

TERATOGENIC DRUGS AND AGENTS

A Teratogenic drug is an agent that can disturb the development of the embryo or foetus by halting the pregnancy or producing congenital malformations (birth defects). Below is a list of teratogenic drugs;

No	Medicine / Chemical class	Medicine / Chemical agent	Effect	Recommendations
1	ACE (angiotensin converting enzyme) inhibitors	captopril, enalapril, fosinopril sodium, Lisinopril, lisinopril + hydrochlorothiazide, ramipril .	Second- and third-trimester exposure to ACE inhibitors is associated with oligohydramnios, hypocalvaria, anuria, renal failure, neonatal hypotension, and patent ductus arteriosus	Avoid in the second and third trimester.
2	Alcohol	Alcohol	Mental retardation, intra uterine growth retardation, small head, foetal alcohol; syndrome characterised by maxillary hypoplasia, congenital heart disease.	Do not use during pregnancy
3	Androgenic agents	Ethisterone, testosterone, Norethisterone,	Ambiguous external genitalia, masculinisation of female foetus especially in 1st trimester.	Avoid prior to pregnancy and during pregnancy especially during the first trimester.

4	Antibiotics	Tetracycline	Yellow staining of teeth and diminished growth of the long bones.	Avoid during second and third trimester
5	Antibiotics	Nitrofurantoin	Has haemolytic effects on the new born when used in the last trimester.	Avoid at term
6	Antibiotics	Streptomycin	Readily crosses the placenta and it should be used with caution to prevent ototoxicity in the foetus	Avoid during the second and third trimester
7	Anti-coagulants	Warfarin	Crosses the placenta and causes bleeding in the foetus resulting into spontaneous abortion, stillbirth, neonatal death, and preterm birth. Cause birth defects like mental retardation, blindness etc	Avoid during pregnancy especially in the first and third trimester
8	Anticonvulsants	Phenytoin, valproic acid, carbamazepine, Phenobarbital, lamotrigine	Phenytoin causes Foetal hydantoin syndrome consisting of intrauterine growth retardation, microcephaly, mental retardation Carbamazepine causes neural tube defects, other abnormalities Valproic acid causes spina bifida and other neural tube defects	Avoid during pregnancy Women of child bearing age who are using these medications should be given contraceptive advice. Women who wish to get pregnant while on this medication should be referred to a gynaecologist for specialist management.

			Phenobarbitone causes various malformations	
9	Antifungal	Fluconazole	Congenital abnormalities when used in first trimester at high doses e.g. malformed bones, face, head, heart	Avoid during pregnancy
10	Anti-depressant	Lithium	Various malformations including cardiac abnormalities.	Avoid during the first trimester. If used during pregnancy, serum – lithium concentration monitoring is advised to avoid toxicity in the neonate.
11	Chemotherapeutic agents	All chemotherapeutic agents	Stunted growth , cleft palate, large part of the brain is missing etc.	Avoid during pregnancy
12	Folic antagonist	Methotrexate	Multiple malformations	Avoid during pregnancy. Use contraceptives during treatment and for at least 3 months after treatment in both men and women
13	Lipid Lowering	Statins	Congenital anomalies, including vertebral, anal, cardiac, tracheal, oesophageal, renal, and limb deficiency and intrauterine growth	Avoid during pregnancy. Adequate contraceptive is required during treatment and

			retardation (IUGR) especially if used in the first trimester.	for 1 month after treatment.
14	Prostaglandin analogues	Misoprostol	Potent uterine stimulant and has teratogenic risk when taken in the first trimester.	Avoid during pregnancy especially in the first trimester.
15	Nicotine	Nicotine	Intrauterine growth restriction. Premature delivery. Nicotine constricts uterine blood vessels and cause decreased uterine blood flow thus reducing oxygen supply and nutrients to the growing baby affecting mental development	Avoid during pregnancy
16	NSAIDs	Naproxen, celecoxib, Acetylsalicylic acid (Aspirin), Diclofenac, Ibuprofen, Indomethacin	Ibuprofen, naproxen, diclofenac, and celecoxib increase the risk of miscarriage in the first half of pregnancy. NSAIDs in the third trimester of pregnancy cause a blood vessel in the foetus to close prematurely (premature closure of ductus arteriosus) and persistent pulmonary hypertension of the new born.	Avoid during pregnancy especially in the third trimester.
17	Opioids	oxycodone, morphine, codeine, hydrocodone, and hydromorphone	Birth defects of the brain, spine, or spinal cord. Respiratory depression and withdrawal symptoms can occur in the neonate if opioid used during delivery	Avoid during pregnancy

18	Radiation	Ionising radiation	Chromosome injury	Avoid during pregnancy
19	Tranquilisers	Thalidomide	Limb abnormalities including absence of limbs, abnormally shortened limbs, absence of external ears, congenital heart disease etc.	Do not use during pregnancy. Use effective contraceptives 1 month before and one month after use. Men should use condoms during treatment and at least 1 week after stopping.
20	Vitamin A	Retinoic acid e.g isotretinoin used to treat pimples and acne	Very teratogenic even at low doses. Cleft palate, neural tube defects, thymic aplasia e.t.c	Avoid during pregnancy