

Vitamin B12

Selected References:

- Ceyhan ST, et al. 2010. Serum vitamin B12 and homocysteine levels in pregnant women with neural tube defect. *Gynecol Endocrinol.* 26(8):578-581.
- Dror DK, Allen LH. 2018. Vitamin B-12 in human milk: A systematic review. *Adv Nutr* 9:358s-66s.
- Duggan C, et al. 2014. Vitamin B-12 supplementation during pregnancy and early lactation increases maternal, breast milk, and infant measures of vitamin B-12 status. *J Nutr.* 144(5):758-764.
- Groenen PMW, et al. 2004. Marginal maternal vitamin B12 status increases the risk of offspring with spina bifida. *Am J Obstet Gynecol* 191(1):11-17.
- Hampel D, Allen LH. 2016. Analyzing B-vitamins in human milk: Methodological approaches. *Crit Rev Food Sci Nutr* 56:494-511.
- Lai JS, et al. 2019. Maternal plasma vitamin B12 concentrations during pregnancy and infant cognitive outcomes at 2 years of age. *Br J Nutr.* 121(11):1303-1312.
- Munger RG, et al. 2021. Maternal vitamin B12 status and risk of cleft lip and cleft palate birth defects in Tamil Nadu State, India. *Cleft Palate Craniofac J* 58(5):567-576.
- National Institute of Health Office of Dietary Supplements. 2024. Vitamin B12: Fact Sheet for Health Professionals. Available at: <https://ods.od.nih.gov/factsheets/VitaminB12-HealthProfessional/>. Accessed 6 Jun 2024.
- Nelen WL, et al. 2000. Hyperhomocysteinemia and recurrent early pregnancy loss: a meta-analysis. *Fertil Steril.* 74(6):1196-1199.
- Ray JG, Blom HJ. 2003. Vitamin B12 insufficiency and the risk of fetal neural tube defects. *QJM.* 96(4):289-295.
- Ray JG, et al. 2007. Vitamin B12 and the risk of neural tube defects in a folic-acid-fortified population. *Epidemiology* 18(3):362-366.
- Reznikoff-Etievant MF, et al. 2002. Low Vitamin B(12) level as a risk factor for very early recurrent abortion. *Eur J Obstet Gynecol Reprod Biol.* 104(2):156-159.
- Senousy SM, et al. 2018. Association between biomarkers of vitamin B12 status and the risk of neural tube defects. *J Obstet Gynaecol Res.* 44(10):1902-1908.
- Suarez L, et al. 2003. Maternal serum B12 levels and risk for neural tube defects in a Texas-Mexico border population. *Ann Epidemiol* 13(2):81-88.
- Van Rooij IALM, et al. 2003. Vitamin and homocysteine status of mothers and infants and the risk of nonsyndromic orofacial clefts. *Am J Obstet Gynecol* 189(4):1155-1160.
- Wilson A, et al. 1999. A common variant in methionine synthase reductase combined with low cobalamin (vitamin B12) increases risk for spina bifida. *Mol Genet Metab.* 67(4):317-323.
- Zhang T, et al. 2009. Maternal serum vitamin B12, folate and homocysteine and the risk of neural tube defects in the offspring in a high-risk area of China. *Public Health Nutr.* 12(5):680-686.

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Vitamin B12

Selected References:

- Aleck KA & Bartley DL. 1997. Multiple malformation syndrome following fluconazole use in pregnancy: report of an additional patient. *Am J Med Genet* 72:253-6.
- Alsaad AM, et al. 2015. Exposure to fluconazole and risk of congenital malformations in the offspring: a systematic review and meta-analysis. *Reprod Toxicol* 52: 78-82.
- Bérard A, et al. 2019. Associations between low- and high-dose oral fluconazole and pregnancy outcomes: 3 nested case-control studies. *CMA J* 2019;191: E179-E187.
- Budani, M. C., et al. 2021.. Maternal use of fluconazole and congenital malformations in the progeny: A meta-analysis of the literature. *Reproductive toxicology*, 100:42-51.
- Diflucan® Drug Label. 2024. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2024/019949s072lbl.pdf. [Accessed 8/2025].
- Carey JC, et al. 2009. Determination of human teratogenicity by the astute clinician method: review of illustrative agents and a proposal of guidelines. *Birth Defects Res A Clin Mol Teratol.* 85(1):63-8.
- Centers for Disease Control and Prevention (CDC). 2021. Vulvovaginal Candidiasis (VVC) STI Treatment Guidelines. Available at: <https://www.cdc.gov/std/treatment-guidelines/candidiasis.htm>
- el-Medany AH, Hagar HH. 2002. Effect of fluconazole on fertility of male rabbits. *Arzneimittelforschung.* 52:636-40.
- Force RW. 1995. Fluconazole concentrations in breast milk. *Pediatr Infect Dis J.* 14:235-6.
- Howley MM, et al, the National Birth Defects Prevention Study. 2016. Fluconazole use and birth defects in the National Birth Defects Prevention Study. *Am J Obstet Gynecol* 214:657.e1-9.
- Inman W, et al. 1994. Safety of fluconazole in the treatment of vaginal candidiasis. A prescription-event monitoring study, with special reference to the outcome of pregnancy. *Eur J Clin Pharmacol* 46:115-8.
- Jick SS. 1999. Pregnancy outcomes after maternal exposure to fluconazole. *Pharmacotherapy* 19:221-2.
- Kaplan YC, et al. 2015. Fluconazole use during breastfeeding. *Can Fam Phys.* 61:875-6.
- Latour M, et al. 2024. Risk of congenital malformations and miscarriages following maternal use of oral fluconazole during the first trimester of pregnancy: a systematic review and meta-analysis. *Eur J Epidemiol.* 39(12):1325-1340.
- Lee BE, et al. 1992. Congenital malformations in an infant born to a woman treated with fluconazole. *Pediatr Infect Dis J* 11:1062-4.
- Liu D, et al. 2020. Fetal outcomes after maternal exposure to oral antifungal agents during pregnancy: A systematic review and meta-analysis. *Int J Gynaecol Obstet* 148(1): 6-13.
- Lopez-Rangel E & Van Allen MI. 2005. Prenatal exposure to fluconazole: an identifiable dysmorphic phenotype. *Birth Defects Res A Clin Mol Teratol* 73:919-23.
- Mastroiacovo P, et al. 1996. Prospective assessment of pregnancy outcomes after first-trimester exposure to

fluconazole. Am J Obstet Gynecol 175:1645-50.

- Mølgaard-Nielsen D, et al. 2013. Use of oral fluconazole during pregnancy and the risk of birth defects. N Engl J Med 369:830-9.
- Mølgaard-Nielsen D, et al. 2016. Association between use of oral fluconazole during pregnancy and risk of spontaneous abortion and still birth. JAMA 315(1):58-67.
- Moorhead AM, et al. 2011. A prospective study of fluconazole treatment for breast and nipple thrush. Breastfeed Rev 19:25-9.
- Nørgaard M, et al. 2008. Maternal use of fluconazole and risk of congenital malformations: a Danish population-based cohort study. J Antimicrob Chemother 62:172-6.
- Pasternak B, et al. 2018. Oral fluconazole in pregnancy and risk of stillbirth and neonatal death. JAMA. 319(22):2333-2335.
- Pursley TJ, et al. 1996. Fluconazole-induced congenital anomalies in three infants. Clin Infect Dis 22:336-40.
- Sorensen HT, et al. 1999. Risk of malformations and other outcomes in children exposed to fluconazole in utero. Br J Clin Pharmacol. 48(2):234-8.
- US Food and Drug Administration (FDA). 2019. FDA Drug Safety Communication: FDA to review study examining use of oral fluconazole (Diflucan) in pregnancy. <https://www.fda.gov/Drugs/DrugSafety/ucm497482.htm>.
- Zhang Z, et al. 2019. The safety of oral fluconazole during the first trimester of pregnancy: a systematic review and meta-analysis. BJOG. Aug 24. doi: 10.1111/1471-0528.15913.
- Zhu Y, et al. 2020. Oral fluconazole use in the first trimester and risk of congenital malformations: population-based cohort study. BMJ 369: m1494.

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Vitamin B12

Selected References:

- Asadi L, Bunce PE. 2013. West Nile virus infection. CMAJ;185(18):E846.

- Centers for Disease Control and Prevention. 2004. Interim Guidelines for the Evaluation of Infants Born to Mothers Infected with West Nile Virus During Pregnancy. MMWR 53(07):154-156.
- Centers for Disease Control and Prevention. 2002. Intrauterine West Nile Virus Infection – New York, 2002. MMWR 51(50):1135-1136.
- Centers for Disease Control and Prevention. 2002. Possible West Nile Virus Transmission to an Infant Through Breastfeeding – Michigan, 2002. MMWR 51(39):877-878.
- Centers for Disease Control and Prevention. 2021. West Nile Virus Transmission. <https://www.cdc.gov/west-nile-virus/php/transmission//>
- Centers for Disease Control and Prevention. 2022. West Nile Virus Symptoms, Diagnosis, & Treatment. <https://www.cdc.gov/westnile/symptoms/index.html>.
- Committee on Infectious Disease, American Academy of Pediatrics: 2021 Red Book: Report of the Committee on Infectious Diseases, 32nd Edition, page 848.
- Herring R, et al. 2019. Pediatric West Nile Virus-Associated Neuroinvasive Disease: A Review of the Literature. *Pediatr Neurol* 92(March):16-25.
- Hinckley AF, et al. 2006. West Nile Virus Infection Among Pregnant Women in A Northern Colorado Community, 2003-2004. *Am J Epidemiol* 163(11Suppl): S55.
- Hinckley AF, et al. 2007. Transmission of West Nile virus through human breast milk seems to be rare. *Pediatrics* 119(3):e666-671.
- Mann TZ et al. 2018. Breast milk transmission of flaviviruses in the context of Zika virus: A systematic review. *Paediatr Perinat Epidemiol* 32(4):358-368.
- O'Leary DR, et al. 2006. Birth outcomes following West Nile Virus infection of pregnant women in the United States: 2003-2004. *Pediatrics* 117(3):e537-545
- Paisley JE, et al. 2006. West Nile virus infection among pregnant women in a northern Colorado community, 2003 to 2004. *Pediatrics* 117(3):814-820.
- Pridjian, et al. 2016. Prospective Study of Pregnancy and Newborn Outcomes in Mothers with West Nile Illness during Pregnancy. *Birth Defects Res A Clin Mol Teratol* 106(8):716-723.
- Rasmussen SA, et al. 2017. Studying the Effects of Emerging Infections on the Fetus: Experience with West Nile and Zika Viruses. *Birth Defects Res* 109(5):363-371.
- Sirois et, al. 2014. Developmental Outcomes in Young Children Born to Mothers with West Nile Illness during Pregnancy. *Birth Defects Res A Clin Mol Teratol* 100(10):792-796.
- Stewart R, et al. 2013. West Nile Virus Infection in Pregnancy. *Case Reports in Infectious Disease*. V 2013, Article ID 351872.
- Wesson DM. 2006. Is West Nile virus a teratogen? (abs) *Birth Defects Research (Part A)* 76:357.

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Vitamin B12

Selected References:

- Alwan S, et al. 2007. Use of selective serotonin-reuptake inhibitors in pregnancy and the risk of birth defects. *N Engl J Med* 356(26):2684-2692.
- Ames JL, et al. 2021. Maternal psychiatric conditions, treatment with selective serotonin reuptake inhibitors, and neurodevelopmental disorders. *Biol Psychiatry*. 90(4):253-262.
- Andersen JT, et al. 2014. Exposure to selective serotonin reuptake inhibitors in early pregnancy and the risk of miscarriage. *Obstet Gynecol*. 124(4):655-661.
- Anderson KN, et al. 2020. Maternal use of specific antidepressant medications during early pregnancy and the risk of selected birth defects. *JAMA Psychiatry*. 77(12):1246-1255.
- Andrade S, et al. 2009. Antidepressant use and risk of persistent pulmonary hypertension of the newborn. *Pharmacoepidemiol Drug Saf* 18(3):246-252.
- Aynaoglu, Y., et al. 2021. Effect of diazepam, sertraline, and melatonin on the stress-induced reproductive in female rats. *J Matern Fetal Neonatal Med*. 34(24): 4103-4109.
- Berard A, et al. 2017. Antidepressant use during pregnancy and the risk of major congenital malformations in a cohort of depressed pregnant women: An updated analysis of the Quebec Pregnancy Cohort. *BMJ Open*;7: e013372.
- Bonari L, et al. 2004. Perinatal risks of untreated depression during pregnancy. *Can J Psychiatry* 49(11):726-735.
- Cantin C, et al. 2024. Neonates With In-Utero SSRI Exposure (NeoWISE): A retrospective cohort study examining the effect of newborn feeding method on newborn withdrawal. *Int J Popul Data Sci* 9:2458.
- Casper R, et al. 2003. Follow-up of children of depressed mothers exposed or not exposed to antidepressant drugs during pregnancy. *J Pediatr* 142:402- 408.
- Chambers C, et al. 2006. Selective serotonin-reuptake inhibitors and risk of persistent pulmonary hypertension of the newborn. *N Engl J Med* 354(6):579- 587.
- Cuomo A, et al. 2018. Using sertraline in postpartum and breastfeeding: balancing risks and benefits. *Expert Opin Drug Saf*. 17(7):719-725.
- Den Besten-Bertholee D, et al. 2024. Sertraline, citalopram and paroxetine in lactation: passage into breastmilk and infant exposure. *Front Pharmacol*. 15:1414677.
- Desautay P, et al. 2023. Benefits and Risks of Antidepressant Drugs During Pregnancy: A Systematic Review of Meta-analyses. *Paediatric drugs*. 25(3): 247-265.
- De Vries C, et al. 2021. A systematic review and meta-analysis considering the risk for congenital heart defects of antidepressant classes and individual antidepressants. *Drug Safety* 44(3):291-312.
- Ericson A, et al. 1999. Delivery outcome after the use of antidepressants in early pregnancy. *Eur J Clin Pharmacol* 55:503-508.
- Furu K, et al. 2015. Selective serotonin reuptake inhibitors and venlafaxine in early pregnancy and risk of birth

defects: population based cohort study and sibling design. *BMJ*. 350:h1798.

- Galbally, M., et al. 2023. Fetal SSRI antidepressant exposure and infant sleep: Findings from the MPEWS pregnancy cohort study. *Infant Behav Dev*. 72:101849.
- Grigoriadis S, et al. 2013. The effect of prenatal antidepressant exposure on neonatal adaptation: a systematic review and meta-analysis. *J Clin Psychiatry*. 74(4):e309-20.
- Grigoriadis et al. 2014. Prenatal exposure to antidepressants and persistent pulmonary hypertension of the newborn: systematic review and meta-analysis. *BMJ* 348:f6932
- Heinonen E, et al. 2021. Sertraline concentrations in pregnant women are steady and the drug transfer to their infants is low. *Eur J Clin Pharmacol*. 77(9):1323-1331.
- Hendrick V, et al. 2001. Use of sertraline, paroxetine and fluvoxamine by nursing women. *Br J Psychiatry*. 179:163-166.
- Hogue AN, et al. 2017. Effects of in-utero exposure to selective serotonin reuptake inhibitors and venlafaxine on term and preterm infants. *J Neonatal Perinatal Med*. 10(4):371-380.
- Jordan S, et al. 2016. Selective serotonin reuptake inhibitor (SSRI) in pregnancy and congenital anomalies: Analysis of linked databases in Wales, Norway and Funen, Denmark. *PLoS One*. 11(12):e0165122.
- Källén B, Olausson PO. 2008. Maternal use of selective serotonin re-uptake inhibitors and persistent pulmonary hypertension of the newborn. *Pharmacoepidemiol Drug Saf*. (8):801-806.
- Kallen BAJ, et al. 2007. Maternal use of selective serotonin re-uptake inhibitors in early pregnancy and infant congenital malformations. *Birth Defects Res A Clin Mol Teratol* 79(4):301-308.
- Kieler H, et al. 2011. Selective serotonin reuptake inhibitors during pregnancy and risk of persistent pulmonary hypertension in the newborn: a population based cohort study from five Nordic countries. *BMJ* 344:d8012.
- Kieviet N, et al. 2015. Risk factors for poor neonatal adaptation after exposure to antidepressants in utero. *Acta Paediatr*. 104(4):384-91.
- Kolding L et al. 2019. Sertraline use during pregnancy and effect on fetal cardiac function. *J Maternal Fetal Neonatal Med*. 12:1-8.
- Kristensen JH, et al. 1998. Distribution and excretion of sertraline and N-desmethylsertraline in human milk. *Br J Clin Pharmacol* 45:453-457.
- Levinson-Castiel R, et al. 2006. Neonatal abstinence syndrome after in utero exposure to selective serotonin reuptake inhibitors in term infants. *Arch Pediatr Adolesc Med* 160:173-176.
- Leutritz AL, et al. 2023. Psychotropic medication in pregnancy and lactation and early development of exposed children. *Br J Clin Pharmacol*. 89(2):737-750.
- Louik C, et al. 2007 First trimester use of selective serotonin-reuptake inhibitors and the risk of birth defects. *N Engl J Med* 356(26):2675-2683.
- Mammen OK, et al. 1997. Sertraline and norsertraline levels in three breastfed infants. *J Clin Psychiatry* 58:100-103.
- Marks C, et al. 2021. Comparing newborn outcomes after prenatal exposure to individual antidepressants: A retrospective cohort study. *Pharmacotherapy*. 41(11):907-914.
- Masarwa R, et al. 2019. Prenatal exposure to selective serotonin reuptake inhibitors and serotonin norepinephrine reuptake inhibitors and risk for persistent pulmonary hypertension of the newborn: a systematic review, meta-analysis, and network meta-analysis. *Am J Obstet Gynecol*. 220(1):57.
- Mattson S, et al. 1999. Neurobehavioral follow-up of children prenatally exposed to fluoxetine [abstract]. In: *Teratology* 59:376.
- Misiri S, et al. 2006. Internalizing behaviors in 4-year-old children exposed in utero to psychotropic medications. *American Journal of Psychiatry*. 163(6): 1026-1032.
- Nulman I, et al. 1997. Neurodevelopment of children exposed in utero to antidepressant drugs. *N Engl J Med* 336 (4):258-262.
- Oberlander TF, et al, 2008. Major congenital malformations following prenatal exposure to serotonin reuptake inhibitors and benzodiazepines using population based health data. *Birth Defects Res B Dev Reprod Toxicol*. 83(1):68-76.

- Pedersen LH, et al. 2009. Selective serotonin reuptake inhibitors in pregnancy and congenital malformations: population based cohort study. *BMJ* 339:b3569.
- Pinheiro E, et al. 2015. Sertraline and breastfeeding: review and meta-analysis. *Archives of Women's Mental Health*. 18(2):139-46.
- Rommel A.-S., et al. 2020. Long-term effects of intrauterine exposure to antidepressants on physical, neurodevelopmental, and psychiatric outcomes: A systematic review. *J Clin Psychiatry* 81(3): 19r12965.
- Sanz E, et al. 2005. Selective serotonin reuptake inhibitors in pregnant women and neonatal withdrawal syndrome: a database analysis. *Lancet* 365:482-487.
- Semet M, et al. 2017. The impact of drugs on male fertility: a review. *Andrology* 5(4): 640-663.
- Sjaarda LA, et al. 2020. Urinary selective serotonin reuptake inhibitors across critical windows of pregnancy establishment: A prospective cohort study of fecundability and pregnancy loss. *Fertility and Sterility*, 114(6):1278-1287.
- Stika C, et al. 2022. Changes in sertraline plasma concentrations across pregnancy and postpartum. *Clin Pharmacol Ther*. 112(6):1280-1290.
- Stowe ZN, et al. 1997. Sertraline and desmethylsertraline in human breast milk and nursing infants. *Am J Psychiatry* 154:1255-1260.
- Suarez EA, et al. 2022. Association of antidepressant use during pregnancy with risk of neurodevelopmental disorders in children. *JAMA Intern Med*. 182(11):1149-60.
- Sylvester C, et al. 2019. Selective serotonin reuptake inhibitors and fertility: Considerations for couples trying to conceive. *Harv Rev Psychiatry* 27(2):108-118.
- Thomson, M, et al. 2021. Pharmacotherapeutic considerations for the treatment of posttraumatic stress disorder during and after pregnancy. *Expert Opinion Pharmacother*. 22(6):705-714.
- Toh S, et al. 2009 Antidepressant use during pregnancy and the risk of preterm delivery and fetal growth restriction. *J Clin Psychopharmacol*. 29(6):555-60.
- U.S. Food and Drug Administration. 2011 (current as of 2/13/2018). Available at: <https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-selective-serotonin-reuptake-inhibitor-ssri-antidepressant-use-during#data>. [Accessed 12/19].
- U.S. Food and Drug Administration. 2023. Zoloft® Drug Label. Available at: https://www.accessdata.fda.gov/drugsatfda_docs/label/2023/019839s108,20990s062lbl.pdf. [Accessed 8/2025].
- Wang S, et al. 2015. Selective serotonin reuptake inhibitors (ssris) and the risk of congenital heart defects: A meta-analysis of prospective cohort studies. *J Am Heart Assoc* 4(5):e001681.
- Uguz, F. 2020. Selective serotonin reuptake inhibitors and the risk of congenital anomalies: A systematic review of current meta-analyses. *Expert Opin Drug Saf* 19(12):1595-1604.
- Wisner KL, et al. 1998. Serum sertraline and N-desmethylsertraline levels in breastfeeding mother-infant pairs. *Am J Psychiatry* 155:690-692.
- Womersely K, et al. 2017. What are the risks associated with different Selective Serotonin Re-uptake Inhibitors (SSRIs) to treat depression and anxiety in pregnancy? An evaluation of current evidence. *Psychiatr Danub*. 29(Suppl. 3):629-644.
- Zheng L, et al. 2022. Antidepressants and antipsychotics in human pregnancy: Transfer across the placenta and opportunities for modeling studies. *J Clin Pharmacol* 62(Suppl. 1): S115-S128.

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Selected References:

- Bosworth, O. M., Padilla-Azain, M. C., Adgent, M. A., Spieker, A. J., Wiese, A. D., Pham, A., Leech, A. A., Grijalva, C. G., & Osmundson, S. S. (2024). Prescription Opioid Exposure During Pregnancy and Risk of Spontaneous Preterm Delivery. *JAMA network open*, 7(2), e2355990. <https://doi.org/10.1001/jamanetworkopen.2023.55990>
- Brogly SB, Velez MP, Werler MM, Li W, Camden A, Guttmann A. Prenatal Opioid Analgesics and the Risk of Adverse Birth Outcomes. *Epidemiology*. 2021 May 1;32(3):448-456. doi: 10.1097/EDE.0000000000001328. PMID: 33625160; PMCID: PMC8011506.
- Broussard CS, et al. 2011. Maternal treatment with opioid analgesics and risk for birth defects. *American Journal of Obstetrics and Gynecology*, 204(4): 314.e1-314.e11.
- Cobrinik RW et al. 1995. The effect of maternal narcotic addiction on the newborn infant. *Pediatrics* 24:288-304.
- Collins LR, et al. 2005: Prolonged morphine exposure in utero causes fetal and placental vasoconstriction: a case report. *J Matern Fetal Neonatal Med*;17:417-21.
- Daud AN, et al. 2015. P-glycoprotein-mediated drug interactions in pregnancy and changes in the risk of congenital anomalies: a case-reference study. *Drug Safety*, 38(7):651-659.
- Feilberg FL, et al. Excretion of morphine in human breast milk. *Acta Anaesthesiol Scand*, 33(5):426-428.
- Ghasemi-Esmailabad S, et al. 2022. The effects of morphine abuse on sperm parameters, chromatin integrity and apoptosis in men. *JBRA Assist Reprod*, 26(3):444-449.
- Interrante JD, et al. 2017. Risk comparison for prenatal use of analgesics and selected birth defects, National Birth Defects Prevention Study 1997-2011. *Annals of Epidemiology*, 27(9):Epub ahead of print.
- Ito, S. 2018. Opioids in breast milk: Pharmacokinetic principles and clinical implications. *J Clin Pharmacol*, 58 Suppl 10:S151-S163.
- Larson, JJ, et al. 2019. Cognitive and behavioral impact on children exposed to opioids during pregnancy. *Pediatrics*, 142(2):e20190514.
- Lind JN, et al. 2017. Maternal use of opioids during pregnancy and congenital malformations: A systematic review. *Pediatrics*, 139(6):e20164131.
- Rothman KJ,, et al. 1979. Exogenous hormones and other drug exposures of children with congenital heart disease. *American Journal of Epidemiology*, 109(4):433-439.
- Wang, Y., Berger, L., Durrance, C., Kirby, R. S., Kuo, D., Pac, J., & Ehrenthal, D. B. (2023). Duration and Timing of In Utero Opioid Exposure and Incidence of Neonatal Withdrawal Syndrome. *Obstetrics and gynecology*, 142(3), 603-611. <https://doi.org/10.1097/AOG.0000000000005289>

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