

## Vaccinations during pregnancy protect expectant mothers and their babies

Vaccination against pertussis (whooping cough) and influenza is strongly recommended during pregnancy to protect pregnant women and their babies against these serious infections. Other inactivated vaccines are not routinely recommended during pregnancy but may be considered in special circumstances. Live attenuated viral vaccines are the only types of vaccines that should not be given during pregnancy. Some vaccines, like rubella, may be needed when planning pregnancy so the mother is immune before she becomes pregnant.

### Pertussis vaccine and pregnancy

#### ***Pertussis is a highly contagious infection which is most severe in young babies***

Pertussis (whooping cough) is a highly contagious respiratory infection. In Australia, pertussis is most common among infants <6 months old. The youngest infants are most at risk of severe disease. About half of the pertussis deaths in infants are in those aged <6 weeks. Adults can also get pertussis, but in most cases the disease is less severe. This means it can be passed on to others without knowing.

#### ***Pertussis vaccine is recommended and funded in every pregnancy***

Pertussis vaccine is provided free for pregnant women under the National Immunisation Program (NIP). Pregnant women are strongly recommended to receive a single dose of pertussis vaccine between mid 2nd trimester and early 3rd trimester (between 20 and 32 weeks gestation) of each pregnancy. However, if the vaccine has not been given by 32 weeks, it can be given at any time during the third trimester up to delivery.

If pregnant women receive the vaccine earlier than 20 weeks, they do not need a repeat dose during the same pregnancy. Evidence shows transfer of pertussis antibodies to the infant in women who received dTpa vaccine as early as 13 weeks gestation.<sup>1</sup>

The recommended vaccine is the adult formulation of the combined diphtheria-tetanus-pertussis (dTpa) vaccine. The only medical reason a pregnant woman

should not receive this vaccine is if she had an anaphylactic reaction after a previous dose.

#### ***Benefits of pertussis vaccination during pregnancy are great***

Vaccination during pregnancy has been shown to be the most effective way to prevent pertussis infection in newborn infants. Studies have found that 9 out of 10 infants aged <3 months were protected against hospitalised pertussis when their mothers received the pertussis vaccine at least 7 days before delivery.<sup>2-4</sup> This is due to the transplacental transfer of protective antibodies from the mother to the fetus during pregnancy. These antibodies last until the infant can receive their first dose of pertussis vaccine at 6 weeks of age. Women should receive pertussis vaccine during each pregnancy to ensure maximum protection to their newborn infant, because the level of vaccine-induced antibodies declines over time.

If women receive pertussis vaccine while pregnant, it also reduces their risk of contracting pertussis, potentially avoiding the unpleasant side effects of a prolonged severe cough, such as vomiting, sleep disturbance, incontinence, weight loss and fainting.<sup>5</sup> It also reduces the likelihood that the pregnant women will pass on pertussis to other people, including their children.<sup>6</sup>

### ***Risks from pertussis vaccination during pregnancy are low***

Pertussis vaccine is an inactivated vaccine which is considered safe for both pregnant women and their babies. Vaccination of pregnant women against pertussis occurs in many countries, including the United States, the United Kingdom and New Zealand. These countries have reported no evidence of an increased risk of adverse pregnancy outcomes (such as stillbirth, low birth weight or preeclampsia) related to pertussis vaccination during pregnancy.<sup>7-9</sup>

Pertussis vaccine is well tolerated in adults. Most adults will experience pain at the injection site following vaccination but this is short-lasting. About 1 in 20 adults will experience fever after vaccination.<sup>10</sup>

### ***What else can be done to protect infants against pertussis?***

The most effective way to protect infants against pertussis is vaccination of the mother while pregnant. Vaccination of other people who will be in close contact with the infant, called ‘cocooning’, will further reduce the chance of pertussis being transmitted to the infant.

About 80% of infants get pertussis from their parents or siblings.<sup>6</sup> A booster dose of pertussis vaccine is recommended for adult close contacts, such as fathers and grandparents, who have not had a dose in the previous 10 years. It is also important to ensure siblings are up to date with their recommended pertussis vaccines.

## **Influenza vaccine and pregnancy**

### ***Influenza virus causes severe disease in pregnant women and young infants***

Influenza is a contagious respiratory viral infection that circulates each year in winter months. It can cause serious illness in previously healthy people. Pregnant women are 2.5 times more likely to be admitted to hospital with influenza than other women.<sup>11</sup> Influenza infection during pregnancy can lead to other complications such as premature delivery and even neonatal and perinatal death.<sup>12</sup>

Young infants, especially those aged <6 months, are more likely to be hospitalised or die from influenza than older children.<sup>13</sup> Aboriginal or Torres Strait Islander children and children with some medical conditions are even more likely to have severe influenza than other children.<sup>14</sup>

### ***Influenza vaccine is recommended in every pregnancy***

Quadrivalent influenza vaccines (QIVs) are provided free for pregnant women under the NIP. Pregnant women are strongly recommended to receive a single dose of influenza vaccine in every pregnancy, preferably before the onset of the influenza season.

Women who received the previous year’s seasonal influenza vaccine early in their pregnancy can receive the current seasonal influenza vaccine later in the same pregnancy.

Pregnant women can receive influenza vaccine at the same time as pertussis vaccine.

For information on influenza vaccines and vaccine recommendations and funding, see the annual statements on the use of influenza vaccines prepared by the Australian Technical Advisory Group on Immunisation (ATAGI).<sup>15</sup>

### ***Benefits of influenza vaccination during pregnant are great***

Influenza vaccination during pregnancy protects both the pregnant woman and her fetus from complications from influenza. Studies have shown a 50% reduction in influenza and a 35% reduction in hospital admission for acute respiratory illness among vaccinated pregnant women compared to unvaccinated pregnant women.<sup>16,17</sup> Babies born to women vaccinated against influenza during pregnancy are no more likely to be born prematurely or have a low birth weight<sup>18</sup> than those born to women who were not vaccinated in pregnancy.<sup>19</sup>

Influenza vaccination during pregnancy also prevents influenza in 5 out of 10 infants before they reach 6 months of age – the age when they can start to receive the vaccine themselves.<sup>20</sup> This is due to the transplacental transfer of protective antibodies from the pregnant woman to the fetus. These antibodies remain in the infant’s blood for the first few months of life.

### ***Risks from influenza vaccination during pregnancy are low***

All influenza vaccines in Australia are inactivated vaccines, which are considered safe for both the pregnant woman and her fetus. An extensive review showed that influenza vaccination during pregnancy is safe for both the mother and her infant, and additionally provides protection against preterm birth and low birth weight.<sup>21</sup> Also, studies of mother–baby pairs have shown that influenza vaccination during pregnancy does not increase maternal or fetal complications.<sup>22</sup>

The expected adverse events following influenza vaccines occur as frequently in pregnant women as in women who are not pregnant. Local reactions (such as redness, swelling and pain) occur in about 1 in 10 adults who receive the vaccine and systemic reactions (fever, tiredness and myalgia) occur in fewer people than that. Serious adverse events like Guillain–Barré syndrome are very rare, occurring in about 1 in 1 million vaccinated people.<sup>23</sup>

### ***What else can be done to protect against influenza?***

Vaccination during pregnancy is the most effective way of preventing influenza in a pregnant woman

and her newborn. Influenza vaccination of household members who will be in close contact with the newborn will reduce the chance of transmitting the virus to the baby. This is especially important if the infant has other risk factors, like a compromised immune system, which increase their risk of developing severe influenza.

Anyone aged 6 months or older can receive influenza vaccine each year to immunise themselves against influenza, rather than relying on the immunity of others around them. Specific influenza vaccine brands are recommended for use in young children. These are outlined in the annual ATAGI influenza vaccine statements.<sup>15</sup>

Frequent hand washing with soap and water and cough etiquette are important hygiene measures to prevent the spread of influenza.

## Other vaccines and pregnancy

### ***Other inactivated vaccines can be given during pregnancy in certain situations***

Influenza and pertussis vaccines are the only vaccines recommended for pregnant women. Other inactivated vaccines are not routinely recommended during pregnancy on precautionary grounds as they haven't been studied for safety in pregnant women specifically. However, there may be circumstances, such as high-risk travel, where the benefits from vaccination during pregnancy outweigh the risks. This should be discussed between each woman and her doctor.

### ***Live attenuated viral vaccines are not to be given during pregnancy***

Live attenuated viral vaccines, such as measles–mumps–rubella, should not be given to pregnant women. If a live attenuated viral vaccine has been given before pregnancy, women should be advised not to become pregnant within the next 28 days.

This is because live attenuated vaccines contain weakened live viruses and, although they cannot cause disease, there is a theoretical risk that the weakened vaccine virus may be passed on to the fetus. However, there is no evidence of harm to the fetus where a live attenuated vaccine has been inadvertently given during pregnancy.

### ***Some vaccines are needed when a woman is planning pregnancy***

The need for vaccination should be assessed as part of any pre-conception health check, particularly for hepatitis B, measles, mumps, rubella and varicella. This is especially important when previous vaccination history is uncertain. For example, ensuring a mother is immune to rubella is important when she is planning a pregnancy. This is because rubella infection during pregnancy can be passed on to the foetus, which leads to congenital rubella syndrome in a high proportion of cases.

## Additional resources for more information

There are a number of Australian websites which provide information on vaccines and vaccine preventable diseases. Some are listed below:

- Australian Government Immunise Australia website: [www.immunise.health.gov.au](http://www.immunise.health.gov.au)
- National Centre for Immunisation Research and Surveillance fact sheets: <http://ncirs.org.au/health-professionals/ncirs-fact-sheets-faqs>

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