

Amlodipine (Norvasc®)

Selected References:

- Ahn HK, et al. 2007. Exposure to amlodipine in the first trimester of pregnancy and during breastfeeding. *Hypertension in pregnancy*, 26(2):179-187.
- Aoki H, et al. 2018. Low Levels of Amlodipine in Breast Milk and Plasma. *Breastfeeding medicine*, 13(9):622-626.
- Centers for Disease Control and Prevention. (2024). Health and economic benefits of high blood pressure interventions. Retrieved August 2024 from <https://www.cdc.gov/nccdphp/priorities/high-blood-pressure.html>.
- Faham DE, et al. 2019. Can Amlodipine Improve the Pre-ovulatory Follicle Blood Flow in Women with Polycystic Ovarian Syndrome?. *Journal of reproduction & infertility*, 20(2):89-94.
- Ishikawa T, et al. 2023. Risk of major congenital malformations associated with first-trimester antihypertensives, including amlodipine and methyldopa: A large claims database study 2010-2019. *Pregnancy hypertension*, 31:73-83.
- Magee LA, et al. 1996. The safety of calcium channel blockers in human pregnancy: a prospective, multicenter cohort study. *Am J Obstet Gynecol*, 174(3):823-828.
- Mito AA, et al. 2019. Safety of Amlodipine in Early Pregnancy. *Journal of the American Heart Association*, 8(15):1-7.
- Morgan JL, et al. 2018. Pharmacokinetics of amlodipine besylate at delivery and during lactation. *Pregnancy hypertension*, 11:77-80.
- Naito T, et al. 2015. Amlodipine passage into breast milk in lactating women with pregnancy-induced hypertension and its estimation of infant risk for breastfeeding. *Journal of human lactation*, 31(2):301-306.
- Rosbotham JL, et al. 1998. Painful subcutaneous fat necrosis of the newborn associated with intra-partum use of a calcium channel blocker. *Clinical and experimental dermatology*. 23(1):19-21.
- Szucs KA, et al. 2010. Maternal membranous glomerulonephritis and successful exclusive breastfeeding. *Breastfeeding Medicine*, 5(3):123-126.
- S. Food and Drug Administration. (2011). Norvasc (Amlodipine besylate) tablets label. Retrieved August 2024 from https://www.accessdata.fda.gov/drugsatfda_docs/label/2011/019787s047lbl.pdf.
- Vigil-De Gracia P, et al. 2014. Management of chronic hypertension during pregnancy with furosemide, amlodipine or aspirin: a pilot clinical trial. *The journal of maternal-fetal & neonatal medicine: the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*, 27(13): 1291-1294.
- Yin J, et al. 2022. Nifedipine or amlodipine? The choice for hypertension during pregnancy: a systematic review and meta-analysis. *Archives of Gynecology and Obstetrics*, 306(6):1891-1900.

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Selected References:

- Auffret M, et al. 2016. Misoprostol exposure during the first trimester of pregnancy: Is the malformation risk varying depending on the indication? *Eur J Obstet Gynecol Reprod Biol*, 207:188-192.
- Baev OR, et al. 2017. Outcomes of mifepristone usage for cervical ripening and induction of labour in full-term pregnancy. Randomized controlled trial. *Eur J Obstet Gynecol Reprod Biol*, 217:144-149.
- Brown A, et al. 2002. Daily low dose mifepristone has contraceptive potential by suppressing ovulation and menstruation: a double-blind randomised controlled trial of 2 and 5 mg per day for 120 days. *J Clin Endocrinol Metab*, 87:63-70.
- Bos-Thompson MA, et al. 2008. Mobius syndrome in a neonate after mifepristone and misoprostol elective abortion failure. *Ann Pharmacother*, 42(6):888-892.
- Chen A, et al. 2004. Mifepristone-induced early abortion and outcome of subsequent wanted pregnancy. *Am J Epidemiol*, 160(2):110-117.
- Gary MM, Harrison DJ. 2006. Analysis of severe adverse events related to the use of mifepristone as an abortifacient. *Ann Pharmacother*, 40:191-197.
- Glasier A, et al. 1992. Mifepristone (RU 486) compared with high-dose estrogen and progestogen for emergency postcoital contraception. *N Engl J Med*, 327:1041-1044.
- Juneja SC, Dodson MG. 1990. In vitro effect of RU 486 on sperm-egg interaction in mice. *Am J Obstet Gynecol*, 163:216-221.
- Lakha F, et al. 2007. A novel estrogen-free oral contraceptive pill for women: multicentre, double-blind, randomized controlled trial of mifepristone and progestogen-only pill (levonorgestrel). *Hum Reprod*, 22(9):2428-2436.
- Liao H, et al. 2011. Repeated medical abortions and the risk of preterm birth in the subsequent pregnancy. *Arch Gynecol Obstet*, 284(3):579-586.
- Lim BH, et al. 1990. Normal development after exposure to mifepristone in early pregnancy. *Lancet*, 336:257-258.
- Mifepristone Drug Label. 2023. Available at: <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b63fad9b-7f12-4400-9019-b0586054e534>.
- Peyron R, et al. 1993. Early termination of pregnancy with mifepristone (RU 486) and the orally active prostaglandin misoprostol. *N Engl J Med*, 328:1509-1513.
- Pons JC, et al. 1991. Development after exposure to mifepristone in early pregnancy. *Lancet*; 338:763.
- Saav I, et al. 2010. Medical abortion in lactating women—low levels of mifepristone in breast milk. *Acta Obstet Gynecol Scand*, 89(5):618-622.
- Sanchez-Criado JE, et al. 1990. A possible dual mechanism of the anovulatory action of antiprogesterone RU486 in the rat. *Biol Reprod*, 42:877-886.

- Shoupe D, et al. 1987. Effects of the antiprogesterone RU 486 in normal women. II. Administration in the late follicular phase. Am J Obstet Gynecol, 157:1421-1426.
- Sitruk-Ware R, Davey A, Sakiz E. 1998. Fetal malformations and failed medical termination of pregnancy. Lancet, 352:323.
- Swahn ML, et al. 1996. Contraception with anti-progesterone. Baillieres Clin Obstet Gynaecol, 10(1):43-53.
- Task force on postovulatory methods of fertility regulation. 1999. Comparison of three single doses of mifepristone as emergency contraception: a randomised trial. Lancet 353:607-702.
- van der Schoot P, et al. 1987. Effects of the progesterone antagonist RU486 on ovarian activity in the rat. Endocrinology, 121:1375-1382.
- Wolf JP, et al. 1990. Tolerance of perinidatory primate embryos to RU 486 exposure in vitro and in vivo. Contraception, 41:85-92.
- Yang YQ, Wu JT. 1990. RU 486 interferes with egg transport and retards the in vivo and in vitro development of mouse embryos. Contraception, 41:551-556.
- Zhu QX, et al. 2009. Mifepristone-induced abortion and placental complications in subsequent pregnancy. Hum Reprod, 24(2):315-319.

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Selected References:

- American College of Obstetricians and Gynecologists (ACOG). 2022/Apr. Preeclampsia and High Blood Pressure during Pregnancy.
<https://www.acog.org/womens-health/faqs/preeclampsia-and-high-blood-pressure-during-pregnancy>
- Anderson PO, et al 2020. Drug treatment of Raynaud's phenomenon of the nipple. Breastfeed Med 15:686-8.
- Benoff S, et al. 1994. The effect of calcium ion channel blockers on sperm fertilization potential. Fertil Steril

62:606-17.

- Bortolus R, et al. 2000. Nifedipine administered in pregnancy: Effect on the development of children at 18 months. BJOG 107:792-794.
- Davis RL, et al 2011. Risks of congenital malformations and perinatal events among infants exposed to calcium channel and beta-blockers during pregnancy. Pharmacoevid Drug Saf 20:13-145.
- Dublin S, et al. 2022. Maternal and neonatal outcomes of antihypertensive treatment in pregnancy: a retrospective cohort study. PLoS One 17(5):e0268284
- George R, et. 2022. Comparative efficacy and safety of oral nifedipine with other antihypertensive medications in the management of hypertensive disorders of pregnancy: a systematic review and meta-analysis of randomized controlled trials. J Hypertens 40(10):1876-1886.
- Houtzager BA, et al. 2006. Long-term follow up of children exposed in utero to nifedipine or ritodrine for the management of preterm labour. BJOG. 2006 Mar; 113(3):324-31.
- Magee LA, et al. 1996. The safety of calcium channel blockers in human pregnancy: A prospective, multicenter cohort study. Am J Obstet Gynecol 174:823-828.
- Malfará BN, et al. 2019. ABCG2 c.421C>A polymorphism alters nifedipine transport to breast milk in hypertensive breastfeeding women. Reprod Toxicol 85:1-5.
- Penny WJ, Lewis MJ. 1989. Nifedipine is excreted in human milk. Eur J Clin Pharmacol. 36(4):427-8.
- Tabacova SA, et al. 2002. Developmental abnormalities reported to FDA in association with nifedipine treatment in pregnancy. Teratology; 65:368.
- Taddio A, et al 1996. Is nifedipine use during labor and breast-feeding safe for the neonate? Clin Investig Med 19:S11. Abstract.
- Weber-Schoendorfer C, et al. 2008. The safety of calcium channel blockers during pregnancy: a prospective, multicenter, observational study. Reprod Toxicol 26(1): 24-30.
- Wu M, et al 2012. Raynaud's phenomenon of the nipple. Obstet Gynecol. 119(2 Pt 2):447-9.

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Amlodipine (Norvasc®)

Selected References:

- Aselton P, et al. 1985. First-trimester drug use and congenital disorders. *Obstet Gynecol*, 65(4):451-455.
- Cao Y, et al. 2021. Maternal use of cough medications during early pregnancy and selected birth defects: a US multisite, case-control study. *BMJ Open*, 11:e053604.
- Einarson A, et al. 2001. The safety of dextromethorphan in pregnancy: Results of a controlled study. *Chest*, 119(2):466-469.
- Heinonen OP, et al. 1977. *Birth Defects and Drugs in Pregnancy*. Littleton, Mass.: John Wright-PSG, page 382.
- Martinez-Frias ML, et al. 2001. Epidemiologic analysis of prenatal exposure to cough medicines containing dextromethorphan: no evidence of human teratogenicity. *Teratology*, 63(1):38-41.
- Shum S, et al. 2022. Infant dextromethorphan and dextropropoxyphene exposure via breast milk from mothers who are CYP2D6 extensive metabolizers. *J Clin Pharmacol*, 62(6):747-755.
- Ward KE. 2005. Can Robitussin DM be used to treat cough during pregnancy? *Med Health R I*, 88(3):99-100.

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Selected References

- Anderson PO, McGuire GG. 1989. Neonatal alprazolam withdrawal – possible effects of breastfeeding. *DICP*. 23:614. Letter.
- Andrade C. 2019. Gestational Exposure to Benzodiazepines, 1: The Risk of Spontaneous Abortion Examined

Through the Prism of Research Design. J Clin Psychiatry.;80(5):19f13076

- Barry WS, St. Clair SM. 1987. Exposure to benzodiazepines in utero. Lancet. 1:1436-7.
- Browne JL, Hauge KJ. 1986. A review of alprazolam withdrawal. Drug Intell Clin Pharm; 20(11):837-41.
- Eros E, et al. 2002. A population-based case-control teratologic study of nitrazepam, medazepam, tofisopam, alprazolam and clonazepam treatment during pregnancy. Eur J Obstet Gynecol Reprod Biol. 101:147-54.
- Freeman MP, et al. 2018. Obstetrical and neonatal outcomes after benzodiazepine exposure during pregnancy: Results from a prospective registry of women with psychiatric disorders. Gen Hosp Psychiatry. 53:73-79.
- Furugen A, et al. 2019. Quantification of eight benzodiazepines in human breastmilk and plasma by liquid-liquid extraction and liquid-chromatography tandem mass spectrometry: Application to evaluation of alprazolam transfer into breastmilk. J Pharm Biomed Anal. 168:83-93.
- García-Algar O, et al. 2007. Confirmation of gestational exposure to alprazolam by analysis of biological matrices in a newborn with neonatal sepsis. Clin Toxicol (Phila). 45(3):295-8.
- Grigoriadis S, et al. 2019. Benzodiazepine Use During Pregnancy Alone or in Combination With an Antidepressant and Congenital Malformations: Systematic Review and Meta-Analysis. J Clin Psychiatry. 80(4):18r12412
- Ito S, et al. 1993. Prospective follow-up of adverse reactions in breastfed infants exposed to maternal medication. Am J Obstet Gynecol. 168:1393-9.
- Källén B, et al. 2013. The use of central nervous system active drugs during pregnancy. Pharmaceuticals (Basel). 6(10):1221-86.
- Kelty E, et al. 2023. Safety of alprazolam use in pregnancy in Western Australia: A retrospective cohort study using linked health data. J of Psychoactive Drugs. 1-7.
- Lee H, et al. 2022. Pregnancy and Neonatal Outcomes After Exposure to Alprazolam in Pregnancy. Front Pharmacol. 25: 13:854562.
- Mazzilli R, et al. 2021. Psychotropic Drugs Levels in Seminal Fluid: A New Therapeutic Drug Monitoring Analysis?. Front Endocrinol (Lausanne). 12:620936.
- Meng LC, et al. 2024. Benzodiazepine Use During Pregnancy and Risk of Miscarriage. JAMA Psychiatry. 81(4):366-373.
- Munjack DJ, Crocker B. 1986. Alprazolam-induced ejaculatory inhibition. J Clin Psychopharmacol 6:57-8.
- Ogawa Y, et al. 2018. Maternal exposure to benzodiazepine and risk of preterm birth and low birth weight: A case-control study using a claims database in Japan. Asia Pac Psychiatry. 2018 Sep;10(3):e12309
- Nishimura A, et al. 2021. Benzodiazepine Concentrations in the Breast Milk and Plasma of Nursing Mothers: Estimation of Relative Infant Dose. Breastfeed Med. 16(5): 424-432.
- Noh Y, et al. 2022. First-trimester exposure to benzodiazepines and risk of congenital malformations in offspring: A population-based cohort study in South Korea. PLoS Med. 2022;19(3):e1003945
- Nonacs R. 2020. "Benzodiazepines and Risk of Ectopic Pregnancy". MGH Center for Women's Mental Health. <https://womensmentalhealth.org/posts/benzodiazepine-ectopic/>. Psychiatric Disorder during Pregnancy
- Nonacs R. 2019. "Benzodiazepines During Early Pregnancy and risk of Miscarriage". MGH Center for Women's Mental Health. <https://womensmentalhealth.org/posts/benzodiazepine-during-early-pregnancy-and-risk-of-miscarriage-2/>. Anxiety Disorder, June. Pregnancy Loss, Pregnancy Outcome.
- Nonacs R. 2019. "Interpreting New Data on the Use of Benzodiazepines During Pregnancy. MGH Center for Women's Mental Health. <https://womensmentalhealth.org/posts/interpreting-new-data-on-the-use-of-benzodiazepines-during-pregnancy/>. December. Psychiatric Disorders during Pregnancy
- Oo CY, et al. 1995. Pharmacokinetics in lactating women: prediction of alprazolam transfer into milk. Br J Clin Pharmacol. 40:231-6.
- Petric D, et al. 2011. High doses alprazolam induced amenorrhoea and galactorrhoea. Psychiatr Danub. 23(1):123-4.
- Sheehy O, et al. 2019. Association Between Incident Exposure to Benzodiazepines in Early Pregnancy and Risk

of Spontaneous Abortion. JAMA Psychiatry. 76(9): 948-957.

- Shyken JM, et. Al. 2019. Benzodiazepines in Pregnancy. Clin Obstet Gynecol.;62(1):156-167
- St Clair SM, Schnirmer RG. 1992. First-trimester exposure to alprazolam. Obstet Gynecol. 80:843-846.
- Tinker SC, et al; National Birth Defects Prevention Study. 2019. Use of benzodiazepine medications during pregnancy and potential risk for birth defects, National Birth Defects Prevention Study, 1997-2011. Birth Defects Res; 111(10):613-620.
- Wall-Wieler et al. 2020. Benzodiazepine use before conception and risk of ectopic pregnancy. Human Reproduction, Vol.35, No.7, pp. 1685-1692.
- Wisner KL, Yonkers KA. 2019. Are Adverse Reproductive Outcomes Associated With the Illness or Its Treatment (or Both)?. JAMA Psychiatry. 2019;76(12):1317-1318
- Yamamoto K, et al. 2019. Pharmacokinetic assessment of alprazolam-induced neonatal abstinence syndrome using physiologically based pharmacokinetic model. Drug Metab Pharmacokinet. 34(6):400-402.

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