



X-Rays for Children:

What Parents Should Know About Radiation Protection in Medical Imaging

What is an X-ray?

X-rays are invisible bundles of energy that pass through the body to create a picture of your child's bones and organs. These exams are not painful but require your child to keep still for a few seconds. Sometimes a piece of tape, sponge or bands of cloth will be used to help keep your child from moving. Sometimes, as parents or guardians, you may be invited into the room while the x-rays are being taken to help keep your child comfortable and quiet. Other children or family members will need to stay in the waiting room.

What is Digital Radiography?

Digital Radiography is a name for routine x-rays that use a computer to help make the picture. X-rays can also be taken using film. If a Digital Radiography film is taken, there are two types. Computed Radiography

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(CR) uses similar equipment as regular x-rays but instead of film it uses an imaging plate. The imaging plate will be placed under the part of the body your child needs examined. After the x-ray is taken, the plate is put into a “reader” so that the image can be processed or developed.

Direct Digital Radiography (DR) uses an imaging detector built into the machine so no plate is needed.

Your child’s study will be stored on a computer. The study is typically seen on a computer screen by a doctor. The study may be seen by your child’s doctor on their computer too. You can request a copy of the x-ray on a CD to take with you.

How much radiation is used in these exams?

We all are exposed to small amounts of radiation daily from the sun, soil, rocks, buildings, air and water. People living in the mountains or flying in planes are exposed to higher amounts of radiation than those living near sea level. This type of natural radiation is called background radiation. The radiation used in x-rays has been compared to the amount of background radiation a person gets in one year. This is shown to help you compare how much radiation your child is getting during their x-ray exam.

Radiation Source	Radiation Dose estimate	Estimates of Equivalent amount of background radiation
Natural Background Radiation	3 mSv	1 year
Airline Passenger (cross-country)	0.04 mSv	4 days
Chest X-ray (single)	0.01 mSv	1 day

How can we reduce radiation risk to my child?

The amount of radiation from an x-ray is very small. Still, it is important to keep the radiation amount as low as possible. Doctors balance the benefit of the test and potential small risks of x-ray tests. Your doctor and the radiologist (x-ray doctor) will work together to decide which test is best for your child. Different tests are done based on your child’s illness.

There are ways to make sure your child is exposed to the lowest amount of radiation possible during an x-ray test. The Image Gently campaign suggests the following:

- Take an x-ray when there is a clear medical benefit
- Use the lowest amount of radiation based on size of the child to get pictures that may show the doctor the problem
- X-ray only the area needed
- Shield patients when possible
- Repeat images only when necessary

Can you tell me about shielding?

Sometimes, shielding may be used to protect parts of your child’s body such as the testes, ovaries or thyroid gland. Other times, the shields will get in the way of a good picture and should not be used. You should feel comfortable asking the technologist taking the x-ray if a shield can be used.

If I still have concerns regarding radiation exposure to my child, whom should I talk to?

You should first talk to the doctor who requested your child to have the x-ray. Your doctor and the radiologist can work together to decide which exam is best to perform. If you still have questions, ask to speak to the radiologist. The information contained in this publication should not be used as a substitute for the medical care and advice of your pediatrician. There may be variations in treatment that your doctor may recommend based on individual facts and circumstances.

