



ACOG COMMITTEE OPINION

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Committee on Obstetric Practice

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Immunization and Emerging Infections Expert Work Group and the Committee on Obstetric Practice in collaboration with Neil S. Silverman, MD, and Richard Beigi, MD.

Influenza Vaccination During Pregnancy

ABSTRACT: Influenza vaccination is an essential element of prepregnancy, prenatal, and postpartum care because influenza can result in serious illness, including a higher chance of progressing to pneumonia, when it occurs during the antepartum or postpartum period. In addition to hospitalization, pregnant women with influenza are at increased risk of intensive care unit admission and adverse perinatal and neonatal outcomes. The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices and the American College of Obstetricians and Gynecologists recommend that all adults receive an annual influenza vaccine and that women who are or will be pregnant during influenza season receive an inactivated influenza vaccine as soon as it is available. In the United States, the influenza season typically occurs from October to May. Ideally, an influenza vaccination should be given before the end of October, but vaccination throughout the influenza season is encouraged to ensure protection during the period of circulation. Any of the licensed, recommended, age-appropriate, inactivated influenza vaccines can be given safely during any trimester. Therefore, it is critically important that obstetrician–gynecologists and other obstetric care providers recommend and advocate for the influenza vaccine. Obstetrician–gynecologists are encouraged to stock and administer the influenza vaccine to their pregnant patients in their offices, and should get the influenza vaccine themselves every season. If the influenza vaccine cannot be offered in a practice, obstetrician–gynecologists and obstetric care providers should refer patients to another health care provider, pharmacy, or community vaccination center. This updated Committee Opinion includes more recent data on the safety and efficacy of influenza vaccination during pregnancy and recommendations for treatment and postexposure chemoprophylaxis.

Recommendations

The American College of Obstetricians and Gynecologists (ACOG) makes the following recommendations:

- The Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices and ACOG recommend that all adults receive an annual influenza vaccine and that women who are or will be pregnant during influenza (flu) season receive an inactivated influenza vaccine as soon as it is available. Any of the licensed, recommended, age-appropriate, inactivated influenza vaccines can be given safely during any trimester.
- Maternal influenza immunization is an essential component of prenatal care for women and their newborns. Obstetrician–gynecologists and other health care providers should counsel pregnant women about the safety and benefits of influenza immunization for themselves and their fetuses and advocate for the benefits of passive immunity from maternal immunization for their newborns.
- Obstetrician–gynecologists are encouraged to stock and administer the influenza vaccine to their pregnant patients in their offices, and should get the influenza vaccine themselves every season.
- If the influenza vaccine cannot be offered in a practice, obstetrician–gynecologists and obstetric care providers should refer patients to another health care provider, pharmacy, or community vaccination center.
- Obstetrician–gynecologists should strongly encourage their office staff to be vaccinated against influenza every season.
- Individuals with a history of egg allergy who have experienced only hives after exposure to egg can

receive any licensed and recommended influenza vaccine that is otherwise appropriate for their age and health status.

- In the case of allergic symptoms more serious than hives, the vaccine should be administered in an inpatient or outpatient medical setting (including, but not necessarily limited to hospitals, clinics, health departments, and physician offices).
- Patients with flu-like illness should be treated with antiviral medications presumptively regardless of vaccination status. Health care providers should not rely on test results to initiate treatment and should treat patients presumptively based on clinical evaluation.
- Because of the high potential for morbidity, the CDC and ACOG recommend that postexposure antiviral chemoprophylaxis (75 mg of oseltamivir once daily for 10 days) be considered for pregnant women and women who are up to 2 weeks postpartum (including pregnancy loss) who have had close contact with someone likely to have been infected with influenza. If oseltamivir is unavailable, zanamivir can be substituted, two inhalations once daily for 10 days.

Introduction

Published data continue to demonstrate the need for influenza vaccination during pregnancy as well as the importance of recommending and providing vaccination in the office (1–4). During the 2016–2017 influenza season, 53.6% of women reported receiving the influenza vaccine before or during pregnancy (5). Although these numbers reflect significant progress, much room remains for improvement to meet the U.S. Health and Human Services' Healthy People 2020 goal of vaccinating 80% of pregnant women against influenza (6). The American College of Obstetricians and Gynecologists' Immunization and Emerging Infections Expert Work Group and the Committee on Obstetric Practice recommend that all women who are pregnant during influenza season receive an inactivated influenza vaccine in accordance with recommendations from the CDC's Advisory Committee on Immunization Practices (5). This updated Committee Opinion includes more recent data on the safety and efficacy of influenza vaccination during pregnancy and recommendations for treatment and postexposure chemoprophylaxis.

Background

Influenza vaccination is an essential element of pre-pregnancy, prenatal, and postpartum care because influenza can result in serious illness, including a higher chance of progressing to pneumonia, when it occurs during the antepartum or postpartum period. For example, a retrospective cohort study in Nova Scotia found that women hospitalized for respiratory illness during pregnancy (especially during the third trimester) were more likely to have an increased number of medical visits or an

increased length of stay when compared with the number of visits the year before their pregnancy (7). In this study, the association between pregnancy status and hospital admission was particularly striking for women with comorbidities (7). However, it is important to note that many studies, including the aforementioned study, were not able to confirm the influenza diagnosis with laboratory results, and more studies using confirmatory laboratory results are needed in pregnant women. In addition to hospitalization, pregnant women with influenza are at an increased risk of intensive care unit admission and adverse perinatal and neonatal outcomes (8–10). Finally, morbidity and mortality among pregnant women increases during influenza pandemics, including the 2009 H1N1 influenza pandemic (10–18). Taken together, these data emphasize the importance of influenza vaccination as a vital intervention that all obstetrician–gynecologists and other obstetric care providers should recommend and administer.

In the United States, the influenza season typically occurs from October to May. The CDC's Advisory Committee on Immunization Practices and ACOG recommend that all adults receive an annual influenza vaccine and that women who are or will be pregnant during influenza season receive an inactivated influenza vaccine as soon as it is available. Ideally, an influenza vaccination should be given by the end of October, but vaccination throughout the influenza season is encouraged to ensure protection during the period of circulation. The inactivated influenza vaccine can be given to all pregnant women during any trimester (5). Because influenza vaccines are recommended annually for all adults, pregnant women should be vaccinated even if they received an influenza vaccine during a previous pregnancy. Vaccination in the postpartum period is an alternative only when vaccination during pregnancy cannot be completed.

Safety

Numerous studies, including clinical trials and observational studies, and data from safety reporting systems have demonstrated consistently the safety of influenza vaccination during pregnancy (19–23). To date, only one small retrospective case–control study has suggested a possible association between receipt of an influenza vaccine containing A/H1N1pdm early in the first trimester and spontaneous abortion in women who also received an influenza vaccine containing A/H1N1pdm in the previous influenza season (24). This association has not been observed during other seasons or other versions of the influenza vaccine. Because of the lack of evidence of biological plausibility, several notable flaws in this study, and the preponderance of other data showing no association, the recommendation for influenza vaccine given in any trimester has not changed (24, 25). Although some researchers have raised concerns that thimerosal, a mercury-containing preservative used in multidose vials of the influenza vaccine, may be unsafe, there is no

scientific evidence that thimerosal-containing vaccines cause health or developmental problems in children born to women who received vaccines with thimerosal during pregnancy (26–28). Therefore, although thimerosal-free formulations of the influenza vaccine are available, the CDC's Advisory Committee on Immunization Practices does not indicate a preference for thimerosal-containing or thimerosal-free vaccines for any group, including pregnant women (19).

Individuals with a history of egg allergy who have experienced only hives after exposure to egg can receive any licensed and recommended influenza vaccine that is otherwise appropriate for their age and health status. A recent study found the rate of anaphylaxis after all vaccines to be 1.31 per one million vaccine doses given (29). Individuals who report having had reactions to egg involving symptoms other than hives (such as angioedema, respiratory distress, lightheadedness, or recurrent emesis) or those who have required epinephrine or another emergency medical intervention, also may receive any licensed and recommended influenza vaccine. However, in the case of allergic symptoms more serious than hives, the vaccine should be administered in an inpatient or outpatient medical setting (including, but not necessarily limited to hospitals, clinics, health departments, and physician offices).

Vaccine administration should be supervised by a health care provider who is able to recognize and manage severe allergic conditions. A previous severe allergic reaction to influenza vaccine, not to eggs, regardless of the component suspected of being responsible for the reaction, is the only current contraindication to future receipt of the influenza vaccine (5).

Currently, pregnant women should receive any licensed, recommended, age-appropriate, inactivated influenza vaccine during any trimester (5). If the timing of the tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine and the influenza vaccine align, it is safe and effective to administer both vaccines during the same visit. It is also safe for breastfeeding women to receive the influenza vaccine if they did not receive it during pregnancy.

Efficacy and Benefits

The efficacy of seasonal influenza vaccination in pregnant women is similar to its efficacy among the general adult population (30). Although the effectiveness of the influenza vaccine can be lower than that of other adult vaccines, vaccination still offers significant protection against influenza. It can mitigate the severity of the effect of influenza when infection does occur and is the primary preventive intervention for pregnant women. A study during the 2012–2013 influenza season demonstrated that pregnant women who were vaccinated had significantly fewer hospitalizations than those who were not (31).

Influenza vaccination during pregnancy also can benefit the newborns of women who received the vac-

cine. Four large-scale, randomized controlled trials and numerous observational studies have demonstrated neonatal protection from maternal influenza vaccination (32–35). Studies also have demonstrated a reduction in hospitalization related to influenza infection among infants born to women who received the vaccine during pregnancy (36, 37). Therefore, because the influenza vaccine is not effective in infants younger than 6 months, passive immunization of fetuses through transplacentally transmitted antibodies is currently the best prevention strategy for newborns (32). Thus, maternal influenza immunization is an essential component of prenatal care for women and their newborns. Obstetrician–gynecologists and other health care providers should counsel pregnant women about the benefits of influenza immunization for themselves and their fetuses and advocate for the benefits of passive immunity from maternal immunization for their newborns.

Treatment and Postexposure Chemoprophylaxis in Pregnant Women

Pregnant women are at high risk of serious complications of influenza infection such as intensive care unit admission, preterm delivery, and maternal death. Patients with flu-like illness should be treated with antiviral medications presumptively regardless of vaccination status. Treatment with oseltamivir (75 mg twice daily for 5 days) is preferred; however, if oseltamivir is unavailable, zanamivir (two inhalations [10 mg] twice daily for 5 days) may be substituted. Health care providers should not rely on test results to initiate treatment and should treat patients presumptively based on clinical evaluation (38).

Because of the high potential for morbidity, the CDC and ACOG recommend that postexposure antiviral chemoprophylaxis (75 mg of oseltamivir once daily for 10 days) be considered for pregnant women and women who are up to 2 weeks postpartum (including pregnancy loss) who have had close contact with someone likely to have been infected with influenza. If oseltamivir is unavailable, zanamivir can be substituted, two inhalations once daily for 10 days. All women who are pregnant or are in the first 2 weeks postpartum should be counseled to call for evaluation immediately if the early signs and symptoms of influenza infection (eg, a fever greater than 100°F coupled with shortness of breath, syncope, or chest pain) develop (38). For more information about treatment and dosage see ACOG and the Society for Maternal–Fetal Medicine's Seasonal Influenza Assessment and Treatment of Pregnant Women with Influenza-like Illness algorithm at www.acog.org/More-Info/FluVaccine.

The Obstetrician–Gynecologist's Role

Discussion with patients regarding the effects of influenza and the potential benefits of vaccination during pregnancy is particularly important because a lack of knowledge about the benefits of the influenza vaccine has

been shown to be a barrier to vaccine acceptance (39–41). Educational tools with simple chart prompts increase the frequency of discussion between physicians and pregnant women regarding influenza vaccination (42). Moreover, studies consistently suggest that when recommendations for influenza vaccination during pregnancy come directly from a woman’s obstetrician–gynecologist or other obstetric care provider and the vaccine is available in the physician’s office, the odds of vaccine acceptance and receipt are 5-fold to 50-fold higher (1, 2). Therefore, it is critically important that all obstetrician–gynecologists and other obstetric care providers recommend and advocate for the influenza vaccine. Obstetrician–gynecologists are encouraged to stock and administer the influenza vaccine to their pregnant patients in their offices, and should get the influenza vaccine themselves every season. Depending on the size of a practice and services provided, there may not be the means to stock and offer the influenza vaccine in the office. If the influenza vaccine cannot be offered in a practice, obstetrician–gynecologists and obstetric care providers should refer patients to another health care provider, pharmacy, or community vaccination center.

If a patient receives the influenza vaccine outside of the obstetrician–gynecologist’s office, it is important for the site that provided the vaccination to provide proper vaccine documentation if the site does not work directly with a centralized vaccine registration program, so that the patient’s immunization record can be updated appropriately. These combined efforts send a powerful message to pregnant women that vaccination is very important for their protection and for their newborns.

Conclusion

Pregnant women are particularly vulnerable to influenza infection and its resulting morbidities; therefore, influenza vaccination is an integral element of pre-pregnancy, prenatal, and postpartum care. It is imperative that obstetrician–gynecologists, other health care providers, health care organizations, and public health officials continue efforts to improve the rate of influenza vaccination among pregnant women. Doing so will benefit women and their newborns.

For More Information

The American College of Obstetricians and Gynecologists has identified additional resources on topics related to this document that may be helpful for obstetrician–gynecologists, other health care providers, and patients. You may view these resources at: www.acog.org/More-Info/FluVaccine.

These resources are for information only and are not meant to be comprehensive. Referral to these resources does not imply the American College of Obstetricians and Gynecologists’ endorsement of the organization, the organization’s website, or the content of the resource. The resources may change without notice.

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