



## X-ray (Radiography) - Abdomen

Abdominal x-ray uses a very small dose of ionizing radiation to produce pictures of the inside of the abdominal cavity. It is used to evaluate the stomach, liver, intestines and spleen and may be used to help diagnose unexplained pain, nausea or vomiting. When used to examine the kidneys, ureters and bladder, it's called a KUB x-ray. Because abdominal x-ray is fast and easy, it is particularly useful in emergency diagnosis and treatment.

This exam requires little to no special preparation. Tell your doctor and the technologist if there is a possibility you are pregnant, you have an intrauterine device (IUD), or you have recently had a barium sulfate contrast material x-ray or taken medicines such as Pepto Bismol. Leave jewelry at home and wear loose, comfortable clothing. You may be asked to wear a gown.



### What is abdominal x-ray?

An x-ray (radiograph) is a noninvasive medical test that helps physicians diagnose and treat medical conditions. Imaging with x-rays involves exposing a part of the body to a small dose of ionizing radiation to produce pictures of the inside of the body. X-rays are the oldest and most frequently used form of medical imaging.

Abdominal x-ray is a commonly performed diagnostic x-ray examination that produces images of the organs in the abdominal cavity including the stomach, liver, intestines and spleen.

When an abdominal x-ray is performed to provide pictures of the kidneys, ureters and bladder, it's called a KUB x-ray.

## What are some common uses of the procedure?

Abdominal x-ray is often the first imaging test used to evaluate and diagnose the source of acute pain in the abdominal region and/or lower back as well as unexplained nausea and vomiting.

Abdominal x-ray is also performed to help diagnose conditions such as:

- kidney and urinary bladder stones and gallstones
- intestinal blockages
- perforation of the stomach or intestine
- ingestion of foreign objects
- abdominal aortic aneurysm

Abdominal x-ray may also be used to help properly place catheters and tubes used for feeding or to decompress organs such as the gallbladder and kidneys.

## How should I prepare?

An abdominal x-ray requires no special preparation.

You will be asked to remove some of your clothes and to wear a gown during the exam. You may also be asked to remove jewelry, removable dental appliances, eye-glasses and any metal objects or clothing that might interfere with the x-ray images.

You should inform your physician if you have had a barium sulfate contrast material x-ray or if you have taken any medicines such as Pepto Bismol in the last few days, as they may interfere with the x-ray.

You may be asked to empty your bladder before the test.

Women should inform their physician and x-ray technologist, an individual specially trained to perform radiology examinations, if they have an intrauterine device (IUD) inserted for pregnancy prevention.

Women should always inform their physician and x-ray technologist if there is any possibility that they are pregnant. An abdominal x-ray is usually not performed on pregnant women so as not to expose the baby to radiation. The ovaries and uterus cannot be shielded during the abdominal x-ray because of their location. Abdominal ultrasound is a common, safe alternative for pregnant women. See the Safety page for more information about pregnancy and x-rays.

## What does the equipment look like?

The equipment typically used for an abdominal x-ray consists of a table on which the patient lies and a large x-ray machine suspended from the ceiling. There is a drawer under the table to hold the x-ray film or digital recording plate.

A portable x-ray machine is a compact apparatus that can be taken to the patient in a hospital bed or the

emergency room. The x-ray tube is connected to a flexible arm that is extended over the patient while an x-ray film holder or image recording plate is placed beneath the patient.

## How does the procedure work?

X-rays are a form of radiation like light or radio waves. X-rays pass through most objects, including the body. Once it is carefully aimed at the part of the body being examined, an x-ray machine produces a small burst of radiation that passes through the body, recording an image on photographic film or a special detector.

Different parts of the body absorb the x-rays in varying degrees. Dense bone absorbs much of the radiation while soft tissue, such as muscle, fat and organs, allow more of the x-rays to pass through them. As a result, bones appear white on the x-ray, soft tissue shows up in shades of gray and air appears black.

Until recently, x-ray images were maintained on large film sheets (much like a large photographic negative). Today, most images are digital files that are stored electronically. These stored images are easily accessible for diagnosis and disease management.

## How is the procedure performed?

The technologist will position you on the x-ray table. You may be asked to wear a lead shield to help protect certain parts of your body. The x-ray machine will be positioned over your abdominal area.

You must hold very still and may be asked to keep from breathing for a few seconds while the x-ray picture is taken to reduce the possibility of a blurred image. The technologist will walk behind a wall or into the next room to activate the x-ray machine.

The technologist may ask you to lie on your side or to stand up for additional images. The standing position will allow the radiologist to see if there are any blockages or perforations in your digestive tract.

When the examination is complete, you may be asked to wait until the radiologist determines that all the necessary images have been obtained.

The entire abdominal x-ray examination, from positioning to obtaining and verifying the images, is usually completed within 15 minutes, although the actual exposure to radiation is usually less than a second.

A guardian can usually accompany the child into the x-ray room. The guardian will be asked to wear a lead apron to protect certain parts of his or her body. A lead shield may also be used to protect their child's reproductive organs as much as possible from radiation exposure.

Children in the hospital who cannot be brought to the x-ray room can be x-rayed at their bedside with a portable device.

The x-ray technologist will position the child, and then walk behind a wall or into the next room to activate the x-ray machine. The child must remain still to reduce the possibility of blurring the image. Older children will be asked to hold their breath and stay still for a few seconds during the x-ray, while

infants may need to be gently restrained.

## What will I experience during and after the procedure?

An abdominal x-ray examination is painless.

You may experience discomfort from the cool temperature in the examination room or the hardness of the x-ray table. You may find that the positions you need to hold are uncomfortable or painful, especially if you have an injury.

The technologist will assist you in finding the most comfortable position possible to ensure diagnostic image quality.

## Who interprets the results and how do I get them?

A radiologist, a physician specifically trained to supervise and interpret radiology examinations, will analyze the images and send a signed report to your primary care or referring physician, who will discuss the results with you.

The results of an abdominal x-ray can be available almost immediately for review by your radiologist.

Follow-up examinations may be necessary. Your doctor will explain the exact reason why another exam is requested. Sometimes a follow-up exam is done because a potential abnormality needs further evaluation with additional views or a special imaging technique. A follow-up examination may also be necessary so that any change in a known abnormality can be monitored over time. Follow-up examinations are sometimes the best way to see if treatment is working or if a finding is stable or changed over time.

## What are the benefits vs. risks?

### Benefits

- Abdominal x-ray imaging is a painless, minimally invasive procedure with rare complications.
- Radiology examinations can often provide enough information to avoid more invasive procedures.
- X-ray equipment is relatively inexpensive and widely available in emergency rooms, physician offices, ambulatory care centers, nursing homes and other locations, making it convenient for both patients and physicians.
- Because x-ray imaging is fast and easy, it is particularly useful in emergency diagnosis and treatment.
- No radiation remains in a patient's body after an x-ray examination.
- X-rays usually have no side effects in the typical diagnostic range for this exam.

### Risks

- There is always a slight chance of cancer from excessive exposure to radiation. However, the benefit of an accurate diagnosis far outweighs the risk.
- The effective radiation dose for this procedure varies. See the Safety page for more information about radiation dose.
- Women should always inform their physician or x-ray technologist if there is any possibility that they are pregnant. See the Safety page for more information about pregnancy and x-rays.

## A Word About Minimizing Radiation Exposure

Special care is taken during x-ray examinations to use the lowest radiation dose possible while producing the best images for evaluation. National and international radiology protection organizations continually review and update the technique standards used by radiology professionals.

Modern x-ray systems have very controlled x-ray beams and dose control methods to minimize stray (scatter) radiation. This ensures that those parts of a patient's body not being imaged receive minimal radiation exposure.

## What are the limitations of an abdominal x-ray?

Abdominal x-ray is a useful first step in the imaging workup. However, the images are not as detailed as those of other approaches such as computed tomography (CT) of the abdomen and pelvis. Further imaging studies may be necessary to clarify the results of an abdominal x-ray or to look for abnormalities not visible on the abdominal x-ray.

Abdominal x-ray is not considered safe for pregnant women.

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