



Current Status: Active

PolicyStat ID: 7173247



Origination: 11/2019
Effective: 11/2019
Last Approved: 11/2019
Last Revised: 11/2019
Next Review: 11/2020
Owner: Sylvia Bartlett: Mgr RN Asc KC
Policy Area: KASC
References:
Applicability: WA - Kadlec Regional Medical Center

KASC Radiological Safety in the Practice Setting

Purpose:

Ionizing radiation can damage living tissues and may produce long-term effects. Because of the adverse and cumulative effect to tissues of ionizing radiation exposure, patients and personnel are protected from scatter and nonessential direct exposure to this type of radiation. It is recognized that radiation safety in the operating room is a responsibility shared by the department of radiology and the perioperative staff.

Policy:

The overall goal of a radiation safety program should be to keep the risks from ionizing radiation as low as reasonably achievable. Time, distance and shielding should be employed to keep radiation exposure within safe levels.

Procedure:

1. The patient is protected from unnecessary exposure to x-rays.
 - i. X-rays to the abdomen and pelvis of pregnant women should be avoided, especially during the first trimester.
Exposure of the fetus to radiation during the first trimester may result in abnormalities to rapidly dividing embryonic cells.
2. A leaded shield is used to protect the fetus when other areas of a pregnant woman's body are x-rayed.
 - a. The fetus is highly sensitive to ionizing radiation, and scatter x-rays may expose the fetus to low-level radiation. Radiation to the abdomen and pelvis in women who are pregnant may result in childhood cancers
1. Leaded shields are used, when possible, to protect male gonads during x-ray studies of hips and upper legs. Protective shielding is placed between the patient and the source of the radiation above and below, when possible.
Radiation may cause mutation of cells, which could be passed on to future generations. Visualization for some studies may make shielding impossible.
2. Leaded shields are used, when possible, to protect the thyroid during x-ray studies of the upper extremities, trunk and head.
Lymphatic and thyroid tissues appear to be more sensitive to radiation exposure.
3. All reasonable means of reconciling an incorrect count should be implemented before using a radiologic exam to locate an unaccounted for sponge, needle or instrument.

Any exposure to radiation, no matter how small, has some small but finite risk. Therefore, radiation exposure should be kept as low as reasonably achievable.

4. All personnel are protected from unnecessary exposure to x-ray in the practice setting.
 - i. No scrubbed personnel who can safely leave the O.R. during single x-ray film exposure, should do so.
Distance from the x-ray and concrete or plaster substances decrease exposure dosage.
5. During single x-ray film exposure, leaded shielding is provided to scrubbed personnel and others who cannot leave the room.
For those who cannot leave the room, leaded screens and aprons and eyewear, minimize the exposure to scattered radiation.
6. Personnel, even when protected by aprons or a leaded shields, should position themselves behind or to the side of the x-ray beam when possible.
Leaded aprons do not totally absorb all ionizing rays, therefore, one must never assume a position within the projection of the primary x-ray beam on the side of the patient where the beam exits the body.
7. Personnel wearing aprons should always face the x-ray unit unless the apron wraps around the body.
To afford protection, the leaded apron must be between the source of radiation and the body.
8. During fluoroscopy, personnel should wear leaded aprons
The potential for exposure to radiation is greater during fluoroscopy than direct x-ray due to increased scatter and exposure time. Doubling the distance from the source of emitting radiation reduces the intensity of the radiation by a factor of four.
9. For optimum protection during fluoroscopy, personnel within two meters of the unit should wear a thyroid shield
Fluoroscopy produces more scatter radiation than roentgenography. The greatest risk of radiation exposure to personnel within a two meter range is in the areas of the head, neck and hands.
10. During lateral/oblique x-rays, including fluoroscopy, anesthesia personnel and all members of the sterile team should wear leaded aprons and thyroid shields. Leaded glasses may also be used.
Levels of scattered radiation can increase up to four times when the x-ray beam is directed at an oblique angle. This results in greater exposure to the head and neck areas of team members.
11. Leaded sterile gloves area are advised when hands are in direct exposure to fluoroscopy.
Radiation-attenuation surgical gloves will block only 33% to 35% safety attenuation.
12. Radiation monitoring devices should be worn by personnel who are in frequent proximity to radiation.
 - i. When single monitoring devices are used, they should be worn on the same area of the body by all personnel.
The device is the principal mechanism for monitoring radiation exposure of personnel on a day-to-day basis and therefore, must be used consistently by all employees.
13. When two monitoring devices are used, one should be worn at the neckline (on thyroid collar) outside the leaded apron; the other should be worn inside (on waist of pants) the leaded apron.
The monitor worn under the apron measures whole body and gonad exposure, the one at the neckline measures head and neck exposure. This practice is advised if the staff are pregnant.
14. Leaded protective devices should be handled carefully and examined periodically to prevent damage that could diminish their effectiveness.
 - i. Aprons should be laid flat or hung by the shoulders when not in use.

Leaded aprons/shields are very susceptible to cracking which can occur when folded. Cracks significantly reduce the apron's effectiveness.

15. Physical integrity of the apron should be evaluated prior to use. Leaded protective devices should be tested for effectiveness at regular intervals by the radiology department.
A radiographic test performed every six months or whenever damage is suspected will ascertain integrity. Visual inspection is not always adequate to detect cracks.
16. Measures taken to protect the patient from direct and scatter radiation should be documented.
 - i. Documentation should include the type of protection and the area(s) protected.

Documentation of nursing actions that promote patient safety is a reflection of the professional care a patient receives in the operating room.

Attachments

No Attachments

Approval Signatures

Approver	Date
Sylvia Bartlett: Mgr RN Asc KC	11/2019

Applicability

WA - Kadlec Regional Medical Center