

# Imaging and Medical Radiation Safety: Important Information for Parents

Pediatricians use different tests and tools to help them diagnose and treat injuries and illnesses. This handout was written by the American Academy of Pediatrics (AAP) to answer questions about imaging and medical radiation safety.

## Q: What is imaging?

**A:** Imaging tests are used to “see” inside the body. Some types of imaging use ionizing radiation. This includes x-rays, computed tomography (CT) scans, and nuclear medicine (radionuclide) studies. Higher-dose radiation can also be used in therapy, for treatment of cancer, or for treatment of an overactive thyroid gland. See “Types of Imaging” for more information on 3 types of imaging tests.

## Q: Why does my child need an imaging test?

**A:** Sometimes imaging tests are the only tests that can help diagnose certain illnesses. Your child’s doctor can then find out the best treatment options, avoid other tests or surgery, and improve your child’s health.

## Q: Isn’t radiation harmful?

**A:** The amount of radiation used in imaging tests is very low. In fact, no direct harm has been shown from the levels of radiation used in the imaging tests mentioned above.

We are all exposed to small amounts of radiation daily from soil, rocks, air, water, and cosmic radiation. Most people are exposed to more radiation from the environment than from many of these tests.

## Types of Imaging

The following are 3 types of imaging tests.

	X-rays	CT scans	Nuclear medicine studies
<b>Types of images taken</b>	2-dimensional pictures of the bones, lungs, and other organs.	3-dimensional pictures of the body.	Pictures of different organs and tissues that depend on how they work.
<b>When this test may be needed</b>	X-rays are usually used to see bones, organs (like the lungs), and air inside the body. Metal objects also can be seen.	CT scans are very useful because they show more detailed pictures of organs than an ordinary x-ray. They can be used to find tumors, infections, or evidence of injury in different parts of the body.	Organs including the kidneys, liver, heart, lungs, and brain can be studied with these exams. Bone scans can show trauma, infection, or a tumor before any problems are seen with x-rays.
<b>What to expect during the test</b> None of these tests are painful; however, it’s important that your child be still during the tests.	Your child will need to stay still. Lead shields may be used to cover the parts not being imaged. Parents can stay in the same room and should wear a lead apron. Pregnant moms should not be in the room.	Your child will need to lie still on a table while it moves through a large scanner that looks like a donut. Nothing touches the child, but your child may be afraid of the large machine. An intravenous contrast to show blood vessels and/or a drink may occasionally be given if ordered by your doctor. Parents can stay in the same room and should wear a lead apron. Pregnant moms should not be in the room.	Before the test an intravenous line is usually needed to inject a radioactive drug called a <i>tracer</i> . Your child will need to stay still.  A machine called a <i>gamma camera</i> scans the body detecting the rays of energy from the tracer, and an image is created and shown on a computer.
<b>Amount of radiation exposure</b>	Very small amounts of radiation exposure to the areas being studied.	More radiation exposure than x-rays.	The amount of radiation exposure depends on the type of study.

## Q: How safe is imaging?

**A:** Special steps are taken to make sure your child is exposed to the smallest amount of radiation possible during imaging. The AAP belongs to the Alliance for Radiation Safety in Pediatric Imaging, which follows the following medical radiation safety guidelines:

- Imaging is to be used only if there is a definite medical benefit.
- Use the lowest amount of radiation possible for the test based on the size of the child.
- Imaging only includes the parts of the body that need to be evaluated.
- Use other diagnostic studies, like ultrasound and magnetic resonance imaging (MRI), when possible.

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

**A:** First talk with the doctor who is ordering the exam. Medical professionals must balance the risks and benefits of performing a study. Your doctor and the radiologist can work together on decisions about which study is best to perform. If your doctor cannot answer your questions, radiologists can provide further information. Also listed at the end of this handout is a list of resources if you would like to find out more information.

## For More Information

### American College of Radiology

[www.acr.org](http://www.acr.org)

### Health Physics Society

<http://hps.org>

### Image Gently

[www.imagegently.org](http://www.imagegently.org)

### National Cancer Institute

[www.cancer.gov](http://www.cancer.gov)

### RadiologyInfo

[www.radiologyinfo.org](http://www.radiologyinfo.org)

## About Image Gently

Image Gently ([www.imagegently.org](http://www.imagegently.org)) is the educational and awareness campaign created by the Alliance for Radiation Safety in Pediatric Imaging that was formed in July 2007. It is a coalition of health care organizations dedicated to providing safe, high-quality pediatric imaging nationwide. The AAP and Society for Pediatric Radiology, as well as more than 37 other societies, are members of this coalition representing more than 500,000 health care professionals in radiology, pediatrics, medical physics, and radiation safety.

Listing of resources does not imply an endorsement by the American Academy of Pediatrics (AAP). The AAP is not responsible for the content of the resources mentioned in this publication. Web site addresses are as current as possible, but may change at any time.

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 pediatrician may recommend based on individual facts and circumstances.

From your doctor

American Academy  
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

The American Academy of Pediatrics is an organization of 60,000 primary care pediatricians, pediatric medical subspecialists, and pediatric surgical specialists dedicated to the health, safety, and well-being of infants, children, adolescents, and young adults.

American Academy of Pediatrics  
Web site—[www.aap.org](http://www.aap.org)

Copyright © 2009  
American Academy of Pediatrics  
All rights reserved.