Vaccinations for Pregnant Women and Newborns

A Clinical Overview

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SAFE 🔄

Tdap

The Flu Vaccine

Promoting the Birth Dose of Hepatitis B Vaccine
Tdap
vs DTaP vs Td (vs DTP)
Health-care personnel should **administer a dose of Tdap during each pregnancy** irrespective of the patient’s prior history of receiving Tdap.
**Question**: Some women have closely spaced pregnancies. Should Tdap be given during each pregnancy, even if it means such women would get 2 doses within 12 months?
• Of all U.S. women who have more than one pregnancy, close to 98% have an interval of at least >12 months between births.

• The interval between subsequent pregnancies is likely to be longer than the persistence of maternal anti-pertussis antibodies.

• ACIP believes the potential benefit of preventing morbidity and mortality in infants outweighs the theoretical concerns of possible severe adverse events in mothers.
Optimal timing for Tdap administration is between 27 and 36 weeks of gestation, although Tdap may be given at any time during pregnancy.
**Question**: What is so special about getting the vaccine in the 3rd trimester (27-36 weeks)?
# Types of Acquired Immunity

<table>
<thead>
<tr>
<th>Naturally acquired</th>
<th>Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td></td>
</tr>
<tr>
<td>The body responds to antigens that enter naturally, such as during infections.</td>
<td>Antibodies are transferred from mother to offspring, either across the placenta (IgG) or in breast milk (secretory IgA).</td>
</tr>
<tr>
<td>Artificially acquired</td>
<td></td>
</tr>
<tr>
<td>Health care workers introduce antigens in vaccines; the body responds with humoral or cell-mediated immune responses, including the production of memory cells.</td>
<td>Health care workers give patients antiserum or antitoxins, which are preformed antibodies obtained from immune individuals or animals.</td>
</tr>
</tbody>
</table>
Question: If a woman received Tdap in the first or second trimester of pregnancy, should she get it again in the third trimester?
Trimesters of pregnancy:

1. Sick and tired.
2. Awww baby kicks!
**Question:** If a woman received Tdap in the first or second trimester of pregnancy, should she get it again in the third trimester?

What if she was given Td instead of Tdap?
ACIP recommends a Tdap vaccination in pregnancy, preferably in the 3rd trimester. If given sooner, it does not need to be repeated.

If a pregnant woman received Td for wound prophylaxis, she can receive her Tdap dose at ANY interval since the Td dose was given, preferably between 27-36 weeks.
For women not previously vaccinated with Tdap, if Tdap is not administered during pregnancy, Tdap should be administered immediately postpartum.
Question: How long does it take Tdap vaccine to provide protection?

When should family members receive Tdap?
To best protect infants, unvaccinated teens and adults should ideally receive Tdap **2 weeks** or more before having contact with an infant.
Question: Every time there is a pregnancy in the family, should fathers and other family members also receive a Tdap booster?
**Answer:** The recommendation for multiple Tdap boosters **applies only to pregnant women**, as a means of optimizing infant immunity.

At this time, ACIP **does not** recommend Tdap revaccination for any other group, including fathers, family members, caregivers, or health care providers.
Provide Post Exposure Prophylaxis to –
1. all household contacts of a pertussis case;
2. all persons at high risk of severe illness, or
3. all persons who will have close contact with a person at high risk of severe illness.
Diagnosed with pertussis

Has a baby at home

Pregnant Baby Due Soon

Volunteers at local NICU
INFLUENZA

- Children, especially <2 yo
- Pregnant women
- Patients > 65yo
- Patients w/chronic medical conditions (chronic lung/heart/kidney/liver disease, sickle cell anemia, DM, immunodeficiency)
- Native Americans
Routine influenza vaccination is recommended for all women who are or will be pregnant (in any trimester) during influenza season, which in the United States is usually early October through late March.
**Question**: Does ACIP recommend one influenza vaccine over another for pregnant women?
**Inactivated flu vaccine**
Viral particles are killed/inactivated and cannot reproduce or cause disease

**Live attenuated vaccine**
Viruses are weakened so they reproduce very poorly inside the body
Answer: Pregnant women can receive any of the inactivated vaccines. They should not be given the live attenuated influenza vaccine (LAIV).
**Question:** Should pregnant women avoid contact with people who were recently vaccinated with LAIV?

Can a NICU nurse get LAIV?
Answer: Pregnant women and newborns do NOT need to avoid contact with persons recently vaccinated with the nasal spray flu vaccine.
Question: Can thimerosal containing flu vaccines be given to pregnant women?

California Law vs Scientific Evidence
# Flu Vaccines and Thimerosal Content

<table>
<thead>
<tr>
<th>Trade name</th>
<th>Presentation</th>
<th>Mercury content from thimerosal (μg Hg/0.5 mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluarix Quadrivalent</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>&lt;25</td>
</tr>
<tr>
<td>FluLaval Quadrivalent</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>25</td>
</tr>
<tr>
<td>Fluzone Quadrivalent</td>
<td>0.25 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>25</td>
</tr>
<tr>
<td>Afluria</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>24.5</td>
</tr>
<tr>
<td>Fluarix</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td>FluLaval</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>&lt;25</td>
</tr>
<tr>
<td>Fluvirin</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>&lt;1</td>
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<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>25</td>
</tr>
<tr>
<td>Fluzone</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>5.0 mL multidose vial</td>
<td>25</td>
</tr>
<tr>
<td>Fluzone Intradermal§</td>
<td>0.1 mL prefilled microinjection system</td>
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</tr>
<tr>
<td>Flucelvax</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td>Fluzone High-Dose††</td>
<td>0.5 mL single-dose prefilled syringe</td>
<td>—</td>
</tr>
<tr>
<td>FluBlok</td>
<td>0.5 mL single-dose vial</td>
<td>—</td>
</tr>
</tbody>
</table>

**Multi-dose vial**

**Single-dose**
Post-exposure prophylaxis can be considered for pregnant women and women who are up to 2 weeks postpartum (including following pregnancy loss) who have had close contact with someone likely to have been infectious with influenza.

Close contact is defined as having cared for or lived with a person who has confirmed, probable, or suspected influenza, or having been in a setting where there was a high likelihood of contact with respiratory droplets and/or body fluids of such a person, including having talked face-to-face with a person with suspected or confirmed influenza illness.
All children should receive their first dose of Hepatitis B vaccine at birth. The dose should be given as soon as baby is medically stable, preferably within 24 hrs of birth.
Question: Does a newborn need to be vaccinated if the mother has tested negative for hepatitis B infection?
**Question:** Isn’t a baby’s immune system too immature to have to deal with a vaccine right after birth?
Infants are confronted with millions of foreign antigens beginning immediately at birth.
### Comparing apples to apples

**Numbers of foreign antigens in first days of life**

<table>
<thead>
<tr>
<th></th>
<th><img src="image.jpg" alt="Image" /></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Baby in womb</strong></td>
<td><img src="image.jpg" alt="Image" /></td>
<td><strong>sterile</strong></td>
</tr>
<tr>
<td><strong>After birth</strong></td>
<td><img src="image.jpg" alt="Image" /></td>
<td>Number of microbes on skin, mucus membranes, and gut</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>100,000,000,000,000</strong></td>
</tr>
<tr>
<td><strong>Hep B vaccine</strong></td>
<td><img src="image.jpg" alt="Image" /></td>
<td>Number of immunologic components</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1</strong></td>
</tr>
</tbody>
</table>
Question: Is it safe to give hepatitis B vaccine to a pregnant woman?
**Answer:** YES, immunization is recommended if she is at risk for HBV infection:

- health care worker
- a person with an STD
- IV drug use
- multiple sex partners
- diabetes

Vaccination should be initiated as soon as her risk factor is identified during the pregnancy.
Future areas of vaccine research

• Pertussis (whooping cough)
• Respiratory syncytial virus (RSV), a virus that causes severe lung inflammation and pneumonia in young infants
• Influenza
• Group B streptococcus, a bacterium that causes bloodstream infection and meningitis in infants less than 4 months of age
IF GOD DID NOT WANT US TO VACCINATE, WHY DID SHE GIVE US THE BRAINS TO MAKE THEM WORK SO WELL