

Teratogens and birth defects they can cause

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Identify the teratogens covered in this chapter and birth defects/disorders they can cause. Format your response as though you were giving a brief prevention lecture to young married couples. Your answer should be no fewer than 400 words in length. We are all aware of genetic and hereditary factors that may impact the health of the newborn baby. However, our ability to prevent genetic disorders is limited to genetic testing of parents and prenatal diagnostic methods that can reveal early warning signs of genetic defects before birth.

Another group of factors that can greatly influence the health and the development of a baby are environmental agents. These agents are commonly referred to as teratogens and include any environmental agent that can cause damage during the prenatal period. Unlike genetic factors, the damaging effects of the teratogens during the prenatal period and after birth are almost completely preventable by the parents. Most common teratogens that can impact pregnancy and child development are: prescription and non-prescription drugs, illegal drugs, alcohol, tobacco, infectious disease, radiation and environmental pollutants.

Many prescription and non-prescription drugs exert side-effects that may be harmful during the prenatal period. Even when these side-effects are not noticeable or are not affecting the mother they may be interfering with the normal prenatal development of the baby during early and later stages of the pregnancy. For this reason all newly-expecting women or those planning to become pregnant need to consult with a doctor about any prescription drugs they may have been taking and certainly before starting therapy with any new medications.

Many people consider non-prescription or “ over-the-counter” drugs to be safe because no physicians prescription is required for their purchase. This is a common and often a dangerous mistake. Many “ over-the-counter” drugs and products are not classified as drugs but rather as nutritional supplements and as such don't require FDA licensing and control. In general these products can be dangerous to health since their contents and action mechanism have not be adequately or scientifically tested. Their consumption by pregnant or planning -to-become pregnant women can be particularly dangerous.

New mothers need to consult a medical professional before using any over-the-counter products including vitamin and mineral supplements. Another category of common products that often get overlooked but can be dangerous to prenatal development and infant health are cosmetics. Many cosmetic products contain chemicals that can be harmful to the mother and the baby. For instance, many anti-acne products and “ blemish-removal” products contain retinol and retinoic acid which can affect the baby during the first trimester.

The retinol based “ over-the-counter” products, such as Retine-A cream, are similar to the prescription drug Accutane which is prohibited for use by pregnant women as it causes damage to baby's eyes, brain, immune system, ears and skull. Other commonly used beauty products can be dangerous as well. Some examples are lipsticks that may contain lead, lotions and creams containing paraben, hair colors, tanning products and many more. The best prevention is to avoid use of pharmaceuticals, supplements and cosmetics before and during pregnancy without consulting a doctor first.

The use of illegal drugs prior to and during pregnancy and while breast feeding is extremely damaging to the baby. Commonly used “ street drugs” such as cocaine, heroin, marijuana, methamphetamines and their derivatives cause a multitude of prenatal development abnormalities and can cause a lasting damage to the child's physical and mental health. Some of these abnormalities include: low birth weight, respiratory and cardiac difficulties, vision and hearing problems, metabolic abnormalities, premature birth and can cause death during or shortly after birth.

Damage to the nervous system is particularly evident among illicit-drugs affected newborns and they are usually irritable, exhibit neurotic crying and often have lasting cognitive and social development difficulties and behavioral problems. The use of cocaine, heroin, methamphetamines and other so called “ heavy drugs”, pre- and, during pregnancy and while breast feeding is especially dangerous as it causes the drug addiction of the newborn.

The maternal use of marijuana causes a multitude of physical and psychological problems to the newborn including low birth weight, brain development abnormalities, depression and learning difficulties. Though it can not be linked to the inherited drug-addiction of the newborn, the use of “ street drugs” by a father has been linked to a multitude of genetic diseases transferred to the off-spring. Though the exact modalities have not yet been determined for every drug, it is certain that use of drugs by a father causes mutations of the paternal DNA and therefore impacts the genotype of the baby.

Persons with drug addiction problems planning to start a family should consult a medical professional well ahead of becoming pregnant to plan a course of action to cease the drug abuse and limit its damaging effects on the baby as well as parents. Already pregnant women with drug abuse problems need to contact the doctor as soon as possible to assess the risk and plan the best course of action needed. Alcohol consumption is one of the most damaging factors to a healthy pregnancy and birth. Mistakenly, most people consider “social drinking”, a consumption of one to two drinks daily or few times per week, to not be damaging to health.

Though some evidence exists that a low or moderate consumption of alcohol can be beneficial to cardiovascular health, it is well established that even small amounts of alcohol during pregnancy can be detrimental to the prenatal development of the child. Alcohol causes a variety of prenatal development abnormalities jointly referred to as fetal alcohol syndrome (FAS). The FAS manifests itself in recognizable cranio-facial morphological deformities such as widely spaced eyes, a thin upper lip, small upward pointing nose, short eye-lid openings and a small head.

The overall growth of the child is slowed. Furthermore, FAS causes a multitude of mental abnormalities such as attention, memory and language deficits, hyperactivity and abnormal motor skills and coordination. It has been established that these abnormalities result from the damaging effects of alcohol on neuron development in the early phases of pregnancy. Due to the overexpenditure of oxygen by mother's body during alcohol metabolism, the fetus is often oxygen deprived which further contributes to development of the above mentioned health problems.

Though the amount of alcohol consumed during pregnancy determines the extent of the damage caused, even small amounts of alcohol consumed can cause some of the symptoms listed. This milder form of FAS is referred to as fetal alcohol effects (FAE) and is equally concerning. Similarly to illegal drugs use, a link had been established between consumption of alcohol by a father and the mutations it causes to the paternal DNA which leads to multiple genetic defects of the offspring. All couples planning to bear children should stop all alcohol consumption well ahead of the time of pregnancy.

Those with alcohol dependency should seek professional help in quitting drinking as alcoholism is a disease and requires a complex approach to physical and psychological issues that are causing it. The damaging effects of smoking on human health are well known but large number of child-bearing aged women still use tobacco regularly. The use of tobacco before, during and after the pregnancy has been linked to a multitude of infant health problems during the prenatal period and childhood. The tobacco using women are at a higher risk of miscarriage during pregnancy.

It is a well known fact that nicotine, which is a vasoconstrictor, prevents an adequate blood flow to the uterus and causes defects to the placenta. In turn, the exchange of the nutrients between a mother and the baby is disturbed resulting in fetal malnutrition and low birth weight. As we know, low birth weight is a main predictor of the physical and mental developmental difficulties of the child. Nicotine affected babies are often born prematurely and exhibit cardiac and respiratory problems such as arrhythmia, asthma, sleep apnea, and are at a higher risk of developing cancer during childhood.

The rate of infant death is also higher among this population of newborns. Even if physical health problems are not obvious, many nicotine-exposed babies display a certain degree of behavioral problems during their development. These can range from diminished sensory response, such as that to a sound, through over stimulation by touch and vision to a multitude of learning impairments. The best prevention to the nicotine-exposure health related issues is quitting smoking well before becoming pregnant.

Even quitting smoking during pregnancy will greatly reduce the health risks to the baby. Joint quitting of smoking by both parents is usually the most successful approach as partners are able to support each other during this difficult endeavor. Exposure to the second hand smoke during pregnancy is equally as damaging to both mother and the baby. Again, quitting smoking and avoiding exposure to the second hand smoke will not only protect the child but also improve the health of the parents in the long run.

All sexually active persons need to regularly undergo testing for sexually transmitted diseases (STDs). Prevention of, and regular testing for, STDs shows not only a concern about personal health but also a responsible approach to protecting the health of the partner and especially the health of the children the relationship may result in. Many STDs and infectious diseases are easily transferred during conception and from the mother to the embryo during this critical period of prenatal development. Many of these infections can cause serious and long-term defects to the fetus as well.

Common birth defects caused by infection transmission during pregnancy include mental retardation, cardiac, respiratory and digestive system problems, vision and hearing damage and multitude of other conditions. One

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of the most dangerous STDs transferred from an infected mother to a baby is human immunodeficiency virus (HIV) which causes AIDS. The HIV-infected babies develop symptoms of AIDS much faster than adults. The disease progression can be as rapid as a few months after birth with most ill babies dying within first 5-8 months after birth.

Women aware of their HIV positive status should consult with the specialist if planning on becoming pregnant to assess risk and discuss possible prophylactic methods that can be employed to prevent transmission. Couples and individuals planning on pregnancy should test for infectious diseases before conception and address any concerns they may have with a health care professional. In the case of HIV, many newly-developed anti-retroviral therapies can prevent the risk of transmission onto baby by as much as 95%.

Other infectious diseases that should be of concern when planning pregnancy or when pregnant are herpes, hepatitis, rubella, toxoplasmosis, syphilis, etc. Exhaustive testing for infectious diseases by both parents performed by a specialist is the best prevention of pregnancy complications and transmission to the newborn. Another teratogen that is of concern when evaluating the prenatal health is radiation. Though not as commonly encountered as other teratogens, radiation can be as devastating to the prenatal and postnatal development of the child.

Exposure to radiation during pregnancy often leads to a miscarriage or birth defects such as physical deformities, central nervous system abnormalities, slow growth as well as a multitude of learning and emotional problems. Pregnant women and those planning on becoming pregnant should avoid <https://assignbuster.com/teratogens-and-birth-defects-they-can-cause/>

exposure to radiation such as occupational exposure, for example radiology technicians, or medical exposure such as during exams with x-rays and other radioactive agents. Men should avoid exposure to radiation as well, as radioactive agents can cause mutations of the paternal DNA which can lead to birth defects of the offspring.

Any concerns about possible radiation exposure need to be addressed with a medical professional as many methods are available to prevent and limit the damaging effects of radiation. Environmental pollution is probably a teratogen that is the hardest to avoid or prevent. As we know our ecosystem, be it the air, the land or the water, is heavily polluted with many agents and has led to an increase of cancers, respiratory, neurological, hereditary and many other diseases in human population. Unfortunately, environmental pollutants affect humans from our early days of prenatal development.

One of the main ways babies get exposed to this teratogen is through the nutrient exchange during the prenatal development. The pollutants transferred through these means include mercury and other heavy metals found in contaminated food and water. The exposure to heavy metals during the prenatal development has been implicated with causing a multitude of abnormalities of the nervous system and psychological disorders. Many toxins commonly found in the products for everyday use cause many metabolic, immunity and respiratory disorders that have a long lasting effects on the health of the newborn.

Environmental pollution is directly linked with childhood cancers as well as hereditary predisposition for cancer development. Some of the measures that can be taken during pregnancy to minimize the damaging effects of this

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teratogen include limiting the consumption of large predatory fish, such as salmon and tuna, which are often high in their mercury content, avoiding antibiotics and steroids contaminated meats as well as pesticide treated fruits and vegetables.

Staying indoors and using air-filtration systems during high air-pollution days can prevent exposure to carbon monoxide and combustion byproduct gases. The use of industrial and chemical cleaning agents and chemicals should be avoided or limited to a minimum. As we can see there are many teratogens we are exposed to daily and though they damage our health it is especially frightening to think of the effects they have on the health of our unborn babies.

Though these concerns are valid they should not stand in the way of enjoying the pregnancy, child birth and child rearing as the most pleasant and enriching experience of the lifetime. As we have learned most of the damaging effects of teratogens can be avoided and prevented through education, being aware of the risk factors and being proactive in taking steps to avoid the exposure and damage by practicing healthy living habits and seeking help when needed.