Acknowledgements

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Introduction

All nursing staff working in areas where ionising radiation is used for the purpose of diagnosis and treatment should be protected against excessive exposure.

This publication, developed by the RCN Imaging Nurses Forum, provides guidance for imaging nurses on current best practice relating to radiation protection in the imaging environment.

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.

UK legislation exists which regulates the annual safe levels of radiation exposure for staff; these limits are documented in the Ionising radiation regulations (IRR99). The regulations also require employers put local rules in place to cover any controlled area; these local rules should be based on an IRR99 risk assessment of the area and the ionising radiation activities that take place there.

Staff radiation exposure levels should be monitored using dosimeters, which should be 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; for example, thyroid, extremity or eye level. In the event of an identified excessive dosage, the member of staff in question will be notified and their everyday working practice and environment will be 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 for radiation safety, which 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 in order 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 these. Staff should sign documentation confirming that they have read and understood the local rules.
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. Alternatively, a two-piece lead personal protective suit may be worn. 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, which are fully adjustable, provide protection for both the thyroid and the oesophagus.

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

Pregnant staff

An early indication of pregnancy is necessary to reduce the risk of exposure to the foetus. Risk assessment should be undertaken in advance, as an employee of child-bearing age may become pregnant.

As soon as pregnancy is confirmed it is the responsibility of the nurse to declare her pregnancy, in writing, to her manager/employer. Once notified, the employer must ensure that a risk assessment has been undertaken. Exposure levels for the unborn child should be no more than 1 mSv for the remainder of the pregnancy.

The 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 and a dosimeter must be worn to assess exposure levels. Although there is no legal obligation, if requested by the nurse some departments may be able to alter the nurse’s duties to ensure that there is no, or a reduced, time spent in the X-ray environment.

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


