Best practice guidance on radiation protection and the use of radiation protective equipment
Acknowledgements

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Best practice guidance on radiation protection and the use of radiation protective equipment

Introduction

It is imperative that all nursing staff working in areas where ionising radiation is a risk are protected against excessive exposure. With this in mind, the RCN Imaging Nurses Forum committee has produced these guidelines to provide direction on current best practice relating to radiation protection and the use of radiation protective equipment.

The working environment

It is essential that nursing staff consult both their employer and a Radiation Protection Adviser (RPA) on all aspects of radiation safety. Regarding safe exposure limits, UK legislation regulates on the annual safe levels of radiation exposure for staff. These are documented in The Ionising Radiation Regulations (Statutory Instrument, 1999).

Staff radiation exposure levels should be monitored using dosimeters. Worn at waist level and beneath protective equipment, dosimeter records are reviewed by a Radiation Protection Supervisor (RPS) who may suggest the use of additional monitors, such as thyroid or eye level. In the event of an identified excessive dosage, the member of staff will be notified and their working practice and environment investigated.

Assigned to each working area, the RPS can provide advice on radiation protection matters relating to that individual location. This will include the statutorily required Local Rules (Statutory Instrument, 1999) for radiation safety, and will incorporate guidance relating to the specific equipment employed in that area of work.

✦ A risk assessment should be undertaken to identify the risks for nurses in each area and the actions taken to reduce these.
✦ All staff operating in the imaging department, and involved in the exposure of patients to radiation, must be aware of the Local Rules and how to apply them.
**Protective equipment**

Appropriate protective equipment must be available for the nurse to use during normal duties:

- lead aprons reduce the exposure of breast tissues; the wrap-around version should be fitted with a lumbar support belt to reduce strain on back and shoulders. A well-chosen lead apron can reduce the effective dose by 75 to 90 per cent. Available from 0.25 to 0.5mm lead equivalent, the RPS will advise on the actual weight required

- thyroid shields provide protection for both the thyroid and the oesophagus. Fully adjustable, these shields are only required when staff are standing within one metre of the patient

- the RPS will be able to advise if operators require radiation protective glasses and can initiate recording eye exposure, using thermoluminescent detectors.

**Pregnant staff**

An early indication of pregnancy is necessary to reduce the risk of exposure to the fetus. A full risk assessment should be undertaken; exposure levels for the unborn child should be no more than 1mSv for the remainder of the pregnancy.

A pregnant nurse should ensure that, wherever practical, she is isolated from the x-ray tube by remaining behind the protective screen. Nurses operating outside the screen in an x-ray room should wear a lead protective coat that comfortably covers the abdomen; a dosimeter may also be worn to assess exposure levels. Pregnant nurses caring for patients who have received radioisotopes for diagnostic imaging should avoid prolonged close contact with the patient. Nurses working in specialist fields, such as nuclear medicine, may have to cease undertaking certain tasks and the RPA consulted as a matter of priority.

**References and further reading**


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