

EVIDENCE-STATEMENT:

HEALTHY PREGNANCY (Screening, Testing, Counseling, Immunization, and Preventive Medication)

Influenza (Immunization)

Clinical Preventive Service Recommendations

U.S. Preventive Services Task Force Recommendation

Not Applicable – The U.S. Preventive Services Task Force defers to the Advisory Committee on Immunization Practices and the CDC on recommendations surrounding immunization.

CDC Recommendation

The Advisory Committee on Immunization Practices (ACIP) recommends that all women who are pregnant during the influenza season (October to mid-May) be vaccinated with trivalent inactivated influenza vaccine.¹ Because this population is considered at risk for influenza-related complications, it should be given priority access to the vaccine in case of shortage.²

Note: Live attenuated influenza vaccine (LAIV) is contraindicated during pregnancy. Because the intranasal vaccine spray contains live virus, it should not be administered to pregnant women.¹

A summary of guidelines for the immunization of pregnant women can be found online (www.cdc.gov/nip/publications/preg_guide.htm).

Evidence Rating:

Expert Consensus

Other Recommended Guidance

The American Academy of Family Physicians (AAFP) and the American College of Obstetricians and Gynecologists (ACOG) concur with the ACIP recommendations.

Information Sources

The recommendations and supporting information contained in this document came from several sources, including the:

- Advisory Committee on Immunization Practices (ACIP)
- American Academy of Family Physicians (AAFP)
- American College of Obstetricians and Gynecologists (ACOG)
- Centers for Disease Control and Prevention (CDC)
- Peer-reviewed research

The background and supporting information contained in this document is a compilation of research findings. All information presented in this document should be attributed to its referenced source and should not be considered a reflection of other organizations cited in the text.

Condition/Disease Specific Information

Epidemiology of Condition/Disease

Influenza is a viral respiratory tract infection that occurs during the winter months in temperate climates. Uncomplicated cases of the illness usually resolve within several days to weeks and include fever, cough, sore throat, headache, muscle aches, and tiredness.

Influenza infection can exacerbate other underlying medical conditions and can lead to hospitalization or even death.¹ Throughout the 1990s in the United States, influenza infection was associated with an average of 36,000 deaths and over 200,000 hospitalizations per year.³⁻⁴

Pregnant women are considered to be at increased risk for complications from influenza infection. Healthy pregnant women in their third trimester are hospitalized for influenza at rates as high as 250 per 100,000 reported cases.¹ Rates are higher among pregnant women with other underlying medical conditions. Researchers estimate that an average of 1 to 2 hospitalizations can be prevented for every 1,000 pregnant women vaccinated.⁵

Despite the seriousness of influenza infection and the fact that the inactivated influenza vaccine is safe and effective, only 12% to 13% of pregnant woman are inoculated against influenza.^{1,6}

Condition/Disease Risk Factors

All pregnant women who are not immunized against influenza are at risk of infection.

Value of Prevention

Economic Burden of Condition/Disease

The overall national economic burden of influenza-attributable illness for adults aged 18 to 64 years is \$4.6 billion in direct medical costs and an additional \$5.6 billion in lost productivity resulting from 17 million missed workdays.⁷ Furthermore, adult hospitalizations from influenza-attributable illness result in 3.1 billion dollars per year in direct hospitalization costs (in year 2003 dollars).⁷

Workplace Burden of Condition/Disease

Influenza-related complications during pregnancy increase medical care costs and productivity losses triggered by lost work days. An infected employee may also spread infection to other employees or family members.

Economic Benefit of Preventive Intervention

Although no study specifically examined the case for pregnant women, studies of the economic benefit of immunization in working adults commonly include reduced hospitalizations, physician visits, and lost workdays; and an increase in quality-adjusted days due to symptom relief from influenza-like illness.⁸⁻⁹

Estimated Cost of Preventive Intervention

In 2004, the private-sector cost of an adult influenza vaccine averaged \$13 and approximately 95% of all paid claims fell within the range of \$3 to \$24 per vaccine.¹⁰ Vaccine administration averaged \$10 per dose and approximately 95% of all paid claims fell within range of \$0 to \$20 per dose.¹⁰

Estimated Cost of Treatment

Zanamivir and oseltamivir, the antiviral medications recommended for treatment of influenza, have not been studied in pregnant women. Because of the unknown effects of these drugs, they should only be used during pregnancy if the potential benefit justifies the potential risk to the embryo or fetus.¹

<p>Cost-Effectiveness and/or Cost-Benefit Analysis of Preventive Intervention</p>	<p>A review of several economic studies shows that vaccination of healthy working adults is cost-effective and may result in cost-savings in some years.¹¹ Though no specific study was conducted with reference to pregnant women, economic results are likely to be at least as favorable for this group since pregnant women are at high risk for influenza-related complications.</p>
<p>Preventive Intervention Information</p>	
<p>Preventive Intervention: Purpose of Immunization</p>	<p>Immunization against influenza reduces the chance that a pregnant woman will contract influenza thereby reducing her chance of experiencing influenza-related illness, hospitalization, and associated costs.</p>
<p>Benefits and Risks of Intervention</p>	<p>There are many benefits to influenza vaccination. First, when a pregnant woman is immunized during pregnancy, antibodies can be passed to her fetus and can also be passed in breast milk.⁶ Because children under 6 months are at high risk of complications from influenza, but cannot be vaccinated themselves, the vaccination of persons who may transmit influenza to infants is recommended.¹ That includes parents, siblings, and other caregivers. Second, healthy, working adults who receive influenza shots (in a year when the vaccine is well matched to the circulating influenza viruses) experience significantly fewer days of influenza-like illness (ILI), make fewer doctor visits for such illnesses, and take fewer days off from work due to ILIs, compared to unvaccinated workers.⁸⁻⁹</p> <p>Influenza vaccination with inactivated virus is considered to be safe for both pregnant women and their fetuses. Two studies with a total of over 2,250 pregnant women found no adverse events after vaccination, regardless of when during pregnancy the vaccine is given.^{6,12}</p>
<p>Initiation, Cessation, and Interval of Immunization</p>	<p>No studies have been conducted on the safety of LAIV in pregnant women. All women who will be pregnant during the influenza season (October to mid-May) should be given the inactivated influenza vaccine at some point during pregnancy. This single-dose vaccine may be administered during any trimester.¹ The ideal time to vaccinate is October and November, although vaccination in December or even later can still be beneficial since influenza activity peaks in February or later in most years.¹</p> <p>It is important to note that a woman should receive an influenza vaccination with each pregnancy to protect herself and her fetus. Immunity gained from the influenza vaccine does not carry from year to year. Influenza vaccination is also recommended for all household contacts of children less than 5 years of age and particularly for households with children less than 6 months of age since infants are at very high risk of influenza complications but are too young to receive the influenza vaccine.¹</p>
<p>Intervention Process</p>	<p>Inactivated influenza vaccine is administered via intra-muscular injection. Injections can be administered in various settings including doctor office visits or at the worksite.</p>
<p>Treatment Information</p>	<p>Influenza-specific antiviral medications are available, but no safety studies have been conducted in pregnant women. Because of the unknown effects of these</p>

drugs on fetuses, they should be used during pregnancy only if the potential benefit justifies the potential risk to the embryo or fetus.¹

Strength of Evidence for the Clinical Preventive Service

The level of evidence supporting the recommendations contained in this section is described below.

Recommended Guidance:

Advisory Committee on Immunization Practices (ACIP)

Strength of Evidence: Expert Consensus

- The ACIP recommends vaccinating all women who are/will be pregnant during the influenza season (October to mid-May) with trivalent inactivated influenza vaccine.¹

This recommendation is supported by the:

- American Academy of Family Physicians (AAFP)
- American College of Obstetricians and Gynecologists (ACOG)
- U.S. Preventive Services Task Force (USPSTF)

Authored by:

Lindley MC, Bhatt A. Influenza evidence-statement: immunization. In: Campbell KP, Lanza A, Dixon R, Chattopadhyay S, Molinari N, Finch RA, editors. *A Purchaser's Guide to Clinical Preventive Services: Moving Science into Coverage*. Washington, DC: National Business Group on Health; 2006.

References

Influenza (Immunization)

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