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NLM Citation: Drugs and Lactation Database (LactMed) [Internet]. Bethesda (MD): National Library of Medicine (US); 2006-. Diphtheria-Tetanus-Pertussis Vaccines. [Updated 2019 Feb 28].
Bookshelf URL: https://www.ncbi.nlm.nih.gov/books/

Diphtheria-Tetanus-Pertussis Vaccines

Revised: February 28, 2019.

Drug Levels and Effects

Summary of Use during Lactation

The Centers for Disease Control and Prevention and several health professional organizations state that vaccines given to a nursing mother do not affect the safety of breastfeeding for mothers or infants and that breastfeeding is not a contraindication to DTP vaccine.[1][2][3] Women are recommended to received Tdap with every pregnancy.[4] Those vaccinated after 20 weeks of gestation have higher antipertussis IgA levels in their breastmilk than those who were not vaccinated. Women, including nursing mothers, who have not received acellular pertussis vaccine with tetanus and reduced diphtheria toxoids (Tdap) previously should be vaccinated with Tdap immediately postpartum.[4][5] After vaccination, antipertussis antibodies appear in breastmilk within 1 to 2 weeks; however, conflicting results have been reported on whether breastfed infants are protected from pertussis.[6][7] Breastfeeding appears to reduce infant side effects associated with routine childhood immunization. Breastfed infants should be vaccinated according to the routine recommended schedules.

A study of 67 colostrum samples that underwent Holder pasteurization (62.5 degrees C for 30 minutes) found that overall IgG amounts decreased by 34 to 40%. Immunoreactivity against tetanus toxoid decreased by 8 to 20%.[8]

Drug Levels

Maternal Levels. Thirty-nine women who were within 24 hours postpartum received 0.5 mL of Tdap vaccine (Adacel, Sanofi Pasteur) and 11 received no vaccine. Colostrum or breast milk and blood samples were collected at baseline and 7, 10, 14, and 28 days after vaccination. Breastmilk IgA levels against pertussis toxoid peaked at day 10 postpartum, then slowly decreased. Breast milk antibody levels against the other antipertussis vaccine components, filamentous hemagglutinin and fimbriae types 2 and 3, reached a plateau during days 10 to 14 and then slowly decreased. Breast milk antibody levels against another antipertussis vaccine component, pertactin, peaked on day 14 and then decreased by day 28.[9]

The milk of 25 pregnant women given Tdap vaccine (Boostrix, GlaxoSmithKline) after 20 weeks of pregnancy was compared to colostrum from 12 unvaccinated women. Milk samples were collected prior to discharge after delivery (colostrum) and at 2, 4 and 8 weeks postpartum. Vaccinated women had significantly higher antipertussis antibody levels in their breastmilk than unvaccinated women. The primary class of imunoglobulins was IgA, which were highest in colostrum, but still detectable at 8 weeks.[10]

Total and anti-pertussis toxin secretory IgA (sIgA) levels were measured in breastmilk from women who had been vaccinated either during pregnancy (n = 19), at or shortly after delivery (n = 34), less than 5 years before delivery (n = 9), or more than 5 years before delivery (n = 12). Tdap vaccine (Boostrix, GlaxoSmithKline) was used in the first 3 groups. Breastmilk samples were obtained between 44 and 91 days postpartum. No difference in total sIgA was found between the groups, but women who were vaccinated during pregnancy or shortly after birth had higher anti-pertussis toxin levels of sIgA than those vaccinated more than 5 years before. Higher anti-pertussis toxin sIgA levels were found among women practicing mixed feeding than among exclusively breastfeeding mothers.[11]

Infant Levels. Relevant published information was not found as of the revision date.

Effects in Breastfed Infants

Limited data indicate that breastfeeding can enhance the response of the infant to certain vaccine antigens,[2][3][12] including tetanus toxoid.[13] Breastfed infants are also less likely to have fever[14] and may be less likely to experience anorexia and reduced energy intake[15] after routine childhood immunization than those who are not breastfed.

One study of previously vaccinated infants found that at 21 to 40 months of age breastfed infants had higher IgG levels against diphtheria, higher secretory IgA levels in saliva against diphtheria and tetanus and higher fecal IgM against tetanus than formula-fed infants.[16]

Effects on Lactation and Breastmilk

Relevant published information was not found as of the revision date.

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Substance Identification

Substance Name

Diphtheria-Tetanus-Pertussis Vaccines

Drug Class

Breast Feeding

Lactation

Vaccines