Paternal Exposures

This sheet is about paternal exposures. This information is based on published research studies. It should not take the place of medical care and advice from your healthcare provider.

What is a paternal exposure?

A paternal exposure is anything a male parent or sperm donor is exposed to before a pregnancy is conceived, while trying to conceive pregnancy, or after their partner is pregnant. This includes things such as prescription or over-the-counter medications, substance use (alcohol, tobacco, marijuana, opioid misuse), viruses, chemotherapy or radiation treatments (for conditions like cancer), and workplace exposures. This sheet discusses paternal exposures in general. Please contact MotherToBaby to discuss specific exposures.

Can paternal exposures affect fertility or make it harder to conceive a pregnancy?

Some exposures may affect a male's fertility (ability to conceive a pregnancy) by lowering the desire for sex, reducing the ability to perform sexually, or by directly changing the sperm. Changes to sperm can affect the size or shape, the number of sperm produced, or how the sperm move. Some changes could cause a male to be unable to conceive a pregnancy (infertility) or to take longer to conceive a pregnancy.

Do paternal exposures increase the chance of birth defects in a pregnancy?

Birth defects can happen in any pregnancy for different reasons. Out of all babies born each year, about 3 out of 100 (3%) will have a birth defect.

A male parent does not share a blood connection with a pregnancy, so medications or chemicals in their bloodstream do not reach the fetus during a pregnancy. Substances that a male is exposed to might enter the semen in small amounts. However, for most exposures, sexual intercourse during pregnancy is not expected to increase the chance of birth defects. This is because the amount of the substance in the semen is usually too small to cause problems for the pregnancy. For information about specific substances, contact a MotherToBaby specialist.

If a male uses alcohol, tobacco, or other substances, can that affect their fertility or a partner's pregnancy?

Alcohol, tobacco, and other substances can affect the number or movement of the sperm. Studies have not found paternal exposures to these substances to cause an increased chance of birth defects.

If your partner is pregnant, it is recommended to stop smoking or not smoke around the person who is pregnant (including in their house or car) because exposure to secondhand smoke can cause pregnancy complications. For more information, see the MotherToBaby fact sheet about cigarette smoke at https://mothertobaby.org/fact-sheets/cigarette-smoking-pregnancy/.

If a male has a virus, can it affect a partner's pregnancy?

Research has shown some viruses can be found in semen. Depending on the virus, this could be temporary, or last for years. There are viruses in the semen that can be passed to a sexual partner during intercourse, and then to the fetus if the partner is pregnant. Some viruses can be harmful to the fetus.

One such example is the Zika virus. If a male is infected with Zika virus, the virus can pass to a sexual partner during intercourse. If the partner is pregnant or gets pregnant soon after, there is a chance the virus will pass to the fetus. If this happens, it can increase the chance for a pattern of birth defects called congenital Zika syndrome. For more information, see the MotherToBaby fact sheet about Zika virus at https://mothertobaby.org/fact-sheets/zika-virus-pregnancy/.

Zika is not the only infection that a male can give to a partner that could cause negative pregnancy outcomes. Contact MotherToBaby to talk about specific exposures.

If a male has chemotherapy or radiation treatments, can that affect their fertility or a partner's pregnancy?

Cancer treatment can affect sperm production. Sperm production may return to normal after chemotherapy or radiation treatment, or it might not. Males who need cancer treatment can talk to their healthcare providers about their options to save or protect sperm to have children in the future (fertility preservation).

Because different types of cancer require different forms of treatment, there are no general recommendations on cancer treatment and pregnancy. Before trying to get pregnant, talk to your healthcare provider about the best time to start trying. At this time, there are no studies showing an increase in birth defects in children of males who were treated for cancer.

Can a male's exposures in the workplace affect their fertility or a partner's pregnancy?

Several studies have looked at the reproductive health of males who are exposed to various substances in the workplace, including lead, certain types of chemicals called organic solvents, pesticides, and radiation. Some studies suggest that these exposures may be associated with changes to the sperm, less sperm production, decreased fertility, and a higher chance for miscarriage or giving birth early (pre-term birth) in the partners of these workers. Other studies have found no increased chance for miscarriage or giving birth early (pre-term birth) when males have workplace exposures. Most workplace exposures in males have not been clearly associated with a higher chance of birth defects.

Males exposed to heavy metals and other chemicals in the workplace may carry these agents into their cars and homes on their clothes and shoes. This may cause their partners to be directly exposed to these metals or chemicals. As a precaution, anyone who is exposed to heavy metals or chemicals in the workplace may want to change their clothes and shoes before coming home. There are general tips on working with chemicals in the MotherToBaby fact sheet Reproductive Hazards of the Workplace: Tips for Job Safety https://mothertobaby.org/fact-sheets/reproductive-hazards-workplace/.

Please click here for references.

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