

## Things to Avoid During Pregnancy: Teratogens

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Teratogens are substances or other factors that can cause congenital abnormalities, which are also called birth defects. Usually these abnormalities arise in the third to eighth weeks of pregnancy, when the major organ systems are forming. Examples of teratogens include certain chemicals, medications, and infections or other diseases in the mother.

### Chemicals and medications

It is difficult to determine whether a particular chemical or medication causes congenital abnormalities. This is because many women take medications during pregnancy, and most studies have to rely on the mother's memory of what she took while she was [pregnant](#). One notable exception is [thalidomide](#), a medication used to treat morning sickness, which was found in the 1960s to cause total or partial absence of the arms or legs in babies.

### Some other medications are known to cause congenital abnormalities:

- Aminopterin is a drug that is used to treat cancerous tumours. Aminopterin blocks folic acid, and folic acid is important for production of [DNA](#) and cell growth. Therefore, folic acid helps prevent many birth defects, most notably neural tube defects. Neural tube defects are problems with the development of the brain or spinal cord. The use of aminopterin during pregnancy can lead to brain abnormalities such as anencephaly, where all or part of the brain is missing, or [hydrocephalus](#), which is a build-up of fluid in the brain. This drug can also cause facial abnormalities such as cleft lip and cleft palate.
- Some [anti-epileptic drugs](#) are associated with a wide array of [birth defects](#), such as cardiovascular abnormalities, [cleft palate](#), and microcephaly, which is a condition where the brain is too small. These drugs include [phenytoin](#), [valproic acid](#), and trimethadione. Women with epilepsy need special monitoring and care during pregnancy, which may include a change in medication.
- [Warfarin](#), a blood-thinning drug, is a teratogen. Warfarin can cause central nervous system defects, including mental retardation, as well as problems with the optic nerves.
- Drugs called angiotensin-converting enzyme (ACE) inhibitors, which are used to treat high blood pressure, can cause a number of problems during pregnancy. ACE inhibitors can cause fetal growth restriction, problems with the baby's kidneys, and sometimes death of the baby during pregnancy.
- Isotretinoin, which is used to treat severe acne, is also linked with a number of congenital abnormalities. These include cleft palate, [heart defects](#), abnormalities of the outer ears, and underdevelopment of the lower jaw. Isotretinoin is also linked with neural tube defects.

- Some types of tranquilizers, such as phenothiazine and lithium, are thought to be teratogens. Similarly, drugs used to treat anxiety, such as [diazepam](#), are linked with congenital abnormalities such as cleft lip or palate.
- [Selective serotonin reuptake inhibitors \(SSRIs\)](#), which are used to treat depression, are capable of crossing the placenta and affecting the baby. Most of the effects in the baby are subtle, and include irritability, agitation, tremor, increased respiratory rate, [nasal congestion](#), or [diarrhea](#). However, the SSRI paroxetine is thought to cause birth defects in early pregnancy. It is important to note that depression itself may be more harmful than the drugs used to treat depression. The benefits of SSRIs in the treatment of depression need to be weighed against the risks to the unborn baby.
- Hormones called androgens and progestins have been shown to make female fetuses more masculine. The baby's [clitoris](#) may be larger than normal, and the outer lips surrounding her genitals may be fused.
- Another hormone called diethylstilbestrol (DES), which is a form of estrogen, can cause abnormalities of the uterus, vagina, and cervix in girls.

## Alcohol, smoking, and other drugs

Alcohol use is a well-known cause of congenital abnormalities during pregnancy. Even moderate amounts of alcohol in pregnancy can cause developmental problems in the unborn baby. Abnormalities caused by alcohol in pregnancy include deformities of the face, arms, and legs, heart conditions, mental retardation, and fetal growth restriction. However, these conditions are not very common. More frequently, children born to women who drink heavily during pregnancy may have problems with thinking and remembering and behavioural issues. The abnormalities and other problems caused by alcohol use in pregnancy are referred to as [Fetal Alcohol Spectrum Disorder](#).

Cigarette smoking is linked with fetal growth restriction and [premature birth](#). Smoking may also cause problems with the development of the brain, cardiovascular system, and respiratory system. This is true whether the mother smokes herself or is exposed to second-hand smoke. Babies exposed to cigarette smoke during pregnancy may also be born with an increased startle reflex, tremor, or other problems. The effects of cigarette smoke on the unborn baby increase with how much the mother smokes, as well as the length of time that she has been smoking.

Exposure to marijuana during pregnancy may result in low birth weight, intracranial bleeding, jitteriness, low blood sugar, low levels of calcium in the blood, or an infection of the blood called sepsis. The use of marijuana in pregnancy can cause other problems in the baby such as poor feeding, irritability, and rapid breathing.

Amphetamines, also called "speed," stimulate the central nervous system. Prenatal use of these drugs is associated with premature birth, low birth weight, or intracranial bleeding.

The use of opioid drugs, such as heroin or methadone, during pregnancy can lead to fetal growth restriction, premature birth, and low birth weight.

Cocaine use is known to cause numerous problems during pregnancy. These include miscarriage, fetal growth restriction, and problems with the development of the urinary system or genital tract. The use of cocaine can lead to microcephaly, where the brain is too small. Children of mothers who used cocaine during pregnancy are also more prone to developing neurobehavioural problems. Cocaine use during pregnancy has been associated with a higher risk of a serious problem with the placenta, called

placental abruption. Prenatal use of cocaine may also cause increased startling, jitteriness, and excessive sucking in the newborn baby.

The use of these types of drugs during pregnancy can also lead to a condition called [neonatal abstinence syndrome](#), where the baby experiences withdrawal. When a woman is pregnant and takes one of these drugs, her baby can become addicted. Once born, the baby is still dependent on the drug; since the drug is no longer available, the baby experiences withdrawal.

## Other chemicals

Some environmental chemicals are known to lead to congenital abnormalities. Mercury, which is found in some types of fish, has been linked with the development of neurological problems resembling [cerebral palsy](#), as well as mental retardation. Lead has been associated with fetal growth restriction and neurological disorders. Polychlorinated biphenyls, also known as PCBs, are shown to cause fetal growth restriction and skin discoloration.

X-rays can cause problems with fetal development, such as spina bifida, cleft palate, blindness, abnormalities of the arms and legs, or microcephaly, which is a condition where the brain is too small. The type of abnormality that develops depends on the dose of X-ray radiation the pregnant woman receives, and how far along the pregnancy is. There is no established safe dose of X-ray radiation. However, dental X-rays (and dental cleanings) are considered safe during pregnancy. Talk to your caregiver if you are asked to have an X-ray and you are pregnant or you think you could be pregnant.

Radiation and chemotherapy, which are used to treat cancer, are also associated with congenital abnormalities. If at all possible, the use of radiation and chemotherapy should be delayed until after the baby has been delivered. Sometimes this is not possible, however, and the risks of these treatments must be weighed against their benefits to the mother.

## Infections in the mother

"CHEAP TORCHES" is an acronym for a special group of infections that can affect the developing baby during pregnancy. CHEAP TORCHES stands for the following:

C: [Chickenpox and shingles](#)

H: [Hepatitis B](#), C, D, E

E: Enteroviruses, a group of viruses including poliovirus

A: [AIDS](#)

P: Parvovirus B19, also known as fifth disease

T: Toxoplasmosis

O: Other infections such as group B streptococcus, listeria, candida

R: [Rubella](#)

C: Cytomegalovirus

H: [Herpes simplex virus](#)

E: Everything else sexually transmitted such as gonorrhea and chlamydia

S: Syphilis

Hepatitis B, herpes simplex virus, and syphilis are sexually transmitted diseases. The chickenpox virus is a risk to women who have not already had chickenpox, or who have not been properly vaccinated against that disease.

CHEAP TORCHES infections are a common cause of birth defects such as mental retardation, learning problems, jaundice, anemia, low birth weight, vision problems, deafness, heart defects, and skin rash. CHEAP TORCHES infections may also cause stillbirth. Babies are most severely affected by

CHEAP TORCHES infections during the first trimester of pregnancy, when the major organs and structures are developing.

## Maternal conditions

A number of chronic illnesses in the mother are linked with an increased risk of congenital abnormalities, fetal growth restriction, or certain diseases in the unborn baby. In some [maternal conditions](#), the risk lies with the drugs used for treatment, rather than the illness itself. It is important to get these conditions under control before becoming pregnant. In some cases, a change in treatment may be needed before pregnancy begins.

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**Notes:**