SESLHD PROCEDURE COVER SHEET

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KEY TERMS	Radiation safety; ionising radiation; x-rays; radiology; medical imaging; PPE; lead aprons; protective clothing
SUMMARY	Procedure to limit the risk to health of staff and members of the public arising from exposure to radiation from diagnostic or interventional radiology at SESLHD facilities.

Protection of Staff and the General Public in Departments Performing Diagnostic or Interventional Radiology

SESLHDPR/538

1. POLICY STATEMENT

South Eastern Sydney Local Health District (SESLHD) is committed, through a risk management approach, to protecting employees, contractors, students, volunteers, patients, members of the public and the environment from unnecessary exposure to radiation arising from systems and processes which use radiation apparatus and radioactive substances, whilst maintaining optimum diagnostic and therapeutic quality, therapeutic efficacy and patient care.

This document provides procedures necessary to ensure compliance in relation to the protection of staff and the general public in departments performing diagnostic or interventional radiology. It applies to all departments using diagnostic x-rays, such as the Cardiac Catheter Laboratory and Endoscopy, as well as the Department of Medical Imaging.

2. BACKGROUND

Staff involved in diagnostic or interventional radiology procedures could receive radiation exposure principally from scattered radiation from the patient being examined. In normal circumstances no one, other than the patient, should be exposed to the primary x-ray beam, but such exposure could occur unintentionally.

Members of the public (for example, the mother of a paediatric patient) may need to be in the imaging room while a diagnostic or interventional radiology procedure is taking place and could also receive a radiation exposure.

Staff or members of the public in adjoining areas will be adequately protected as long as the required radiation shielding has been installed as required in SESLHNPR/536.

3. RESPONSIBILITIES

3.1 The Radiation Medical Practitioner (Radiologist or Medical Specialist)

- is responsible for the clinical management of the patient undergoing a diagnostic or interventional radiology procedure. This includes the decision to proceed with a radiology procedure based on the specialist's knowledge of the potential risks and benefits of the procedure, taking into account the clinical information, and the sensitivity and specificity of the procedure.

3.2 The Referrer

- of the patient for a diagnostic or interventional procedure needs to be satisfied that the procedure is justified being aware that the patient will receive a radiation exposure. The referral must state the clinical question that the diagnostic procedure is intended to answer. The referral should also alert the radiation medical practitioner when the referrer is aware that a female patient is pregnant or is breast-feeding.

3.3 The Radiographer

- is responsible for performing diagnostic radiology procedures as prescribed by the radiation medical practitioner in accordance with the centre's written standard protocols. This will include:
  - o correctly identifying the patient, the procedure and the site to be examined
  - o following established imaging protocols to ensure optimal data acquisition and analysis
  - o performing quality assurance procedures for instrumentation and image quality.

3.4 The Radiology Medical Physicist

- is required to be available for consultation on optimisation of medical exposures, including clinical dosimetry and quality assurance, and to give advice on matters relating to radiation protection.
- works closely with the radiologists and radiographers in the optimisation of clinical studies – through image acquisition, analysis and display optimisation and ongoing oversight of the quality control of equipment.
- is required to provide Human Research Ethics Committees with a radiation dose estimation and risk assessment for any research studies that involve the research participants receiving an exposure from ionizing radiation, in accordance with the requirements of RPS8 (ARPANSA 2005).

3.5 The Radiation Safety Officer

- will oversee and provide advice on radiation safety within departments performing diagnostic or interventional radiology.

4. PROCEDURE

4.1 Procedures to minimise radiation exposure

The radiation dose to the operator or a member of the public can be minimised by prudent positioning relative to the X-ray tube, patient and/or structural shielding. Where there is no structural shield and the operator has to remain in the room during general radiography, such as with mobile radiography, the operator should stand:

- at least two metres away from the X-ray tube; and
- outside the primary beam.

In these circumstances the operator should, wear protective aprons.

Where a person is required to be present in a controlled area during an X-ray exposure, such as in a fluoroscopy suite, that person should not remain any closer to the patient or the X-ray tube than is necessary. The operator should ensure that any person who is required to remain in the room during the radiation exposure wears protective clothing or stands behind protective shields.

The design of all radiology suites should include a protected area in which the operator's console is located. The operator's console should be the only area within the radiology suite that radiography and remote controlled fluoroscopy systems (usually over-table X-ray tube systems) are operable.

4.2 Personal protective equipment

Aprons, thyroid shields and other personal protective devices should meet the requirements of the EPA Policy on x-ray protective clothing. Although aprons should be of at least 0.3 mm lead equivalence (at 100 kVp), in practice, their thickness should be selected with due consideration given to the type of workload being undertaken. Individuals continually involved in interventional radiology should wear aprons of 0.5 mm lead equivalence (at 100 kVp). Preferred designs are those comprising a separate vest and skirt that wrap around fully, as open back designs are not recommended.

Operators and other staff should use thyroid shields in all cardiology and interventional radiology suites. Relevant staff should be provided with protective gloves for use during all radiological procedures in which the hands and forearms may be in the primary beam.

All personal protective clothing should be clearly labelled with its lead equivalence and a unique identification number as specified by AS/NZS 4543.3.2000 and examined under fluoroscopy at least annually to confirm its shielding integrity. If damage to an apron is seen or suspected, it must be reported to the Radiology Services Manager and/or the Radiation Safety Officer immediately and the apron removed from service until its shielding integrity can be checked.

4.3 Patient Immobilisation

In some cases, it may be necessary for a person to restrain an uncooperative patient (e.g. a child or incapacitated patient) during an exposure. Where such a situation arises, the operator should use restraining devices as a first preference. If this is not possible, someone not occupationally exposed to radiation, such as a carer, should restrain the patient.

4.4 Protection of Relatives and Carers

Any relatives of the patient should be discouraged from entering the room during an examination unless they are required to assist with the examination. If they insist they must be asked to stand at least 2m away from the patient and must wear a protective apron.

Any person aiding an examination (e.g. restraining the patient) shall use a protective apron and avoid facing the direct primary beam. If their hands are near the primary beam, they should be provided with protective gloves.

When children are to be examined, parent participation should be encouraged and adequate protection provided to the parents along with clear instructions as to the parent's role.

5. DOCUMENTATION

Protocols for performing diagnostic radiology procedures.

6. AUDIT

The following documents should be available for audit:

- Annual lead apron testing records showing the identification number, usual location, date of purchase, lead equivalence, style, testing dates and test results.
- Records of staff radiation exposure.

7. REFERENCES

[1] SESLHDPR/536 Shielding and Facility Design

[2] PD2017_032 NSW Health Policy Directive: Clinical Procedure Safety

[3] ARPANSA RPS 14.1 The Safety Guide for Radiation Protection in Diagnostic and Interventional Radiology, ARPANSA 2008

[4] EPA Policy on x-ray protective clothing 2014

[5] ARPANSA RPS-8 Code of Practice for the Exposure of Humans to Ionizing Radiation for Research Purposes (2005).

8. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
May 2010	Draft	Richard Smart, Area Radiation Safety Officer in conjunction with the Area Radiation Safety Committee
February 2011	0	Approved by Combined Clinical Council
October 2012	1	Broken link to SESLHNPD/53 fixed
January 2016	2	Periodic review
October 2016	2	Updates endorsed by Executive Services
March 2020	3	Updates endorsed by Executive Services