Pertussis. A shifting landscape
NEW STRATEGIES FOR PREVENTION

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Learning Objectives
• What is pertussis?
• Current pertussis epidemic in New Zealand
• Who is most at risk?
• What are the stages of pertussis infection?
• How can parents and midwives protect the infant and themselves?
• What are the key pertussis messages?

Abstract
While immunisation programmes continue to be successful for the recipients, pertussis (whooping cough) is still a leading cause of vaccine-preventable deaths. Seen as a childhood disease, the incidence of pertussis is increasing in adolescents and adults. These groups are a significant reservoir of highly contagious bacteria, often undiagnosed because they do not exhibit typical symptoms. Even if vaccinated in childhood, immunity wanes after about 10 years, and most adults do not realise they need regular booster doses. Parents and close family contacts are the most common source of transmission to our most vulnerable population – the newborn and young infants. Babies who are too young to be fully vaccinated bear the highest rates of morbidity, hospitalisation and mortality.

The burden of pertussis disease is likely to be much higher than reported, both nationally and internationally, due to laboratory access, and frequent failure to diagnose (especially in adults). NZ and Australia are seeing increasing case numbers; notifications in NZ have doubled in the past year, and rates are currently higher than they have been since 2004.

Globally, new strategies to combat pertussis include improved delivery of childhood immunisation schedules, and “cocooning” of infants by vaccination of close contacts. The NZ Ministry of Health recommends, but does not fund, pertussis vaccination for close contacts of newborns: new mothers and parents; family members; healthcare professionals; and early childhood workers. As key providers of education to families, midwives can help reduce the risk of whooping cough to newborn infants by talking to parents about active prevention and protection of pertussis by cocooning.

What is pertussis?
Pertussis, (whooping cough), is a highly infectious bacteriological infection spread by coughing and sneezing. It causes severe bouts of coughing and sometimes vomiting and a ‘whooping sound’ (Figure 1a & b). Whooping cough can last up to 3 months and is sometimes referred to as the “100 day cough”.

Each year in New Zealand, for every 10 babies who catch whooping cough before 6 months of age, 7 babies will require hospitalisation, and 1 in 30 of those hospitalised will die. Severe coughing decreases the supply of oxygen to the brain in 2 per 1,000 children, leading to permanent brain damage, paralysis, deafness or blindness. 90% of deaths due to whooping cough occur in babies that are infected within the first few weeks of life. The current pertussis epidemic is continuing to rage, with well over 100 new cases being notified every week across the country. Since the beginning of the year, well over 2,500 cases have been reported. (Figure 1).

Who is most at risk?
• Babies under one year old are the most at risk of serious disease.
• The <12 month olds bear the brunt of the experience, experiencing the highest incidence of hospitalisations and death (Figure 3).
• 70% of infants will have contracted whooping cough from their parents or other close family contacts. (Figure 4).

What are the stages of pertussis infection?
• Incubation Period: 7–10 days
  - Transmission is by contact with someone who is coughing and sneezing.
  - Highly infectious – good hygiene, hand washing etc is not going to prevent infection.
  - Infant and young children are frequently infected by older siblings or adults who may have mild or asymptomatic disease.

Ref: Dr J. Jarman, Northland Medical officer of health, February 2004

• Paroxysmal Stage: 1–6 weeks
  - Noted by paroxysmal coughing followed by a high pitched whoop. Adults may not whoop.
  - Can persist for up to 10 weeks. Conjunctional hemorrhages and facial petechiae are common and result from intense coughing.
  - Vomiting after coughing bout, as can apnoea.
  - Fever can indicate a bacterial secondary infection.
  - Person is considered infectious until 3 weeks from onset of paroxysmal coughing or 5 days after start of a 14 day course of antibiotics.

Ref: Ministry of Health (2011) Immunisation Handbook pg 24, Wellington, New Zealand;

• Convalescent Stage: 2–4 weeks
  - Coughing gradually wanes in intensity.
  - Cough may not subside for several months.
  - Natural immunity may not occur and any acquired, is not life long.

What are the key pertussis messages?
• Babies under one year old are the most at risk of serious disease.
• The <12 month olds bear the brunt of the experience, experiencing the highest incidence of hospitalisations and death.
• Too young to be fully vaccinated, strategies in addition to infant immunisation are recommended to protect baby.
• Up to 70% of whooping cough cases in young infants are transmitted from the mother or other close family contact.
• Immunisation of pregnant women, partners, siblings, grandparents and other close family can be an effective and recommended strategy to protect the young baby.
• People with a cough should stay away from babies and young children and visit their doctor in case they have whooping cough.

Ref: Ministry of Health (2011) Immunisation Handbook pg 24, Wellington, New Zealand

How can parents and midwives protect infants and themselves?
On time immunisation of babies at 6 weeks, 3 months and 5 months of age will then continue to protect them from whooping cough. Full protection is not conferred until after the 5 month immunisation has been given.1,4,7

1. "Infants who do not receive doses of pertussis containing vaccine at the scheduled times of 6 weeks, 3 months, and 5 months have up to a five-fold increased risk of being hospitalised with pertussis."5

• "Cocooning" is an important strategy to protect baby:
  - Vaccination of pregnant women, partners, siblings, grandparents and other close family is also an effective and recommended strategy to protect the young baby.

In over 70% of cases, newborn babies catch whooping cough from parents or other close family members.

Inoculation time

Immunisation of pregnant women, partners, siblings, grandparents and other close family is also an effective and recommended strategy to protect the young baby.