

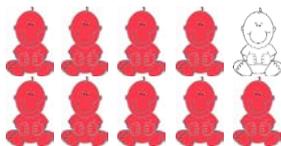
Vaccinations during pregnancy protect expectant mothers and their babies

Vaccination against pertussis (whooping cough) and influenza is strongly recommended during pregnancy to protect expectant mothers 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 vaccines are the only types of vaccines that are not to 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 babies younger than 6 months old and about 9 in 10 young babies who get pertussis will require hospitalisation. The youngest babies, those less than 3 months old, are most at risk of severe disease. Among babies this age who get pertussis, 1 in 200 will die. 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.



9 out of 10 babies who get pertussis will be hospitalised

Pertussis vaccine is recommended in the third trimester of every pregnancy

A single dose of pertussis vaccine is strongly recommended for pregnant women in the third trimester of every pregnancy (preferably between 28 and 32 weeks). The recommended vaccine is the adult formulation of the combined diphtheria-tetanus-pertussis vaccine, dTpa, which contains less diphtheria and pertussis antigen than the same vaccine formulation given to children. The only medical reason a woman should not receive this vaccine is if she had an anaphylactic reaction after a previous dose.

Pertussis vaccine is not funded for pregnant women under the National Immunisation Program (NIP) but is currently free under state and territory initiatives. For detailed information on pertussis vaccines and vaccine recommendations, see the 2015 update of *The Australian Immunisation Handbook*.¹

The benefits from receiving pertussis vaccine while pregnant are great

Vaccination during pregnancy has been shown to be the most effective way to prevent pertussis infection in newborn babies. An English study found that 9 out of 10 babies less than 3 months old were protected against pertussis when their mothers received the pertussis vaccine at least 7 days before delivery.² This is due to the transfer of protective antibodies from the mother to her baby, which last until the baby is eligible for their first dose of pertussis vaccine at 6 weeks of age. As the level of protective antibodies from the vaccine declines over time, a mother should receive pertussis vaccine during each pregnancy to ensure maximum protection for her newborn.

Pertussis vaccination while pregnant also reduces the mother's risk of contracting pertussis, potentially avoiding unpleasant side effects of a prolonged severe cough, such as vomiting, sleep disturbance, incontinence, weight loss and fainting.³ It also reduces the likelihood that the mother will pass on pertussis to other people, including her children.⁴

The risks from receiving pertussis vaccine while pregnant are low

The 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, England and New Zealand. These countries have reported no evidence of an increased risk of adverse pregnancy outcomes (such as stillbirth, foetal distress or low birth weight) related to pertussis vaccination during pregnancy.⁵

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.⁶ Injection site reactions like pain, redness and swelling

are reported more often in adults who have had a number of doses of pertussis vaccine as an adult.⁷

What else can be done to protect babies against pertussis?

The most effective way to protect a baby against pertussis is vaccination of the mother while pregnant. Vaccination of others who will be in close contact with the baby, called 'cocooning', will further reduce the chance of pertussis being transmitted to the baby. About 80% of babies get pertussis from their parents or siblings.⁴ 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 babies

Influenza is a contagious respiratory viral infection that circulates each year in the winter months. It can cause serious illness in previously healthy people. Pregnant women are 5 times more likely to be admitted to ICU with influenza than other women.⁸ Influenza infection while pregnant can lead to other complications such as premature delivery and even neonatal and perinatal death.⁹

Young children, especially those less than 6 months old, are more likely to be hospitalised or die from influenza than older children.¹⁰ Aboriginal or Torres Strait Islander children and children with some medical conditions are even more likely to have severe influenza than other children.

Influenza vaccine is recommended with every pregnancy

It is strongly recommended that pregnant women receive a single dose of the influenza vaccine each year. In 2016, quadrivalent influenza vaccines (QIV) are provided free for pregnant women under the NIP. QIV protect against the same three influenza strains as trivalent influenza vaccines (TIV), as well as one more influenza B strain.

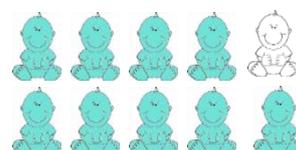
Influenza vaccine is also strongly recommended for other people who are at increased risk of influenza. Both QIV and TIV are expected to be available for

purchase in 2016 for children and adults who cannot access vaccine via the NIP. For detailed information on influenza vaccines and vaccine recommendations, see the 2015 update of *The Australian Immunisation Handbook*¹ and annual statements on the use of influenza vaccines prepared by ATAGI (the Australian Technical Advisory Group on Immunisation).

The benefits from receiving the influenza vaccine while pregnant are great

Influenza vaccine during pregnancy protects both the expectant mother and her unborn child from complications from influenza. A Canadian study showed that babies born to women vaccinated against influenza while pregnant were less likely to be born prematurely or have a low birth weight.¹¹

Influenza vaccination during pregnancy also prevents influenza hospitalisations in 9 out of 10 babies before they reach 6 months of age – the age when they can start to receive the vaccine themselves.¹² This is due to the transfer of protective antibodies from the pregnant woman to the baby, which remains in the newborn's blood for the first few months of life.



Influenza hospitalisation is prevented in 9 out of 10 babies when mum is vaccinated while pregnant

The risks from receiving influenza vaccine while pregnant are low

All influenza vaccines in Australia are inactivated vaccines, which are considered safe for both pregnant women and their babies. Studies of mother–baby pairs have shown that receiving the influenza vaccine while pregnant does not increase maternal or foetal complications during pregnancy.¹³

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.¹⁴

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 baby has other risk factors, like a compromised immune system, which make them more likely to develop severe influenza.

Anyone aged 6 months or older can get the influenza vaccine each year to give themselves immunity 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 detail in *The Australian Immunisation Handbook* and annual ATAGI influenza vaccine statements.

Frequent hand washing with soap and water and cough etiquette will also help limit the transmission of influenza between people and is an important hygiene measure to prevent the spread of disease.

Other vaccines and pregnancy

Other inactivated vaccines can be given during pregnancy in certain circumstances

Influenza and pertussis vaccines are the only vaccines recommended for pregnant women.¹ 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 vaccines are not to be given during pregnancy

Live attenuated vaccine formulations, such as measles-mumps-rubella, should not be given to pregnant women. If a live vaccine has been given prior to pregnancy, women should be advised not to become pregnant within the following 28 days. This recommendation is because these types of vaccines contain weakened live viruses and, although they cannot cause disease, there is a theoretical risk that

the weakened vaccine virus may be passed to the foetus. However, although there is this hypothetical risk to the foetus, there is no evidence of harm where live attenuated vaccines have 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 and, if this happens, lead 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
- The Australian Immunisation Handbook: www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home
- National Centre for Immunisation Research and Surveillance fact sheets: www.ncirs.edu.au/provider-resources/ncirs-fact-sheets

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