

Paternal Exposures

MotherSafe - Royal Hospital for Women

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Information in this leaflet is general in nature and should not take the place of advice from your health care provider. With every pregnancy there is a 3 to 5% risk of having a baby with a birth defect.

What is paternal exposure?

Paternal exposure refers to exposure of the father to medicines, radiation, chemicals, infections or drugs of dependence in the period before pregnancy, around conception or during pregnancy.

Medication: paternal exposure before pregnancy and at time of conception

There is clear evidence that a small number of medications taken by the father may be associated with reduced fertility. Other medications may be associated with reduced sexual function which may also decrease the likelihood of the man's partner getting pregnant.^{1,2}

In general, there is no evidence that paternal use of medication prior to or at the time of conception is associated with an increase in birth defects or other harmful outcomes in any developing pregnancy.^{1,2,3}

Medication: paternal exposure during pregnancy

During pregnancy, there is no blood connection between a man and his partner's unborn baby. Therefore in general, medications taken by the father will not cause birth defects or have any other harmful effects. Semen may contain very small amounts of medication but this amount is generally so low as to be considered an irrelevant exposure.¹

Chemotherapy and radiation

The effects of **chemotherapy** on male fertility are dependent on the specific agent and the dose and timing of the exposure. Many agents have a substantial impact on sperm quality and quantity which may then affect fertility. For many agents fertility can return in time. In some situations sperm banking prior to chemotherapy may be considered. Most evidence suggests that children born to fathers previously exposed to chemotherapy do not have an increased risk of birth defects or other harmful outcomes.^{1,2,3} However generally, health bodies suggest waiting 3 months after finishing chemotherapy before trying to conceive.¹ This is the time it takes to completely replace the chemotherapy exposed sperm with new unexposed sperm.

Paternal radiation exposure through **radiotherapy** may affect fertility but often sperm counts return to normal.^{1,2} Evidence suggests there is no increased risk of birth defects or other abnormalities in children of fathers who have previously had radiotherapy or are otherwise exposed to radiation.^{1,3,4} However, men may be advised by their treating doctors to wait several months after radiotherapy before their partners try to conceive. This allows time for replacement of radiation exposed sperm with unexposed sperm.

Paternal diagnostic radiology (X-Rays and scans) and paternal workplace exposure to radiation (within normal accepted limits) are not associated with significantly increased risks of birth defects or other adverse outcomes (including miscarriage) when exposure is prior to pregnancy, around conception or during pregnancy.^{3,5,6}

If a man requires **radionuclide treatment**, it is advised to wait several months after treatment before trying to conceive.⁶ This too, is to allow for replacement of radiation-exposed sperm with unexposed sperm.

Waiting times before conception after chemotherapy, radiotherapy and radionuclide treatment should be confirmed with the treating specialist.

Recreational drugs and alcohol

Paternal use of alcohol has been associated with reduced fertility but there is no evidence to suggest an increased risk of birth defects or any other harmful effects. Paternal cigarette smoking and use of other recreational drugs

such as marijuana, cocaine, methamphetamine and ecstasy may also have fertility effects but have not been implicated in increasing the risk of birth defects.^{1,7}

Workplace exposure

A wide variety of exposures can occur in the workplace. These may involve chemicals and radiation. Although there may be potential effects on fertility, these can be minimised by employers ensuring that proper occupational health and safety measures are always in place. In the case of chemicals, employers should provide good ventilation and relevant personal protective equipment (PPE) such as gloves, masks and gowns. It is also important for individuals to use general measures such as washing hands before eating or leaving the premises.⁸

There is no evidence of an association between a father's workplace exposure and birth defects. However, a man occupationally exposed to chemicals should consider leaving contaminated clothing in the workplace in order to prevent directly exposing his pregnant partner.¹

Infections

If a man has an infection such as a virus, he can potentially have the infection in his semen. This can transmit to his pregnant partner through sexual intercourse. A developing baby can sometimes then be infected. An example of this is Zika virus, a virus that is spread by specific types of mosquitoes and is associated with birth defects. Many areas worldwide have mosquitoes with Zika virus, but currently it does not exist in Australia.⁹

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NSW Medications in Pregnancy & Breastfeeding Service

For more information call MotherSafe: NSW Medications in Pregnancy and Breastfeeding Service on 9382 6539 (Sydney Metropolitan Area) or 1800 647 848 (Non-Metropolitan Area) Monday -Friday 9am-5pm (excluding public holidays)