ACOG COMMITTEE OPINION SUMMARY

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For a comprehensive overview of these recommendations, the full-text version of this Committee Opinion is available at http://dx.doi.org/10.1097/AOG.0000000000002662.

Immunization, Infectious Disease, and Public Health Preparedness Expert Work Group

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists’ Immunization, Infectious Disease, and Public Health Preparedness Expert Work Group, in collaboration with member Kevin A. Ault, MD and Laura E. Riley, MD.

Maternal Immunization

ABSTRACT: Immunization is an essential part of care for adults, including pregnant women. Influenza vaccination for pregnant women is especially important because pregnant women who contract influenza are at greater risk of maternal morbidity and mortality in addition to fetal morbidity, including congenital anomalies, spontaneous abortion, preterm birth, and low birth weight. Other vaccines provide maternal protection from severe morbidity related to specific pathogens such as pneumococcus, meningococcus, and hepatitis for at-risk pregnant women. Obstetrician–gynecologists and other obstetric care providers should routinely assess their pregnant patients’ vaccination status. Based on this assessment they should recommend and, when possible, administer needed vaccines to their pregnant patients. There is no evidence of adverse fetal effects from vaccinating pregnant women with inactivated virus, bacterial vaccines, or toxoids, and a growing body of data demonstrate the safety of such use. Women who are or will be pregnant during influenza season should receive an annual influenza vaccine. All pregnant women should receive a tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis (Tdap) vaccine during each pregnancy, as early in the 27–36-weeks-of-gestation window as possible.

Recommendations

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

- Obstetrician–gynecologists and other obstetric care providers should routinely assess their pregnant patients’ vaccination status.
- Obstetrician–gynecologists and other obstetric care providers should recommend and, when possible, administer needed vaccines to their pregnant patients.
- Women who are or will be pregnant during influenza season should receive an annual influenza vaccine.
- All pregnant women should receive a tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap) vaccine during each pregnancy, as early in the 27–36-weeks-of-gestation window as possible.
- Other vaccines may be recommended during pregnancy depending on the patient’s age, prior immunizations, comorbidities, or disease risk factors.
Table 1. Summary of Maternal Immunization Recommendations

<table>
<thead>
<tr>
<th>Vaccine*</th>
<th>Indicated During Every Pregnancy</th>
<th>May Be Given During Pregnancy in Certain Populations</th>
<th>Contraindicated During Pregnancy</th>
<th>Can Be Initiated Postpartum or When Breastfeeding or Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactivated influenza</td>
<td>X&lt;sup&gt;1,3,4&lt;/sup&gt;</td>
<td>X&lt;sup&gt;2&lt;/sup&gt;</td>
<td></td>
<td>X&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap)</td>
<td>X&lt;sup&gt;1,3,4&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Pneumococcal vaccines</td>
<td>X&lt;sup&gt;4,5,6&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;5,6&lt;/sup&gt;</td>
</tr>
<tr>
<td>Meningococcal conjugate (MenACWY) and Meningococcal serogroup B</td>
<td>X&lt;sup&gt;1,7&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;1,7&lt;/sup&gt;</td>
</tr>
<tr>
<td>Hepatitis A</td>
<td>X&lt;sup&gt;8&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;8&lt;/sup&gt;</td>
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<tr>
<td>Hepatitis B</td>
<td>X&lt;sup&gt;9,10&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;9,10&lt;/sup&gt;</td>
</tr>
<tr>
<td>Human papillomavirus (HPV)**</td>
<td></td>
<td></td>
<td></td>
<td>X&lt;sup&gt;**11,12&lt;/sup&gt;</td>
</tr>
<tr>
<td>Measles–mumps–rubella</td>
<td>X&lt;sup&gt;11,13,14&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;11&lt;/sup&gt;</td>
</tr>
<tr>
<td>Varicella</td>
<td>X&lt;sup&gt;11,13,15,16&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>X&lt;sup&gt;11&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

*An “X” indicates that the vaccine can be given in this window. See the corresponding numbered footnote for details.

1Inactive influenza vaccination can be given in any trimester and should be given with each influenza season as soon as the vaccine is available. The Tdap vaccine is given at 27–36 weeks of gestation in each pregnancy, preferably as early in the 27–36-week window as possible. Tdap vaccine should be given during each pregnancy in order to boost the maternal immune response and maximize the passive antibody transfer to the newborn. Women who did not receive Tdap during pregnancy (and have never received the Tdap vaccine) should be immunized once in the immediate postpartum period.<sup>1–3</sup>

2Vaccination during every pregnancy is preferred over vaccination during the postpartum period to ensure antibody transfer to the newborn.<sup>1,4</sup>

4There are two pneumococcal vaccines: 1) the 23-valent pneumococcal polysaccharide vaccine (PPSV23) is recommended in reproductive-age women who have heart disease, lung disease, sickle cell disease, and diabetes as well as other chronic illnesses; 2) the 13-valent pneumococcal vaccine (PCV13) is recommended for reproductive-aged women with certain immunocompromised conditions, including human immunodeficiency virus (HIV) infection and asplenia. The PCV13 vaccine should be deferred in pregnant women, unless the woman is at increased risk of pneumococcal disease and after consultation with her health care provider the benefits of vaccination are considered to outweigh the potential risks.<sup>5,6</sup>

5Quadrivalent conjugate meningococcal vaccine is routinely recommended for adolescents aged 11–18 years, along with individuals with HIV infection, complement component deficiency (including eculizumab use), functional or anatomic asplenia (including sickle cell disease), exposure during a meningococcal disease outbreak, travel to endemic or hyperendemic areas, or work as a microbiologist routinely exposed to <i>Neisseria meningitidis</i>. If indicated, pregnancy should not preclude vaccination. The serogroup B vaccine should be deferred in pregnant women, unless the woman is at increased risk of pneumococcal disease and after consultation with her health care provider the benefits of vaccination are considered to outweigh the potential risks.<sup>5,6</sup>

6Pregnant women with any of the conditions that increase the risk of either acquiring or having a severe outcome from hepatitis A infection (eg, having chronic liver disease, clotting-factor disorders, traveling, using injection and noninjection drugs, and working with nonhuman primates) should be vaccinated during pregnancy if not previously vaccinated. Pregnant women at risk of hepatitis A infection during pregnancy should also be counseled concerning all options to prevent hepatitis A infection. Any woman who wants to be protected from hepatitis A or has an indication for use may receive the vaccine during pregnancy or during the postpartum period.<sup>8</sup>

8Hepatitis B vaccination is recommended for women who are identified as being at risk of hepatitis B infection during pregnancy (eg, women who have household contacts or sex partners who are hepatitis B surface antigen-positive; have more than one sex partner during the previous 6 months; have been evaluated or treated for a sexually transmitted infection; are current or recent injection-drug users; have chronic liver disease; have HIV infection; or have traveled to certain countries). Any woman who wants to be protected from hepatitis B or has an indication for use may receive the vaccine during pregnancy and the postpartum period. Pregnancy women at risk of hepatitis B infection during pregnancy should be counseled concerning other methods to prevent hepatitis B infection.<sup>1,9</sup>

9**The HPV vaccine in pregnancy is not recommended, however, inadvertent HPV vaccination during pregnancy is not associated with adverse events for the woman or her fetus. The HPV vaccine can be given to postpartum and breastfeeding women. The HPV vaccine should be administered to women through age 26 years who were not previously vaccinated. Vaccination timing and number of doses should follow Centers for Disease Control and Prevention and American College of Obstetricians and Gynecologists’ guidance.<sup>11,12</sup>

11Live attenuated vaccines including, measles–mumps–rubella, varicella, and live-attenuated influenza vaccine are contraindicated for pregnant women. If indicated (ie, among seronegative women), the measles–mumps–rubella vaccine and the varicella vaccine should be given during the postpartum period. Inadvertent administration during pregnancy has not been associated with congenital rubella or congenital varicella syndromes.<sup>15–16</sup>


