ARTICLE

Immunisation and pregnancy – who, what, when and why?

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SUMMARY

Only two vaccines are routinely recommended during pregnancy – influenza vaccine is recommended throughout, and pertussis vaccine is recommended at 28–32 weeks but can be given later.

Some other vaccines can be administered in special circumstances but are not routinely recommended.

All live attenuated vaccines are contraindicated in pregnancy, although there has been no evidence of adverse effects from inadvertent administration.

Recommending vaccination to pregnant women is important as evidence shows they are more likely to get vaccinated if their healthcare provider advises it.

It is important for healthcare providers to discuss the benefits and the safety of vaccination during pregnancy. In particular, pointing out the benefits for the baby is important in helping women decide.

Introduction

Immunisation is increasingly becoming a routine part of antenatal care, but there remains some confusion among healthcare providers and patients about what to do. Recommendation by the healthcare provider has been shown to be the most significant factor in a pregnant woman's decision to get vaccinated.[1] It is important to be aware of the current recommendations and how best to communicate them to pregnant women.

All pregnancy vaccination recommendations can be found in the Australian Immunisation Handbook, in particular section 3.3.2 – Vaccination of women who are planning pregnancy, pregnant or breastfeeding, and preterm infants. The Handbook is regularly updated and healthcare professionals are encouraged to check for these updates.[2]

Recommendations for women planning pregnancy

The need for vaccination against hepatitis B, measles, mumps, rubella and varicella should be assessed as part of pre-conception care. When previous infection or vaccination history is uncertain, serology can be used to assess immunity to hepatitis B, measles, mumps and rubella. Serological testing for varicella is not reliable for assessing vaccine-induced immunity, although it can indicate previous natural infection.[2]

Recommendations for pregnant women

Current Australian guidelines recommend the seasonal influenza vaccine. When both tri- and quadrivalent vaccines are available, the quadrivalent vaccines (Fluarix Tetra or FluQuadri) are the preferred option, although the trivalent vaccines are all suitable if quadrivalent vaccines are not available (see section 4.7.4 of the Australian Immunisation Handbook).[2]

The other recommended vaccine for pregnant women is the adult pertussis dTpa vaccine (Adacel or Boostrix). The safety of influenza and pertussis vaccines is very good, and they can be administered at the same consultation.[3]

Close household contacts and carers such as siblings, partners and grandparents should also be up to date with all of their age-appropriate immunisations, such as rotavirus, varicella and MMR (measles-mumps-rubella) and particularly pertussis vaccine.

Influenza vaccination

The influenza vaccine should be administered with seasonal protection in mind so it protects pregnant women against strains circulating during the influenza season and protects babies likely to be born during that time. The vaccine is recommended during any trimester,[4] although the greatest risk of adverse outcomes from influenza for the pregnant woman is in

the third trimester. There are excellent data showing that vaccination in pregnancy also protects the infant in the first few months of life.[5,6]

As there are challenges in obtaining seasonal influenza vaccine during the summer months, the emphasis should be on administration of the vaccine as early as possible after the seasonal vaccine formulation becomes available in the next year.

Pertussis vaccination

Pertussis infection is most severe in infants under the age of three months. Almost all deaths occur before six weeks of age which is the earliest the first vaccine dose can be given. High concentrations of maternal antibody, only achievable through vaccination during pregnancy and transmitted via the placenta to the baby, have been shown to give more than 90% protection against severe infection in the first three months of life.[7,8]

Although evidence on the optimal time for administration is rapidly evolving, current data support vaccination at 28–32 weeks gestation giving the highest infant antibody levels at birth (even in premature infants).[9] This conveniently corresponds to the usual time when glucose tolerance tests are conducted. However, the only efficacy data – from experience in England with an emergency vaccination in pregnancy program – showed that there was still significant protection with vaccination as late as 14 days before birth.[7] Based on recent advice from the Australian Technical Advisory Group on Immunisation,[10] if the pertussis vaccine is given earlier than 28 weeks but still during pregnancy, it need not be repeated.

Which vaccines can be given in special circumstances?

While not routinely recommended, some vaccines can be administered to at-risk women, on a case-by-case basis. For example, vaccines that can be given to pregnant women at high risk of exposure include pneumococcal polysaccharide vaccine and hepatitis B (see Table 3.3.1 in the Australian Immunisation Handbook).[2]

Which vaccines are contraindicated?

Live attenuated viral and bacterial vaccines are contraindicated in pregnancy (see Box).[2] In most cases, the risk is hypothetical. For example, limited safety data available from inadvertent administration of rubella and varicella vaccines are reassuring.

How many pregnant women get vaccinated?

Vaccine uptake has significantly improved in Australia over the past few years. In 2012, it was estimated that one in four pregnant women were immunised against influenza.[11] Uptake of influenza vaccine is thought to have more than doubled since then, with 60% of pregnant women immunised in 2015 (author's unpublished data).

Following the recommendation for antenatal pertussis vaccine in 2015, early estimates indicate approximately 70% of mothers received a pertussis vaccine in the third trimester of their pregnancy. Much of this success is owed to GPs, as more than two-thirds of antenatal vaccines are given in general practice.

Women who are recommended vaccines by a health provider are more than 10 times as likely to be immunised compared to those who are not.[12,13] Another important factor is easy access to vaccines – women are more willing to get vaccinated if it is available at the same time as an antenatal visit.[11]

Communicating vaccination to pregnant women

Pregnant women report being bombarded with advice about what they should and should not do. There is evidence that unless it is recommended by their healthcare provider, vaccination is not a priority.[14] Simply pointing out that it is recommended can often be enough for a pregnant woman to get vaccinated.

When recommending antenatal immunisation, it is important to remember that pregnant women trust their healthcare providers and are primarily interested in the health and well-being of their baby. More than 90% of pregnant women who are immunised report doing so to protect their baby,[12] therefore framing the benefits of vaccination to focus on the baby is important. Evidence from clinical trials shows maternal vaccination protects young infants from disease.[5,7,15] This knowledge is often the deciding factor for pregnant women to get vaccinated.

Unimmunised women often cite concerns about the safety of vaccination as a reason why they

Box Contraindicated vaccines in pregnancy

BCG (Bacillus Calmette-Guérin) against tuberculosis
Oral typhoid
Japanese encephalitis (Imojev)
MMR (measles-mumps-rubella)
MMRV (measles-mumps-rubella-varicella)
Rotavirus
Varicella against chickenpox
Zoster against shingles

Source: Reference 2

refused it during pregnancy.[12] A number of studies have shown the safety of influenza and pertussis vaccines, and previous investigations in Australia have found that a similar proportion of pregnant women experience common adverse events as compared to non-pregnant women.[16] Providers should discuss common, expected reactions with their patients and reassure them about the safety of the vaccine for the baby. There is a large body of evidence supporting the safety of antenatal vaccination for the fetus. It shows no increase in the risk of preterm labour, low birthweight, congenital malformation or fetal death.[3,17] In fact, some studies have shown influenza vaccination during pregnancy is associated with a lower rate of stillbirth.[18]

Conclusion

Vaccination during pregnancy is an effective strategy for protecting mothers during a time when they are often more vulnerable to infections such as influenza. Antenatal vaccination can also protect infants in the first few months of life, before they receive their first course of childhood vaccines. While antenatal vaccination is improving in Australia, more women and their infants could be offered protection against disease if every healthcare provider recommended vaccination to their pregnant patients. ◁

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