Digital radiography

X-rays are a form of invisible electromagnetic radiation (energy) that can penetrate human tissues. Doctors use x-rays to see inside your child's body by creating a picture (radiograph). Depending on how dense the tissue is, more or less of the x-rays energy will be absorbed. This difference creates the contrast seen on a radiograph. Bones for example are dense structures and will always be shown as white areas, while soft tissues are depicted as a gray tones.

In order to get a good picture, your child needs to stay still for few seconds.

Traditionally, x-rays were exposed onto photographic film, which needed complex processing before the image could be seen. Digital radiography was developed in mid-1980's and uses electronic detectors instead of film, similar to a digital camera. The image acquired can be seen immediately on the screen and stored on a computer.

There are two types of digital radiography equipment. Computed radiography (CR) uses an image plate instead of the photographic film, while direct digital radiography (DR) converts the x-rays directly into electrical signals without a film or plate.

The amount of radiation received by your child while getting an x-ray is very small. If we compare it to the amount of background radiation that we all receive daily from our surroundings, a chest radiograph like the one in Fig 1 is equivalent to approximately 1 day of background radiation. It is important however to keep the radiation dose that your child receives from a radiologic exam at minimum. Please see: http://www.imagegently.org/Portals/6/Procedures/Im_Gently_XRAY_2pg_English.pdf

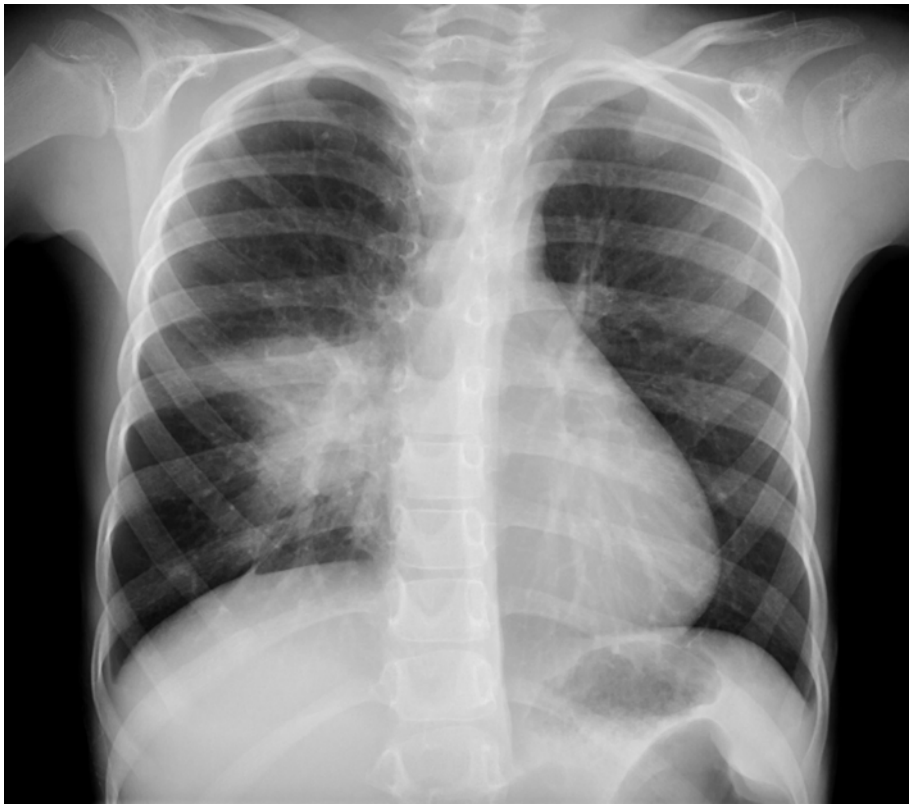

Fig.1 Chest radiograph in a child with a right middle lobe pneumonia.

Digital fluoroscopy

Fluoroscopy is an imaging method that uses x-rays in real time to create a movie of your child's body internal organs in motion. Given that soft tissues are difficult to differentiate on x-ray images, contrast like a barium solution or iodinated contrast is typically ingested or introduced through a catheter to allow visualization of the internal organs. The gastrointestinal and genitourinary tracts can be well visualized with fluoroscopy.

Similar to radiography, fluoroscopy evolved from the traditional fluoroscopic systems, using an image-intensifier video camera, to digital fluoroscopy based on a digital imaging chain.

The amount of radiation received by your child during a fluoroscopy exam depends on the type/length of the exam and the child's size and weight. If we compare it to the amount of background radiation that we all receive daily from our surroundings, an Upper GI exam which evaluates the gastrointestinal tract (Fig.2) is equivalent to approximately 1 year of background radiation.

It is important to keep the radiation dose that your child receives from a radiologic exam at minimum. Please see: http://www.imagegently.org/Roles-What-can-I-do/Parent/Fluoroscopy.

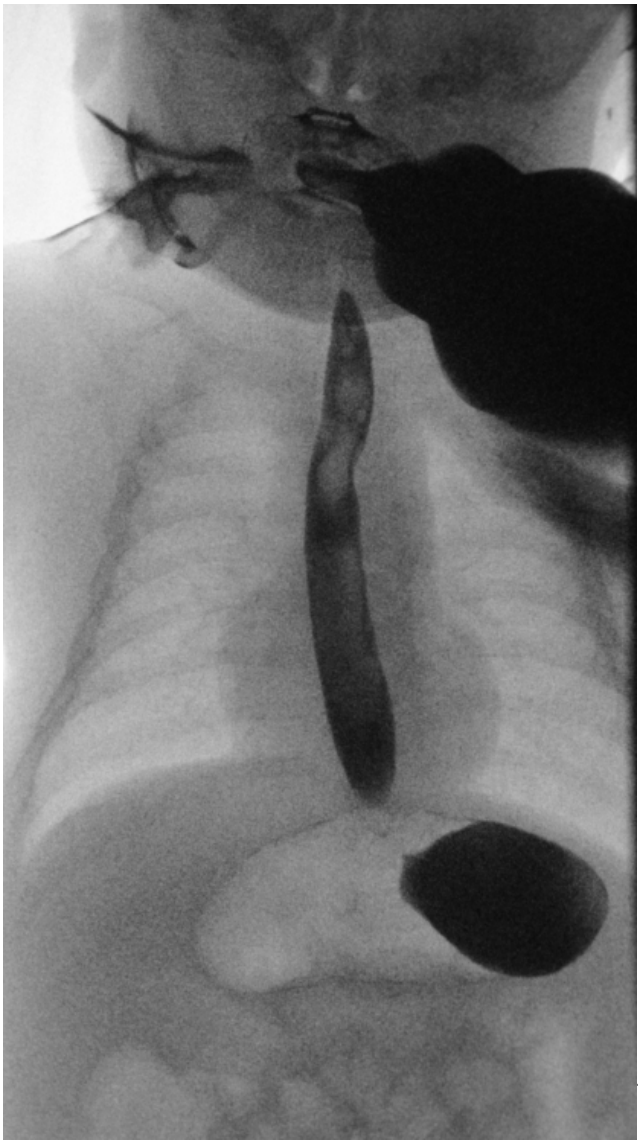

Fig.2. Upper GI exam in an infant showing contrast in the esophagus and stomach, as well as in baby's bottle.