

IMAGING

# PREGNANCY & RADIATION



### WHAT ARE DIAGNOSTIC XRAYS?



Diagnostic X-rays can give the doctor important and even life-saving information about a person's medical condition.

But like many things, diagnostic X-rays have risks as well as benefits. They should be used only when they will give the doctor information needed to treat you.

#### X-RAYS DURING PREGNANCY

You'll probably never need an X-ray during pregnancy. But sometimes, because of a particular medical condition, your physician may feel that a diagnostic X-ray is needed. If this should happen - don't be upset. The risk to you and your unborn child is very small, and the benefit of finding out about your medical condition is far greater. In fact, the risk of not having a needed X-ray could be much greater than the risk from the radiation. But even small risks should not be taken if they are unnecessary.

You can reduce those risks by telling your doctor if you are, or think you might be, pregnant whenever an X-ray is prescribed. If you are pregnant or unsure of your pregnancy status, the doctor may decide that it would be best to cancel the X-ray examination, to postpone it, or to use another non-ionizing diagnostic test. Depending on your medical needs, and weighing the risks and benefits, the doctor may feel that it is best to proceed with the X-ray as planned. In any case, you should feel free to discuss the decision with your doctor.

If you are unsure of your pregnancy status, it is advisable for you to either wait for the onset of your menstruation or have a urine test. You should discuss the options with your doctor.

#### HEALTH RISKS FROM MEDICAL X-RAYS PERFORMED DURING PREGNANCY

Vast majority of medical X-rays do not pose a critical risk to a developing fetus. The actual risk depends on how far along the pregnancy is and on the type of X-ray examination.

X-ray studies can be divided into two main categories. Those giving very low exposure to the fetus and thus of lower risk and those giving greater radiation exposure. Our radiographer would be able to advise you of the category your X-ray request falls under.



Examples of X-ray studies that give low radiation exposure to the fetus include those that are not directly exposing the pelvic area e.g., chest, lower and upper extremities.

X-ray studies that gives higher radiation exposure to the fetus include CT abdomen, nuclear medicine and angiography procedures.

Before proceeding with any X-ray procedures, it is advisable that you fully discuss all risks and benefits with your referring physician. As part of our procedure to establish your pregnancy status, you will also be asked relevant questions in order to avoid unnecessary radiation exposure during your early pregnancy period.

### UNDERSTANDING THE RISKS



## RISKS RELATED TO GESTATIONAL AGE

### Early Gestation / First Trimester (up to 12 Weeks):

At this point, the rate of fetal growth is very rapid and the fetus, as an organism, is at its most radiationsensitive stage. The incidence of fetal wastage consequential to radiation exposure at this stage of gestation is not known, since: (a) many women were never aware they were pregnant at the time of the exposure or miscarriage, and (b) the normal rate of miscarriage for any pregnancy is high (15 to 25% of all pregnancies).

#### Second Trimester (12 to 24 weeks):

During this period, the overall growth rate of the fetus has slowed. However, the major organ systems are beginning to differentiate. From a standpoint of future development, the fetus is in its most sensitive stage. The incidence of gross



congenital malformations and mental retardation are dose-related and appear to have thresholds.

#### Third Trimester (after 24 weeks):

Diagnostic irradiation during this period will not result in gross organ malformations.

#### RISKS RELATED TO RADIATION DOSE

The risk of adverse effects increases with increasing dose. Some broad generalizations based on fetal dose ranges may be made.

#### Fetal dose less than 50 mSv:

No increased incidence of malformations or fetal death.

#### **Fetal dose between 50–100 mSv:** Very low risk of malformations.

#### Fetal dose greater than 100 mSv:

Possible spontaneous abortion in the first month of pregnancy and possible malformations in the first two trimesters.

NOTE: Highest dose to the fetus in diagnostic radiology rarely exceeds 10 mSv and most examinations are under 2 mSv of radiation. The background radiation dose most of us receive every year from the atmosphere and sun is about 3 mSv.



#### **MINIMISING THE RISKS**

#### MOST IMPORTANTLY, TELL YOUR PHYSICIAN IF YOU ARE PREGNANT OR THINK YOU MIGHT BE.

This is important for many medical decisions, like drug prescriptions and nuclear medicine procedures, as well as X-rays. This is true even in the very early weeks of pregnancy.

If you have any of the symptoms of pregnancy (nausea, vomiting, breast tenderness, fatigue) consider whether you might be pregnant and tell your doctor or radiographer (the person doing the examination) before having an X-ray of the lower torso. A pregnancy test may be called for.

If you are pregnant, or think you might be, do not hold a child who is being X-rayed. If you are not pregnant and you are asked to hold a child during an X-ray, be sure to ask for a lead apron to protect your reproductive organs.

Whenever an X-ray is requested, tell your doctor about any similar X-rays you have had recently. It may not be necessary to do another. It is a good idea to keep a record of the X-ray examinations you and your family have had taken so you can provide this kind of information accurately.

Feel free to talk with your doctor about the need for an X-ray examination. You should understand the reason X-rays are requested in your particular case.



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