

# Radiation and pregnancy



**ASSIGN  
BUSTER**

Radiation, when unborn children are exposed to it, has deleterious effects on their growth and development which makes it imperative for pregnant mothers to be aware of it and take all possible care in avoiding such exposure. There are many types of radiation: cosmic radiation or the naturally occurring radiation from the sun, terrestrial radiation or that emanating from uranium decay in the soil, man-made radiation in medical facilities, consumer products, atmospheric testing of nuclear weapons and industries (CMU).

Pregnant women most likely experience radiation as part of medical diagnosis and therapy, accidental intake as well as exposure in the workplace. Effects on the Unborn Baby Prenatal radiation takes place when the abdominal areas of pregnant mothers are exposed to external radiation. Prenatal radiation also occurs when expectant mothers unintentionally ingest or inhale radioactive materials (CDC). Once these materials are diffused into the bloodstream, they find their way to the developing fetus via the umbilical cord.

Further, these substances may also become concentrated in the organs surrounding the womb such as the mother's urinary bladder or the placenta and from there affect the unborn baby. The probability and extent of effects on the unborn child can be attributed to factors such as the degree of exposure and the age of the baby when it was exposed to radiation. Within the first two weeks of life (zygote and blastocyst stages), the baby is composed of just a small number of cells and when exposed to radiation may result in death and subsequent miscarriage. Of those who make it through, some may have birth defects.

It may also be possible that these defects, though not manifested in the baby at birth, may be passed down to the next generation through heredity. Babies are most susceptible to the severe consequences of radiation between the second and the fifteenth week of pregnancy (embryo stage), most especially when the amount of radiation is high and exceeds that of 500 chest x-rays. Deformities, stunted growth, abnormalities in brain functioning and increased risk for birth defects (e. g. lower IQ or mental retardation) are some of the negative effects of radiation during this stage (CDC).

These have been observed in Japanese children who were still in the womb during the atomic bombing of Hiroshima and Nagasaki during World War II. From the sixteenth week to the twenty-fifth week of pregnancy (fetal stage), radiation does not seem to affect the health and development of unborn children unless the amount of radiation is so great as to equal 5, 000 chest x-rays. In this case, the mother would most likely be suffering from acute radiation syndrome also. By the twenty-sixth week up to birth, unborn children can physiologically tolerate diagnostic radiation or one x-ray and are at minimal risk for deformities and abnormalities.

However, the exposure of mothers to radiation whose amount is equivalent or lower than that of 500 x-rays at any time during pregnancy increases the baby's chances of developing cancer later in life (MAMC). Hence, health practitioners advise against undergoing diagnostic radiation such as x-rays unless the expected benefits from it for both mother and baby are far more significant than the risks (MAMC). Minimizing the Risks from Radiation during Pregnancy Sometimes, women may need to undergo diagnoses which

include abdominal/pelvic x-rays, computed tomography (CT) or fluoroscopy which expose them to small amounts of radiation.

For women who are aware of their pregnancy, they should disclose this fact to their physician so that the diagnostic x-ray may be postponed until after delivery or other equally reliable tests that do not pose radiation risks may be substituted. If the physician and patient have weighed the pros and cons and both still decide that an x-ray is more beneficial, the pregnant woman should also inform the x-ray technician of her condition for her to be given a lead apron to use as a protective measure (MAMC). If the woman may think she is pregnant, she should confirm it by taking a pregnancy test the soonest possible time.

In radiologically restricted workplaces and nuclear facilities, women employees should officially declare their pregnancy to their supervisors who in turn must assess the type of work performed by the women and determine the amount of radiation they are exposed to (CMU). The federal government has set certain regulations and standards on the amount of radiation pregnant and non-pregnant workers may be subjected to in the workplace. The supervisor should also make sure that necessary precautions are put into place or provided and radioactive materials handled by pregnant women should be reduced.

If the amount of exposure is still deemed high, pregnant women should withdraw from the work they perform and seek reassignment for their baby's welfare (CMU). Although, there are yet no studies that confirm the effects of radiation from televisions, computers, cell phones, printers and photocopiers

as well as living near nuclear plants and high tension wires on the developing baby, it will not do harm to take extra precautions such as watching television from a farther distance or letting down the top of the photocopying machine when using it (CMU).

Finally, proper and timely health education is the key to increasing the awareness of the public, especially women who are or who wish to be pregnant, regarding the established and possible effects of radiation on the health of their babies and for them to assert and take necessary safety measures. For any concerns with regards to the amount of radiation exposure and the effects on the baby, consulting a physician is the best way to ascertain the health of the baby.