

Breastfeeding and Medication



Vaccines and Breastfeeding

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Vaccines have low bio-availability and absorption from breastmilk is unlikely in most circumstances other than with live vaccines. Cessation or interruption of breastfeeding is not normally required but individual regimens should be considered especially with yellow fever (Data taken from LactMed website [2012]; Martindale [2005]; Advisory Committee on Immunization Practices [ACIP]; CDC [Kroger 2006]; Advisory Committee on Immunization Practices [2006]). UK data are available in the Department of Health 'The Green Book' available on the internet (Plotkin and Orenstein 2004; Department of Health Green Book).

Although there is a theoretical risk of live vaccine being present in breastmilk, vaccination with common vaccines is not contra-indicated for women who are breastfeeding when there is significant risk of exposure to disease. There is no evidence of risk from vaccinating women who are breastfeeding, with inactivated viral or bacterial vaccines or toxoids (BNF).

References

- Advisory Committee on Immunization Practices, MMWR Recomm Rep, 2006;55(RR15):1–48.
- Immunisation against infectious disease – Department of Health Green Book
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.
- Plotkin SA, Orenstein WA, Vaccines 4th edition, Philadelphia: WB Saunders, 2004 (cited in Department of Health Green Book chapter 34).

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However, live vaccines should not be given to immunocompromised mothers or children exposed to biological drugs during pregnancy until after 6 months of age. See <https://breastfeeding-and-medication.co.uk/fact-sheet/live-vaccinations-and-immunosuppressant-medication-taken-by-breastfeeding-mothers>

Measles, mumps and rubella

Rubella vaccine virus can appear in breastmilk and result in infections in some infants (Buimovici-Klein et al. 1977). There is no evidence of mumps and measles vaccine viruses being found in breastmilk. Some breastfed infants acquire passive immunity to rubella after maternal vaccination, as do infants of mothers with natural rubella immunity. However, neither group of infants has a decreased response to rubella vaccine administered directly (Krogh et al. 1989). The CDC (Kroger et al. 2006) 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 contra-indication to MMR vaccine. Breastfed infants should be vaccinated according to the routine recommended schedules (Plotkin and Orenstein, 2004; Department of Health Green Book).

Compatible with use during breastfeeding.

References

- Buimovici-Klein E, Hite RL, Byrne T et al. Isolation of rubella virus in milk after postpartum immunization, *J Pediatr*, 1977;91:939–41.
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), *MMWR Recomm Rep*, 2006;55(RR-15):1–48.
- Krogh V, Duffy LC, Wong D, Rosenband M, Riddlesberger KR, Ogra PL, Post-partum immunization with rubella virus vaccine and antibody response in breastfeeding infants, *J Lab Clin Med*, 1989;113(6):695–9.

Diphtheria, tetanus and pertussis

One study of previously vaccinated infants found that at 21 to 40 months of age breastfed infants had higher immunoglobulin G (IgG) levels against diphtheria, higher secretory IgA levels in saliva against diphtheria and tetanus and higher fecal IgM against tetanus than formula-fed infants (Hahn-Zoric et al. 1990).

Pisicane et al. (2010) found that breastfed infants were also less likely to have fever after immunisation than their non-breastfed counterparts. Lopez-Alarcon et al. (2002) found they were also less likely to experience loss of appetite and reduced energy intake after routine childhood immunisation than those who are not breastfed. Although baseline calorie intakes were higher in the formula-fed infants mean intakes fell by 12% in the post-immunisation period.

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There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated viral or bacterial vaccines or toxoids (Kroger 2006; Plotkin and Orenstein 2004; Department of Health Green Book).

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References

- Hahn-Zoric M, Fulconis F, Minoli I, Moro G, Carlsson B, Böttiger M, Räihä N, Hanson LA, Antibody responses to parenteral and oral vaccines are impaired by conventional and low protein formulas as compared to breastfeeding, *Acta Paediatr Scand*; 1990;1979:1137–42.
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), *MMWR Recomm Rep*, 2006;55(RR-15):1–48.
- López-Alarcón M, Garza C, Habicht JP, Martínez L, Pegueros V, Villalpando S, Breastfeeding attenuates reductions in energy intake induced by a mild immunologic stimulus represented by DPTH immunization: possible roles of interleukin-1beta, tumor necrosis factor-alpha and leptin, *J Nutr*, 2002;132:1293–8.
- Pisacane A, Continisio P, Palma O, Cataldo S, De Michele F, Vairo U, Breastfeeding and risk for fever after immunization, *Pediatrics*, 2010;125:e1448–52.

Meningococcal vaccination

Immunisation of pregnant or lactating women with meningococcal vaccine increased the specific secretory IgA content of milk (Shahid et al. 2002). There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated virus or bacterial vaccines or toxoids (Granoff et al. 2004, Department of Health Green Book).

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References

- Granoff DM, Feavers IM, Borrow R, Meningococcal vaccines. In: Plotkin SA, Orenstein WA, *Vaccines 4th edition*, Philadelphia: WB Saunders, 2004 (cited in Department of Health Green Book, 959–88).
- Shahid NS, Steinhoff MC, Roy E, Begum T, Thompson CM, Siber GR, Placental and breast transfer of antibodies after maternal immunization with polysaccharide meningococcal vaccine: a randomized, controlled evaluation, *Vaccine*, 2002;20:2404–9.

Typhoid vaccination ☺

Recommended as compatible with breastfeeding by the CDC and the American Academy of Pediatrics (AAP). There is no evidence of risk from vaccinating pregnant women or those who are

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breastfeeding with inactivated viral or bacterial vaccines or toxoids (Kroger 2006; Plotkin and Orenstein 2004; Department of Health Green Book).

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References

- Immunisation against infectious disease – Department of Health Green Book
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.

Influenza vaccination

Use of live, attenuated or inactivated vaccine is recommended as compatible with breastfeeding by the CDC and the AAP. There is no evidence of risk from vaccinating pregnant women, or those who are feeding, with inactivated viral or bacterial vaccines or toxoids (Plotkin and Orenstein 2004). Where possible, pregnant women should receive a thiomersal-free influenza vaccine (Department of Health Green Book).

Compatible with use during breastfeeding.

References

- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.

BCG vaccination

BCG vaccination against tuberculosis is recommended as compatible with breastfeeding by CDC and the AAP (Kroger 2006). Although no harmful effects on the foetus have been observed from BCG during pregnancy, it is wise to avoid vaccination, particularly in the first trimester, and wherever possible to delay until after delivery. Breastfeeding is not a contraindication to BCG (Plotkin and Orenstein 2004; Department of Health Green Book).

Compatible with use during breastfeeding.

References

- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.

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Pneumococcal vaccines

Some evidence of decreased pneumococcal disease has been found among breastfed infants of vaccinated mothers (Lehmann et al. 2003). Pneumococcal-containing vaccines may be given to pregnant women when the need for protection is required without delay. There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated viral or bacterial vaccines or toxoids (Kroger 2006; Plotkin and Orenstein 2004; Department of Health Green Book).

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References

- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.
- Lehmann D, Pomat WS, Riley ID, Alpers MP, Studies of maternal immunisation with pneumococcal polysaccharide vaccine in Papua New Guinea, Vaccine, 2003;21:3446–50.

Varicella vaccine

Recommended as compatible with breastfeeding by the CDC and the AAP (Kroger 2006). Women who are pregnant should not receive varicella vaccine and pregnancy should be avoided for 3 months following the last dose. Studies have shown that the vaccine virus is not transferred to the infant through breastmilk (Bohlke et al. 2003) and therefore breastfeeding women can be vaccinated if indicated (Plotkin and Orenstein 2004; Department of Health Green Book).

Compatible with use during breastfeeding.

References

- Bohlke K, Galil K, Jackson LA, Schmid DS, Starkovich P, Loparev VN, Seward JF, Vaccine Safety Data link Team. Post-partum varicella vaccination: is the vaccine virus excreted in breastmilk?, Obstet Gynecol, 2003;102 (5 Pt 1):970–7.
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.

Yellow fever vaccine

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Until 2009 no adverse effects to yellow fever vaccine had been reported in infants exposed via breastfeeding. In 2009, the first case of meningoencephalitis caused by the yellow fever vaccine virus transmitted via breastmilk was confirmed.

Traiber et al. reported on a 38-day-old infant who was exclusively breastfed by a mother who had received yellow fever vaccination, the baby was discharged when convulsions resolved.

Kuhn et al. reported a case study of a previously healthy 5-week-old baby admitted to hospital with a 2-day history of fever and irritability, he subsequently fitted in the emergency department. When the baby was 10 days of age his mother was given travel vaccinations including yellow fever for a holiday to Venezuela. Hospital tests showed symptoms consistent with encephalitis. His symptoms resolved following a 21-day course of aciclovir.

The CDC (Kroger 2006) recommend against vaccinating nursing mothers with yellow fever vaccine before the baby is 6 months of age. However, if travel by the nursing mother to a high-risk yellow fever endemic area cannot be avoided or postponed, the mother may be vaccinated. Exposure to yellow fever vaccine via breastmilk would not increase the risk to an infant who receives the vaccination after the age of 6 months (Plotkin and Orenstein 2004, Department of Health Green Book).

Compatible with use during breastfeeding. Avoid in first 6 months unless essential.

References

- Centers for Disease Control and Prevention (CDC), Transmission of yellow fever vaccine virus through breastfeeding – Brazil, 2009, MMWR Morb Mortal Wkly Rep, 2010;59:130–32.
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.
- Kuhn S, Twele-Montecinos L, MacDonald J, Webster P, Law B, Case report: probable transmission of vaccine strain of yellow fever virus to an infant via breastmilk, CMAJ, 2011;183(4):E243–5.
- Staples JE, Gershman M, Fischer M, Centers for Disease Control and Prevention (CDC). Yellow fever vaccine: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR, 2010;59 (RR-7):1–27.
- Traiber C, Amaral PC, Ritter VR, Winge A, Infant meningoencephalitis probably caused by yellow fever vaccine virus transmitted via breastmilk, J Pediatr (Rio J), 2011;87:269–72.

Hepatitis B vaccine

Recommended as compatible with breastfeeding by the CDC and the AAP (Kroger 2006). Breastfed infants of hepatitis B surface antigen positive mothers have a different response in the development of Ig subtypes after vaccination with hepatitis B vaccine than do formula-fed infants. However, breastfeeding does not interfere with the infant's antibody response to hepatitis B vaccine (Azarri et

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al. 1990; Wang et al. 2003). There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated viral or bacterial vaccines or toxoids (Plotkin and Orenstein 2004; Department of Health Green Book).

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References

- Azzari C, Resti M, Rossi ME et al. Modulation by human milk of IgG subclass response to hepatitis B vaccine in infants, *J Pediatr Gastroenterol Nutr*, 1990;10:310–15.
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), *MMWR Recomm Rep*, 2006;55(RR-15):1–48.
- Wang JS, Zhu QR, Wang XH, Breastfeeding does not pose any additional risk of immunoprophylaxis failure on infants of HBV carrier mothers, *Int J Clin Pract*, 2003;57(2):100–102.

Hepatitis A vaccine

Recommended as compatible with breastfeeding by the CDC and the AAP (Kroger 2006). There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated viral or bacterial vaccines or toxoids (Plotkin and Orenstein 2004; Department of Health Green Book)

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References

- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), *MMWR Recomm Rep*, 2006;55(RR-15):1–48.

Cholera vaccine

Use of oral cholera vaccine to the mother decreased the risk of cholera in their breastfed infants by 47% in one study (Clemens et al. 1990). The authors hypothesised that vaccination of the mothers reduced their transmission of cholera to their infants. There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated viral or bacterial vaccines or toxoids (Kroger 2006; Plotkin and Orenstein 2004; Department of Health Green Book).

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- Clemens JD, Sack DA, Chakraborty J, Rao MR, Ahmed F, Harris JR, van Loon F, Khan MR, Yunis M, Huda S, Field trial of oral cholera vaccines in Bangladesh: evaluation of anti-bacterial and anti-toxic breastmilk immunity in response to ingestion of the vaccines, *Vaccine*, 1990;8:469–72.
- Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), *MMWR Recomm Rep*, 2006;55(RR-15):1–48.

Polio vaccine

Two types of poliomyelitis vaccine are available: inactivated poliomyelitis vaccine (for injection in combination with diphtheria vaccine) and live (oral) poliomyelitis vaccine.

Administration of oral poliovirus vaccine to nursing infants is less effective if it is given the neonatal period, due to maternal antibodies in colostrum and breastmilk (WHO 1995; Zaman et al. 1991). However, breastfeeding does not interfere with the infant's response to oral polio vaccine, when given at the normal scheduled times (Kim-Farley et al. 1982; John et al. 1976). There is no evidence of risk from vaccinating pregnant women or those who are breastfeeding with inactivated viral or bacterial vaccines or toxoids according to the CDC and the AAP (Kroger et al. 2006) and the Department of Health Green Book (Plotkin and Orenstein 2004; Department of Health Green Book)

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References

- John TJ, Devarajan LV, Luther L, Vijayarathnam P, Effect of breastfeeding on seroresponse of infants to oral poliovirus vaccination, *Pediatrics*, 1976;57:47–53.
- Kim-Farley R, Brink E, Orenstein W, Bart K, Vaccination and breastfeeding, *JAMA*, 1982;248:2451–2. Letter.
- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), *MMWR Recomm Rep*, 2006;55(RR-15):1–48.
- World Health Organization Collaborative Study Group on Oral Poliovirus Vaccine, Factors affecting the immunogenicity of oral poliovirus vaccine: a prospective evaluation in Brazil and the Gambia, *J Infect Dis*, 1995;171:1097–1106.
- Zaman S, Carlsson B, Jalil F, Jeansson S, Mellander L, Hanson LA, Specific antibodies to poliovirus type I in breastmilk of unvaccinated mothers before and seven years after start of community-wide vaccination of their infants with live, oral poliovirus vaccine, *Acta Paediatr Scand*, 1991;80:1174–82.

Japanese encephalitis vaccine

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- Kroger AT, Atkinson WL, Marcuse EK, Pickering LK, Advisory Committee on Immunization Practices (ACIP) Centers for Disease Control and Prevention (CDC). General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP), MMWR Recomm Rep, 2006;55(RR-15):1–48.

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