ADULT X-RAY AND CT EXAMS

COMP OCPM
Canadian Organization of Medical Physicists
Organisation canadienne des physiciens médicaux

WHAT ARE X-RAYS?

X-rays are used in many diagnostic imaging exams, including CT (computed tomography).

- X-rays are a form of invisible energy that can pass through the body.
- X-rays are a type of radiation.
- X-rays allow health practitioners to look inside the body to find disease processes or broken bones.
- CT is a type of x-ray exam that produces cross-sectional images.

CAN MEDICAL X-RAYS CAUSE HARM?

There is minimal chance of harm. X-ray exams are only requested if needed.

- There is a small risk, as with any medical drug, test, or therapy.
- X-rays might very slightly increase cancer risk.

When a health practitioner requests an x-ray or CT exam, it means, in their expert opinion, that the benefits gained from the exam outweigh any small risk from radiation.

DO WE RECEIVE RADIATION FROM NATURAL SOURCES?

Yes. Natural sources of radiation include:

1. SUN **2.** SOIL **3.** FOOD

Radiation dose is measured using milliSieverts (mSv) just like temperature is measured using degrees Celsius (°C).

Radiation from natural sources (background radiation) varies across Canada. Within Canada, you get between 1 and 8 mSv per year depending on where you live, with a national average of 1.8 mSv per year.

IS THERE A LIMIT TO THE AMOUNT OF RADIATION I CAN RECEIVE FROM DIAGNOSTIC IMAGING?

No, there is no limit when receiving necessary x-ray or CT exams. As long as the exam is clinically appropriate, the health benefits of the x-ray diagnosis far outweigh the x-ray dose risks.

In addition, health practitioners are always trying to reduce x-ray dose through radiation safety and quality assurance initiatives. Similarly, equipment manufacturers improve technology to reduce dose and maintain image quality.

HOW MUCH RADIATION DO WE GET FROM X-RAYS?

Different exams require different amounts of radiation. More radiation is required to image thicker body parts. CT exams provide more detail and generally require more radiation than x-ray exams.

It can be helpful to compare the radiation dose from x-ray and CT exams to the dose from background radiation that we are exposed to every day.

X-ray Exam	Equivalent Background Radiation
Knee	2 days
Chest	4 days
Lumbar Spine	6 weeks
Head CT	13 months
Chest CT	5 years
Abdomen/ Pelvis CT	7 years

HOW MUCH RISK IS THERE FROM MEDICAL X-RAY RADIATION?

There is very little risk from medical x-ray radiation. The main concern is the possibility of future cancer from the x-rays.

The risk of cancer from an x-ray exam is a fraction of a percent per exam, and might be zero. This is very small compared to the overall risk of cancer, which is between 14 and 40 %.

ARE THERE ALTERNATIVES TO X-RAY EXAMS?

In some cases, yes. Ultrasound and Magnetic Resonance Imaging (MRI) do not use x-rays and do not increase cancer risk. However, ultrasound and MRI may not provide the diagnostic information needed. Health practitioners know the best exam to perform to maximize the health benefit to patients.

CAN CHILDREN HAVE X-RAY EXAMS?

Yes. The health practitioner who requests the x-ray exam determines if the health benefits of the exam outweigh any potential risks from radiation.

Health practitioners take extra precautions when performing x-ray exams on children to minimize radiation dose.

The amount of radiation used for children is specific to their age and size and is less than what is used for adult exams.

CAN PREGNANT WOMEN HAVE X-RAY EXAMS?

Yes. The requesting health practitioner, x-ray staff, and radiologists make every effort to identify pregnant patients. In most cases, the health benefits of having the x-ray exam far outweigh the potential risk to the unborn child. Health practitioners take extra precautions when imaging pregnant women and women of childbearing age. Federal guidelines recommend that all females aged 11 to 55 be asked if they may be pregnant.

Be sure to notify your health practitioner or medical radiation technologist if you may be pregnant.

DEVELOPED BY THE CANADIAN ORGANIZATION OF MEDICAL PHYSICISTS WWW.COMP-OCPM.CA WITH CONTRIBUTIONS FROM BC INTERIOR HEALTH.

COMP Canadian Organization of Medical Physicists

OCPM Organisation canadienne des physiciens médicaux

ADULT X-RAY AND CT EXAMS