## **Importance of Vaccines in Pregnant Women**

1. There are two vaccines routinely recommended during pregnancy: flu (protects against influenza) and Tdap (protects against whooping cough).
2. The vaccines received during pregnancy will provide baby with some immunity that will last the first few months of life before babies are able to get their own vaccines.
3. However, vaccines do not provide long-lasting protection. That is why vaccination is recommended during each pregnancy and each flu season— so that each baby gets the greatest number of protective antibodies and the best protection possible.
4. No evidence exists of risk to the developing baby from vaccinating pregnant women with inactivated virus or bacterial vaccines or toxoids.
5. A strong recommendation from a health care provider may ultimately influence whether or not your patients get vaccinated.

## **Influenza and Pregnancy**

1. Pregnant women are at high risk of serious flu complications and they are more likely to become severely ill with the flu than women who are not pregnant.
2. Getting the flu while pregnant increases the chances for serious problems with the pregnancy, including premature labor and delivery.
3. Even if a woman is generally healthy, changes in immune, heart, and lung functions during pregnancy make them more likely to get seriously ill from the flu.
4. Babies younger than 6 months of age are too young to get a flu vaccine. To protect infants younger than 6 months from getting the flu, their mothers should get a flu vaccine during pregnancy.
5. Getting a flu shot is the best way to protect from the flu and prevent possible flu-associated pregnancy complications.

## **Influenza Vaccine**

1. CDC recommends that pregnant women get a flu shot during any trimester of their pregnancy to protect themselves and their newborn babies from the flu.

It takes about two weeks to make antibodies after getting a flu vaccine. Therefore, it is best that people get vaccinated by the end of October, if possible.

1. Studies show that getting a flu shot while pregnant can protect the baby from flu for several months after birth.
2. Some studies have shown that a flu vaccine may reduce the risk of certain pregnancy complications.
3. One out of two pregnant women are getting their yearly flu shot.
   1. During the 2015-16 flu season, an estimated 50% of pregnant women in the U.S. protected themselves and their babies from flu by getting a flu shot.
   2. This is a significant improvement since the years before the 2009 flu pandemic.
   3. However, almost half of pregnant women and their babies remained unprotected from flu that season.
4. Flu shots are a safe way to protect the mother and her baby from serious illness and complications from flu.
   1. Millions of pregnant women have safely received flu shots for many years. The CDC continues to gather data showing that the flu shot is safe during pregnancy.
   2. A review of reports to the Vaccine Adverse Reporting System (VAERS) found no link between pregnancy complications or adverse fetal outcomes among pregnant women and flu shots.
   3. A large study using [VSD](http://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vsd/index.html) data ([Kharbanda et al, 2013](http://journals.lww.com/greenjournal/Fulltext/2013/09000/Inactivated_Influenza_Vaccine_During_Pregnancy_and.23.aspx)) found no increased risk for adverse obstetric events (like chorioamnionitis, pre-eclampsia, or gestational hypertension) for pregnant women who received the flu vaccine from 2002 to 2009 when compared to pregnant women who were not vaccinated.
   4. A study using Vaccine Safety Datalink ([VSD](http://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vsd/index.html)) data ([Irving et al, 2013](http://www.ncbi.nlm.nih.gov/pubmed/23262941)) found no increased risk of miscarriage among pregnant women who received flu vaccines in the 2005-06 or 2006-07 flu seasons.
   5. A [VSD](http://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vsd/index.html) study ([Nordin et al, 2014](http://www.sciencedirect.com/science/article/pii/S0022347614000651)) compared pregnant women who received the flu shot with an equal number of pregnant women who did not receive the flu shot during the 2004-05 and 2008-09 flu seasons, and found no differences between the two groups in the rates of premature delivery or small for gestational age infants. There is a large body of scientific studies that supports the safety of flu vaccine in pregnant women and their babies. The CDC continues to gather data on this topic.
   6. The most common side effects from vaccination experienced by pregnant women are the same as those experienced by other people. They are generally mild and include soreness, redness, and/or swelling from the shot, fainting, headache, fever, muscles aches, nausea, and fatigue.

## **Pertussis and Pregnancy**

1. Pertussis (whooping cough) is a very contagious disease than can cause serious illness and death, especially in newborns and young infants who are not fully vaccinated.
2. While the number of US cases is not as high as the past, whooping cough is still a health concern.
   1. More than 18,000 cases of whooping cough were reported to CDC in 2015.
   2. In recent years, up to 1,450 infants have been hospitalized and about 10 to 20 have died each year in the United States due to pertussis.
   3. About half of babies younger than 1 year old who get whooping cough need treatment in the hospital.
   4. The younger the baby is when he gets whooping cough, the more likely he will need to be treated in a hospital.
3. Whooping cough is usually less severe for those who have been vaccinated. Vaccinated babies are less likely to suffer from life-threatening pauses in breathing and end up in the hospital.
4. These first few months of life are when infants are at greatest risk of contracting pertussis and having severe, potentially life-threatening complications from the infection.
5. Whooping cough vaccines are the safest and most effective way to prevent this disease.
   1. Two studies from the United Kingdom have shown whooping cough vaccination during pregnancy to be at least 90% effective in preventing whooping cough in babies younger than 2 months of age.

## **Tdap Vaccine**

1. There are currently no whooping cough vaccines licensed or recommended for newborns at birth, so CDC recommends that Tdap vaccination of pregnant women during each pregnancy.
2. When a pregnant women receives a whooping cough vaccine, her body creates protective antibodies and passes some of them to her baby before birth. These antibodies provide the baby some short-term protection against whopping cough until he or she is able to start receiving his or her own vaccine at 2 months of age.
3. To maximize the maternal antibody response and passive antibody transfer to the infant, optimal timing for Tdap administration is during the early part of gestational weeks 27 and 36 weeks.
   1. Tdap administration does not provide immunity to the infant, who is most vulnerable to the disease’s serious complications.
   2. Fewer babies will be hospitalized for and die from pertussis when Tdap is given during pregnancy rather than during the postpartum period.
4. Getting whooping cough or a whooping cough vaccines (as a child or an adult) does not provide lifetime protection.
   1. In general, Tdap fully protects about seven out of 10 people who receive it against whooping cough, but protection fades over time. Between three and four out of 10 people are fully protected against whooping cough 4 years after receiving Tdap.
   2. While protection from both whooping cough vaccines fades over time, people who get whooping cough after being vaccinated are typically protected against severe illness.
5. CDC continually monitors whooping cough vaccine safety. The most common side effects are mild (redness, swelling, tenderness at the site where the shot was given). Serious side effects are extremely rare.
   1. Studies do not suggest any elevated frequency or unusual patterns of adverse events in pregnant women who received Tdap and that the few serious adverse events reported were unlikely to have been caused by the vaccine.