



# Pertussis vaccine

## now subsidised for all pregnant women

Changes to the funding criteria for diphtheria, tetanus and pertussis (Tdap) vaccine (Boostrix) came into effect on 1 August, 2015. The new criteria mean that all pregnant women between 28 and 38 weeks' gestation are now eligible for subsidised vaccination, whereas previously this was only the case during a pertussis epidemic.<sup>1</sup> Pertussis vaccination is also included in the National Immunisation Schedule at age six weeks, three months and five months.

New Zealand has undergone three pertussis epidemics in the last 15 years. In the most recent, from 2011 to 2014, there were on average 102 cases of pertussis per 100,000 population, with the primary burden of disease in infants aged six months or less at a rate of 801 per 100,000.<sup>2</sup> Vaccine coverage for infants from August 2011 to December 2013 was 75% in six month-olds, highlighting a gap in vaccination rates in infants even during an epidemic.<sup>2</sup> The lowest rates of pertussis vaccine coverage were seen in Northland and Waikato DHBs.<sup>2</sup> Vaccination rates were lowest, and pertussis rates highest, for Māori and Pacific children and children in lower socioeconomic circumstances.<sup>2</sup>

### The case for maternal vaccination during pregnancy

The Tdap vaccine was subsidised in New Zealand from 1 January, 2013 for use in pregnancy during a pertussis epidemic. Currently, maternal immunisation rates in New Zealand are reported to be poor, and have been identified as a target area for improvement prior to the next pertussis epidemic.<sup>2</sup>

Many cases of pertussis occur in infants too young to have gained immunity from the present national immunisation schedule. Maternal vaccination offers benefit to the infant

as maternal antibodies cross the placenta and provide protection prior to the first infant vaccination at age six weeks, as well as boosting maternal immunity to provide indirect protection and “cocoon” the infant.<sup>2,3</sup> In October 2012, the Advisory Committee on Immunization Practices (ACIP) in the United States recommended that all pregnant females should receive Tdap vaccination during pregnancy.<sup>3</sup> This advice was echoed by the Global Pertussis Initiative in 2015, which now recommends maternal vaccination during pregnancy as the primary prevention strategy for reducing pertussis hospitalisation and mortality in infants.<sup>4</sup>

### Maternal Tdap vaccination is highly effective at providing pertussis protection to infants too young to receive vaccination

An assessment of pertussis incidence during an outbreak in England, where vaccination rates reached 60% in pregnant mothers by the end of the outbreak, suggests a vaccine efficacy of 90% for infants aged under two months when vaccination occurs at least seven days before birth.<sup>5</sup> Similar analyses from the United States show a vaccine efficacy of 91% for infants aged two months or under.<sup>4</sup> Protection is lower if the vaccine is given within seven days of birth.<sup>5</sup>

### Tdap vaccine safety during pregnancy

Some expectant mothers may be hesitant to take up Tdap vaccination during pregnancy due to fears of adverse effects. Mothers can be reassured that real-world data from tens of thousands of women who have been vaccinated against pertussis during pregnancy report that rates of adverse birth outcomes are similar between vaccinated and unvaccinated

mothers.<sup>4</sup> Infant growth and development up to age 13 months has been assessed in one randomised controlled trial of maternal pertussis vaccination, and found not to differ between infants born to vaccinated or unvaccinated mothers.<sup>6</sup>

Surveillance data from the United Kingdom including 20,074 pregnant females who received pertussis vaccination reported no increased risk of a range of adverse pregnancy outcomes, including: stillbirth, maternal or neonatal death, pre-eclampsia or eclampsia, haemorrhage, fetal distress, uterine rupture, placenta or vasa praevia, caesarean delivery, low birth weight, or neonatal renal failure.<sup>7</sup> In the United States, surveillance data from 123,494 pregnant females, 21% of whom received Tdap, reported no differences in rates of preterm delivery, small for gestational age babies, or hypertensive disorders between vaccinated and unvaccinated mothers.<sup>8</sup> A small difference in rates of chorioamnionitis was noted in this study - subsequent assessment of this study, however, and other data by the Centers for Disease Control (CDC) and Global Pertussis Initiative, suggest that there is unlikely to be a causal association between pertussis vaccination and chorioamnionitis.<sup>4,9</sup>

As pertussis vaccination during pregnancy has only been recommended and taken up recently, there is little data available regarding long-term health outcomes for children. However, parents can be assured that maternal vaccination offers immediate protection to infants in the neonatal period and a reduced risk of the serious consequences of pertussis infection.

### Offering Tdap vaccination to pregnant women

Key practice points:


- Clinicians should offer the Tdap vaccine to all pregnant mothers and for each pregnancy
- Vaccination should preferably occur at least seven days before birth, and is subsidised for women between 28 and 38 weeks' gestation

Vaccination between 28 and 38 weeks' gestation may provide the greatest benefit by allowing transfer of maternal antibodies close to birth.<sup>3</sup> The maximal antibody response develops after two weeks, and evidence indicates the greatest vaccine efficacy occurs when vaccination is given at least seven days prior to birth.<sup>3,4</sup>

Clinicians can inform patients that they should expect local injection site pain and irritation, and may develop short-term systemic symptoms. Adverse effects following Tdap

administration include typical vaccine-associated symptoms, such as local irritation, injection site pain, and possible systemic symptoms, such as headache, fever, and muscle pain.<sup>3,6</sup>

For mothers who decline vaccination during pregnancy, an alternative strategy for the prevention of infant pertussis is to "cocoon" the infant by providing booster vaccinations for close family members immediately after birth.<sup>4</sup> Vaccination of adult family members against pertussis is not subsidised, but if children aged under 18 years are unvaccinated or have not completed the recommended pertussis vaccination schedule, they can receive funded catch up vaccinations under the Immunisation Schedule.<sup>10</sup>

 For further information on pertussis vaccination during pregnancy, see: [www.bpac.org.nz/BPJ/2014/April/pertussis.aspx](http://www.bpac.org.nz/BPJ/2014/April/pertussis.aspx)

### References:

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