1. Influenza vaccination during pregnancy has been shown to be safe and effective.

2. Vaccination during pregnancy protects pregnant women from influenza and its complications in pregnancy, and is the best way to protect newborns against influenza during the critical early months of life.

**BACKGROUND**

The national immunisation guidelines recommend influenza vaccination for all pregnant women and this advice is endorsed by the Royal Australian and New Zealand College of Obstetricians and Gynaecologists and the Royal Australian College of General Practitioners.[1,2,3]

The World Health Organization recommends that pregnant women should have the highest priority for seasonal influenza vaccination, and it is also recommended by health authorities in the United States and England.[4,5,6] Influenza vaccine is recommended both to protect women during pregnancy and to help protect their babies during the pregnancy and in the critical period after they are born.

**BURDEN OF ILLNESS**

**Pregnant women**

Women are more vulnerable to severe illness from influenza during pregnancy, especially late pregnancy.[7] In later pregnancy, chest movements are restricted, making respiratory infections potentially more severe, and changes in immunity to protect the baby in the womb can also make mothers more susceptible to infections.[8,9,10] Case-cohort and observational studies of influenza infection during pregnancy have found an increased risk of hospitalisation and perinatal death, stillbirth, and pre-term birth compared with pregnant women who do not have influenza.[11,12,13] A high severity of influenza illness among pregnant women, including intensive care and death, was particularly noted during the 2009-2010 influenza pandemic.[14]

**Newborns**

Hospitalisation rates for infants < 6 months of age with influenza infections are higher than any other age group.[15,16,17,18] However, influenza vaccination is not an option for infants aged less than six months.[1]

**EFFECTIVENESS**

**Maternal protection**

A retrospective cohort study in Western Australia of more than 34,000 pregnant women found that women who had received influenza vaccine during pregnancy had significantly fewer visits to an emergency department and fewer hospitalisations for respiratory illness.[19]

Another study, which randomised women to receive or not receive influenza vaccine during pregnancy, found a 36 per cent reduction in the rate of respiratory illness with fever in the vaccinated group (95%CI 4-57), in addition to benefits for their babies.[20]

**Protection of infants**

There are now multiple studies which show that influenza vaccination during pregnancy also protect infants against influenza during the critical first few months of life. This is because protective antibodies are passed from the mother to the infant in utero. Significant reductions have been found in both all influenza infections and influenza-related hospitalisations, especially in the first 3 months of life.[20,21,22,23]

A recent large randomized, double-blind, placebo-controlled clinical trial of influenza vaccination during pregnancy followed up infants during the first 6 months of life for confirmed influenza illness.[24] The vaccine's efficacy against confirmed influenza illness was 85.6 per cent (95%CI, 38.3%-98.4%) among infants 8 weeks of age or younger. The study was also able to show that 56 per cent of infants who had high levels of protective antibodies in the first week of life. Protection for the infant decreases over time as the maternally-derived antibody levels fall.

**SAFETY**

Understandably, the safety of influenza vaccine during pregnancy remains a major concern for women and their clinicians. There has been a steadily accumulating body of evidence from clinical trials, passive surveillance, and observational studies showing no evidence of any association between the influenza vaccine and adverse events in mothers or their babies.

A large cohort study in the United States reviewed rates of medically-attended adverse events in almost 76,000 pregnant women did not find any increase in adverse events, such as allergic reactions, cellulitis, seizures or Guillain-Barré syndrome, in women who had received an influenza vaccine compared to women who had not been vaccinated.[25]

This adds to the evidence from smaller randomised control and matched-pair studies which found no significant differences in rates of serious adverse events such as miscarriage, stillbirth, premature birth or low birth weight.[26,27]

**VACCINATION TIMING**

The timing of vaccination depends on the time of the year, vaccine availability, stage of pregnancy and the anticipated duration of immunity.[1] Influenza vaccine can be given at the same time as pertussis vaccination (ideally at 28 weeks) but may be given earlier, and should not be delayed if the winter influenza season has begun or is imminent.
REFERENCES


