Disclaimer

This film is an educational resource only and should not be used to make a decision on management of X-Ray. All such decisions must be made in consultation with a physician or licensed healthcare provider.
# MULTIMEDIA HEALTH EDUCATION MANUAL

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Introduction</strong></td>
<td></td>
</tr>
<tr>
<td>a. What is an X-Ray?</td>
<td></td>
</tr>
<tr>
<td>b. What is Radiology?</td>
<td></td>
</tr>
<tr>
<td>c. X-Ray in Medical Treatments</td>
<td></td>
</tr>
<tr>
<td><strong>2. Purpose of X-Ray</strong></td>
<td></td>
</tr>
<tr>
<td>a. Diagnostic Uses</td>
<td></td>
</tr>
<tr>
<td>b. Transmission Imaging</td>
<td></td>
</tr>
<tr>
<td><strong>3. Procedure</strong></td>
<td></td>
</tr>
<tr>
<td>a. Preparation for X-Ray Test</td>
<td></td>
</tr>
<tr>
<td>b. What are the Risks of X-Ray?</td>
<td></td>
</tr>
</tbody>
</table>
What is an X-Ray?

X-rays are waves of electromagnetic energy. They behave in much the same way as light rays, but at much shorter wavelengths. When directed at a target, X-rays can often pass through the substance uninterrupted, especially when it is of low density.

Higher density targets (like the human body) will reflect or absorb the X-rays. They do this because there is less space between the atoms for the short waves to pass through.

(Refer fig. 1)

What is Radiology?

Radiology is the study of images of the human body. Imaging simply means creating an image of the inner configuration of a dense object, such as part of the human body, with the use of radiant energy. X-rays are one of the most common radiology procedures. X-rays produce a still picture of bones and organs.

(Refer fig. 2 & 3)
X-Ray in Medical Treatments

Chest X-Rays are used to identify lung diseases such as:

- Pneumonia
- Lung cancer
- Fluid collection in the lungs

(Refer fig. 4)

Abdominal X-Rays can be used for:

- Detection of obstruction of the intestine (Ileus)
- Presence of air in the abdominal organs through abnormal communications
- Fluid collection in the abdominal cavity (Ascites)

(Refer fig. 5)

Since Rontgen’s discovery that X-rays can identify bone structures, X-rays have been developed for their use in medical imaging. Radiology is a specialized field of medicine that employs radiography and other techniques for diagnostic imaging. X-rays are especially useful in the detection of pathology of the skeletal system, but are also useful for detecting some disease processes in soft tissue.

(Refer fig. 5 & 6)
Diagnostic Uses

Diagnostic imaging techniques help narrow the causes of an injury or illness and ensure that the diagnosis is accurate. These techniques include X-rays, computed tomography (CT) scans, and magnetic resonance imaging (MRI).

(Refer fig. 7)

These imaging tools let your doctor see inside your body to get a picture of your bones, organs, muscles, tendons, nerves, and cartilage. Your doctor uses these tools to determine if there are any abnormalities.

(Refer fig. 8)

X-rays (radiographs) are the most common and widely available diagnostic imaging technique. Even if you also need more sophisticated tests, you will probably get an X-ray first.

(Refer fig. 9)
Transmission Imaging

The X-ray or radiograph is produced by the transmission of energy. A beam of high-energy photons is passed through the body, some of which are attenuated or blocked when they strike subatomic particles.

(Refer fig. 10)

The higher the atomic weight of the substance through which the photons are passing, the “denser” it appears to photons, and the more likely they are to be blocked, or attenuated. In decreasing order of density, the principal densities visible in a radiograph are metal, bone, water (including soft tissues such as muscle), fat, and air.

(Refer fig. 11 & 12)
Preparation for X-Ray Test

The test is performed in a hospital radiology department or in the health care provider's office by an X-ray technician.

Two views are usually taken: one in which the X-rays pass through the chest from the back (posterior-anterior view), and one in which the X-rays pass through the chest from one side to the other (lateral view). You stand in front of the machine and must hold your breath when the X-ray is taken.

It is important to inform the health care provider if you are pregnant. Chest X-rays are generally avoided during the first six months of pregnancy. You must wear a hospital gown and remove all jewelry. There will be no discomfort during the X-Ray test; however, the film plate may feel cold.

A chest X-ray may be ordered when a person's symptoms include a persistent cough, coughing up blood, chest pain, a chest injury, or difficulty in breathing. The test is also used when tuberculosis, lung cancer, or other chest or lung disease is suspected.

(Refer fig. 13)

What are the Risks of X-Ray?

There is very little risk with having one X-ray test. However, with repeated tests there is a risk that the X-rays may damage some cells in the body, possibly leading to cancer in the future. The dose of X-ray radiation is always kept to the minimum needed to get a good picture of the particular body part being checked.

Also, radiographers who take the X-ray pictures always wear lead aprons or go behind a protective screen when the X-rays are fired to avoid repeated exposure to X-rays.

Pregnant women, if possible, should not have an X-ray test as there is a small risk that X-rays may cause an abnormality to the unborn child. This is why women are asked before having an X-ray if they are, or might be, pregnant.

(Refer fig. 14)
Although every effort is made to educate you on X-Ray and take control, there will be specific information that will not be discussed. Talk to your doctor or health care provider about any concerns you have about X-Ray.
Your Surgery Date

Read Your Book and Material

View Your Video / CD / DVD / Website

Pre-Habilitation

Arrange for Blood

Medical Check Up

Advance Medical Directive

Pre-Admission Testing

Family Support Review

Physician’s Name: ____________________  Patient’s Name: ____________________

Physician’s Signature: ____________________  Patient’s Signature: ____________________

Date: ______________  Date: ______________