet is available:
  K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\PertussisFactSheet.pdf
  A Ministry of Health pamphlet is also available:
  K:\CFS\Quality\ApprovedDocuments\ProtectionTeam\FactSheets\Pertussis100412_MoH.pdf
- Any contacts (high priority or otherwise) should be advised to avoid attending early childhood services, school, work or community gatherings if they become symptomatic (and to see a doctor promptly).
- Check immunisation status and recommend immunisation of those contacts who are either unimmunised or under-immunised including health care and childcare workers. Reinforce importance of on-time immunisation.
- Consider 'cocooning' immunisation for protection of an infant if appropriate (Immunisation Handbook 2017, Pertussis, 14.8.1, page 389).
- Advise to see a doctor promptly if symptoms develop.

	• Child care facility providers and exposed children, especially incompletely immunised children should be observed for respiratory symptoms for 21 days after contact has been terminated.
Other Control Measures	
	Identification of source Not applicable. **Disinfection** • Clean and disinfect surfaces and materials contaminated by respiratory secretions. • If necessary MOH to discuss with the infection control officer. **Health education** • Encourage immunisation of pregnant women between 28–38 weeks gestation at every pregnancy. • Encourage on-time immunisation, particularly for infants at 6 weeks, 3 months and 5 months. • Encourage timely immunisation of older children against pertussis at aged 4 and 11 years as per the *Immunisation Handbook 2017 (*Ministry of Health)[12]. • Encourage close family contacts of young infants, such as grandparents, fathers and partners to have a booster dose of pertussis vaccine to reduce spread of the disease. Older siblings should be up-to-date with their immunisations. • Encourage a booster dose against pertussis every 10 years to all lead maternity carers and other health care personnel who work in neonatal units and other clinical settings (such as GPs, practice nurses and Well Child providers), where they are exposed to infants • Encourage a booster dose against pertussis every 10 years to all those living or working with people with a pre-existing health condition that may be exacerbated by a pertussis infection, especially health care workers • Encourage (re-)vaccination (funded) of immunosuppressed patients with pertussis-containing vaccine according to the existing guidance (page 720, Immunisation handbook) • Encourage a booster dose against pertussis every 10 years to all early childhood workers. • Promote behaviours that protect infants, such as encouraging people with a cough to keep their distance from babies. • Promote behaviours that prevent the transmission of communicable respiratory diseases. [12] Refer to the Immunisation Handbook 2017 https://www.health.govt.nz/publication/immunisation-handbook-2017
Reporting	
	• Enter completer case details on EpiSurv • If a cluster of cases occurs, inform the Ministry of Health Communicable Diseases Team and outbreak liaison staff at ESR, and complete the Outbreak Report Form. • If an outbreak, write report for Pertussis Outbreak Report File K:\CFS\ProtectionTeam\FinalDocs\NotifiableConditions\Pertussis\Outbreaks\. • File.

Appendix

Summary of pertussis contact management

Case	Contacts	Management
Any case, but in particular in a household, or the first case* in an early child care facility.	**A) High priority contacts** for follow- up: 1) children <12 months old 2) children and adults who live with, or spend much of their time around a child < 12 months old including health care and education settings 3) pregnant women ≥36 wks 4) individuals at risk because of a pre-existing health condition (eg. those with chronic respiratory conditions, congenital heart disease or immune deficiency).	• Information about pertussis and respiratory hygiene • Vaccination advice • Recommend azithromycin • No restriction if asymptomatic • Exclude if symptomatic and refer to GP
	B) Susceptible contacts Those who are either: - not fully immunised for their age, or - are over 16 years of age and have not received a booster of pertussis in the last 5 years, and who are either working or living with someone particularly vulnerable to pertussis ie: a) young child with < 3 doses of pertussis, b) pregnant woman ≥36 wks c) person with a pre-existing health condition that may be exacerbated by pertussis.	• Information about pertussis and respiratory hygiene • Vaccination advice • Recommend azithromycin • No restriction if asymptomatic • Exclude if symptomatic and refer to GP
	C) Non-high risk contacts	• Information about pertussis and respiratory hygiene • Vaccination advice • No antibiotics • Monitor for symptoms • Exclude if symptomatic and refer to GP

* If repeated events in an early child care facility, advise prophylaxis only to the vulnerable contacts ie.: **A** 1), 3) and 4), [*not* **B or C**] but also see comments below.
This C&PH recommendation is based on comments from the Pertussis control guideline, NSW Health, http://www.health.nsw.gov.au/Infectious/controlguideline/Pages/pertussis.aspx#fn21

- There is little evidence that antibiotic prophylaxis reduces secondary transmission outside of the household setting (*although some child care settings may be regarded as a household, the NSW prophylaxis advice for contacts in a child care facility is not identical to the advice for household contacts*)
- If there are prolonged or multiple chains of transmission, the benefit of antibiotic prophylaxis is likely to be minimal
- Circumstances, in which further contact occurs with an index case satisfying the recommendations for antibiotic prophylaxis, should be assessed to determine the risk of severe disease in contacts and the benefit of repeat antibiotic prophylaxis.

If 2 or more cases within a single incubation period in the same room in an early child care facility refer to Table 2 in the above reference.

References and other information

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