



Know the Risks and Benefits

- **Talk to your physician.** Ask if a non-radiation imaging test might be as good. Ask if he or she has consulted a radiologist.
- **If the scan is medically necessary, don't hesitate to accept it.** Any risks are outweighed by potential benefits.

Tips for Patients

- **Be your own advocate.** Learn about the risks and benefits of diagnostic imaging.
- **Don't opt for an X-ray or scan "just in case."** You are taking the place in line of someone who really does need that test and you may be exposing yourself to radiation unnecessarily.

Tips for Parents

- **Stay on the safe side.** Children are 10 times more sensitive to radiation received from medical imaging scans than are adults.
- **Avoid multiple scans** and ask for alternative diagnostic studies (such as ultrasound or MRI).
- **Limit your child's exposure.** Ask that the lowest radiation dose necessary for imaging be used, based on the size of the child, and that exposure be limited to the indicated area.
- **Ask questions.** Be sure that the imaging facility is using reduced radiation techniques. You may not know unless you ask, and it is reasonable and within your rights to do so.

Did You Know?

As many as 30% of CT scans and other imaging procedures are inappropriate or contribute no useful information.



Whole-body CT scanning is promoted as a "preventative health measure" by some private clinics. The radiation exposure is significant – 500 to 1000 times higher than a routine chest X-ray. This increases the risk of developing radiation-induced cancer.

Solutions

The Canadian Association of Radiologists is working with doctors, patients and manufacturers to improve CT scan safety and decrease patient risk. We are developing strict protocols and best practices for scanning. As a result, scanner manufacturers have developed machines with lower dosage settings. Radiation technologists are being trained to ask patients about past scans. Healthcare authorities are developing shared record-keeping systems.



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Do you **need** that scan?



Canadian Association of Radiologists

There is a one in three chance that **you don't.**



What is a CT Scan?

CT scans, also known as CAT scans for computerized axial tomography, are used for diagnosis. The scan quickly produces detailed X-ray images of the body and displays them on a screen. CT is a vital tool of modern medicine; however scans themselves can increase your risk of developing cancer.

Too Much?

Medical tests are the biggest source of radiation exposure outside natural exposure. The use of CT in adults and children has increased about eight-fold since 1980 and is growing at 10% per year.

The radiation dose from a CT scan is 100 to 500 times more than from a conventional X-ray. If the scan is medically necessary, the benefit outweighs any future risk. However, this is not always the case.

Sometimes people come to an emergency room and are given a CT scan without a diagnosis by a physician or a conference with a radiologist. Sometimes the scan is done because patients insist on it. Often medical records are missing details of previous scans and X-rays.



Handle with Care

Increased use of CT scans for children and pregnant women is a special concern. Children are more sensitive to radiation because they are still growing. Even minor damage to their cells could eventually cause cancer. CT settings must be reduced to protect children and small adults from over-exposure.

In the last 10 years, radiation imaging of pregnant women has increased by more than 100%. Imaging exposes the developing baby to gene-altering X-rays. Even though the amount of radiation absorbed is small, this is cause for concern.

How Much Radiation?

Comparison of exposure for common diagnostic imaging procedures



Procedure	Dosage (millisieverts)	Equivalent chest X-rays	Days of background radiation
Magnetic resonance imaging (MRI)	0	0	0
Ultrasound	0	0	0
X-ray – limbs	less than 0.01 mSv	less than half	1.6 days
X-ray – chest (single film)	0.02	1	3.3 days
X-ray – lumbar spine	1	50	166 days
X-ray – barium swallow	1.5	75	249 days
CT scan – head	2	100	331 days
One year natural background	2.2 mSv	110	1 year
X-ray – barium enema	7.2	360	3.2 years
CT scan – chest	8	400	3.6 years
CT scan – abdomen or pelvis	10	500	4.5 years