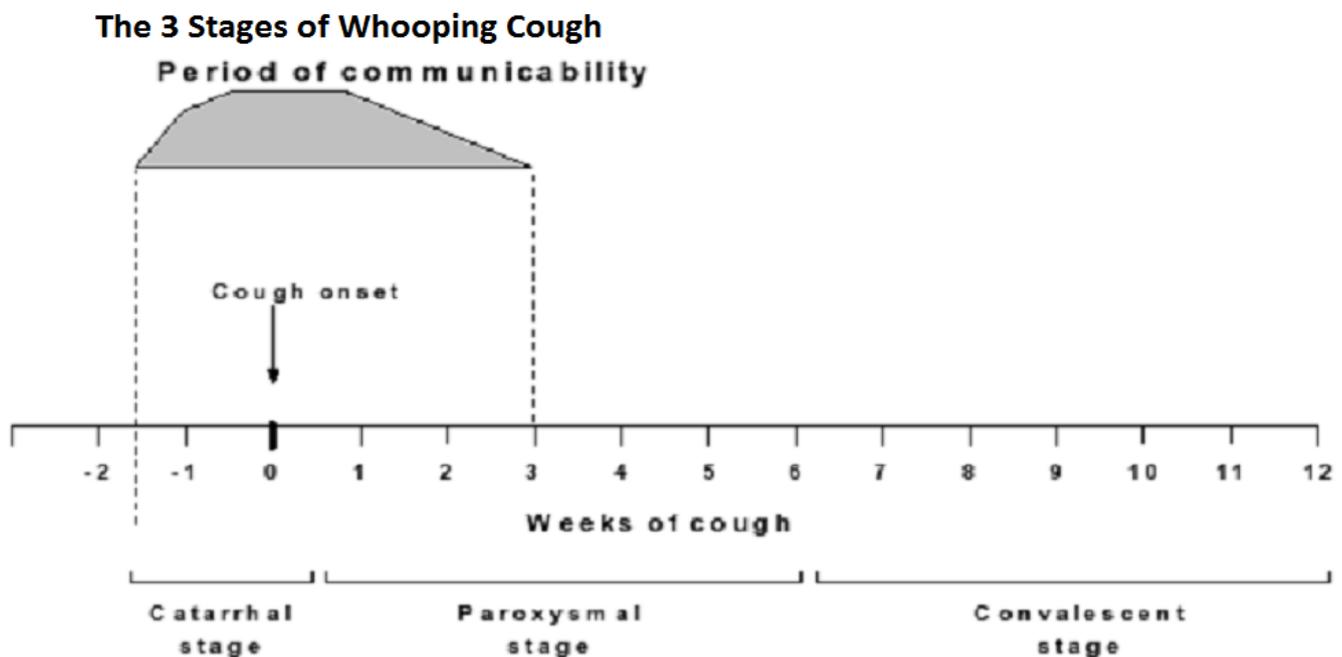


Whooping Cough *Bordetella pertussis*

Pertussis, whooping cough, is a highly communicable bacterial infectious disease characterized by spasms of severe coughing (paroxysms) usually lasting from 6 to 10 weeks. Pertussis should be suspected when any cough is paroxysmal or lasts more than a week.

Pertussis typically lacks fever and classically **progresses through three stages**:

- 1. Catarrhal (1–2 weeks): mild, upper respiratory tract symptoms** gradually develop with an intermittent non-productive cough.
- 2. Paroxysmal (1–2 weeks or longer): spasms of cough end with a gasp, whoop,** or vomiting. The paroxysms are continuous without inspiration until the end and are often followed by the characteristic inspiratory whoop and/or post-tussive vomiting. Adolescents and adults may have less dramatic symptoms.
- 3. Convalescent (2–6 weeks but up to 3 months): gradual resolution** of the paroxysmal coughing.



Pertussis can occur at any age, regardless of vaccination history. Apnoea rather than cough may be the initial symptom in infants less than 6 months of age. Pertussis among older children, adults, and those previously immunised can be milder than classic whooping cough, the symptoms may be no more distinctive than other upper respiratory tract infections.

Death and serious complications occur mainly in infants.

Incubation period is thought to be **about 7-10 days** (range 4-21 days) and rarely may be as long as 42 days.

Prevention is best, especially in the most vulnerable and those around them.

Pertussis may occur among persons at any age regardless of vaccination status and may be relatively common among adolescents and adults, although infants aged <1 year have the highest rates of reported disease. **Vaccination significantly reduces the severity of illness and the otherwise significant mortality rates of infants.** Hospitalisation is commonly required for infected infants.

Infants aged <1 year

Among infants aged <6 months, apnoea may occur, and whoop or paroxysms may be absent. **Infants are more likely than older children or adults to have severe disease,** to suffer from complications, to require hospitalisation, or to die (**0.8 deaths per 100 unvaccinated infected infants**). **Infants usually catch the infection from a family member or other close contact.** Thus the benefits of 'cocoon vaccination' of close contacts of infants, the pregnant, family members, associated healthcare and childcare workers.

Adolescents and adults

Compared with un-immunised children, adolescents and adults with pertussis are more likely to have milder illness (i.e. resembling an acute cough illness without paroxysms or whoop).

Because pertussis is not always considered as a cause of cough illness among adolescents and adults, these patients may be misdiagnosed as having bronchitis or asthma. 13-20% of ongoing cough illnesses in adults may be caused by pertussis.

Household Settings

Early diagnosis and antimicrobial treatment of cases **may** lessen the severity of symptoms but **will** limit the period of communicability. Vaccination helps to protect children who are the most vulnerable.

During an outbreak antimicrobial prophylaxis of household and other close contacts is the primary method used to prevent secondary cases. Because pertussis can be very severe among infants, antimicrobial prophylaxis is especially important in this age group.

TRANSMISSION

B. pertussis is transmitted from person to person via aerosolised droplets produced from a cough or sneeze or by direct contact with secretions from the respiratory tract of infectious individuals. Pertussis is highly contagious, with 80% secondary attack rates among susceptible persons (i.e., persons who have not been immunised or have not had a prior case of pertussis).

Persons with pertussis are most infectious during the catarrhal period and the first 2 weeks after cough onset (i.e., approximately 21 days total).

Some individuals, such as infants who remain culture-positive for several weeks, may be infectious for a longer period.

In a study of pertussis cases among 430 hospitalised children aged <2 years, the source of pertussis in the child was suspected to be a parent in 20%, a sibling in 53%, a child relative in 12%, a neighbour in 8%, and a day care contact in 3%.

IMMUNITY

The mechanism of immunity to pertussis is not well understood.

An increase in IgA in the respiratory mucosa corresponds with the disappearance of *B. pertussis* from the nasopharynx. Immunity to pertussis has been shown to wane 5-10 years after vaccination. Immunity following natural disease may also wane over time and exposure to the organism with asymptomatic or symptomatic infection may be needed to maintain effective protection

Maternal antibodies that cross the placenta are insufficient to protect against pertussis.

The effectiveness of vaccines for protection against moderate to severe pertussis has been estimated to range from 60% to 90%. The routine use of pertussis containing vaccines has greatly reduced the incidence of pertussis.

DIAGNOSTIC TESTING

Once it has been established that a new pertussis epidemic (every 3-5 years) has returned, **diagnosis is usually clinical, and MOH notification only needs to be reported on 'suspicion' of clinical illness.**

Confirmatory testing is 'nice to know' but will rarely alter patient management or outcome and comes with a significant aggregate healthcare cost. Culture swab \$20 each, PCR \$103, serology \$112

