SESLHD PROCEDURE COVER SHEET

NAME OF DOCUMENT	Radiation Safety in Ward Areas
TYPE OF DOCUMENT	Procedure
DOCUMENT NUMBER	SESLHDPR/539
DATE OF PUBLICATION	March 2020
RISK RATING	Medium
LEVEL OF EVIDENCE	Legislative Requirements National Standard 1
REVIEW DATE	March 2023
FORMER REFERENCE(S)	SESLHNPD/58 Radiation Safety – Radiation Safety in Ward Areas
EXECUTIVE SPONSOR or EXECUTIVE CLINICAL SPONSOR	Caroline Skipper Director People and Culture
AUTHOR	Brent Rogers, SESLHD Radiation Safety Officer Erin McKay, RSL SESLHD Southern Sector
POSITION RESPONSIBLE FOR THE DOCUMENT	District Radiation Safety Officer SESLHD-RadiationSafetyOfficer@health.nsw.gov.au
KEY TERMS	Radiation safety; ionising radiation; x-rays; radiology; medical imaging; PPE; lead aprons; protective clothing; brachytherapy
SUMMARY	Procedure to limit the risk to health of staff and members of the public arising from exposure to radiation from mobile diagnostic x-ray examinations or from nuclear medicine or brachytherapy patients on hospital wards.

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 all areas of a hospital where mobile diagnostic x-ray examinations are taken or where nuclear medicine or brachytherapy patients are accommodated.

2. BACKGROUND

Radiation exposure to staff can occur as a result of the following

- Staff involved in mobile radiology procedures could receive a radiation exposure 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.
- Staff caring for patients who are receiving therapy using radioactive materials could be exposed to gamma radiation from the patient being treated, or, in the case of radionuclide therapy administered by the Nuclear Medicine Department, the staff could become contaminated by the radioactive substance.
- 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 SESLHDPR/536.

3. RESPONSIBILITIES

3.1 The Radiation Medical Practitioner (Radiologist, Nuclear Medicine Physician or Radiation Oncologist)

- is responsible for the clinical management of the patient undergoing a diagnostic or therapeutic procedure. This includes providing advice to the patient on the procedure that is to be performed and advising the clinical team responsible for the patient of any precautions required by the procedure.

3.2 The Radiographer

- is responsible for performing the mobile 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, procedure matching against the referral and obtaining valid consent, and correctly identifying the site to be examined
  - o performing imaging protocols to ensure optimal data acquisition and analysis
  - o performing quality assurance procedures for instrumentation and image quality

- ensuring that no staff member or member of the public receives an unnecessary radiation exposure.

3.3 The Radiation Oncology Medical Physicist (ROMP)

- is responsible for the correct packing of radioactive sources into a brachytherapy plaque for the treatment of choroidal melanoma in accordance with the prescription by a Radiation Medical Practitioner.
- is responsible for the plaque's sterilization, transport, delivery and retrieval to and from theatre at the Sydney Eye Hospital and Prince of Wales Hospital. In the event of an emergency requiring removal of the implanted radioactive plaque, the on-call ROMP must be contacted for advice regarding any immediate radiation safety or treatment delivery effects.

3.4 The Radiation Safety Officer

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

3.5 The Nursing Unit Manager

- must ensure that all ward staff are aware of, and comply with, these procedures.

3.6 Ward Staff

- must follow this procedure
- wear any radiation monitors issued to them.

4. PROCEDURE

4.1 Procedures to minimise radiation exposure during mobile x-ray examinations

- Staff should not be near a patient who is to undergo an x-ray examination unless that person is directly involved in the procedure itself.
- The staff member should be a minimum distance of 2m from the patient to ensure that the levels of scattered radiation are negligible. In a multi-bed ward, if a nurse is the other side of the next bed he/she should be sufficiently far away from the patient and does not need the additional protection of a lead apron.
- If a staff member is required to assist with the x-ray procedure that person must wear a lead apron of at least 0.3 mm lead equivalence.
- Staff must never place part of their body in the x-ray beam.
- Personal radiation monitors are not needed by ward staff because the levels of radiation that they could be exposed to are so low.

4.1.1 Personal protective equipment

Lead aprons should be of at least 0.3 mm lead equivalence (at 150 kVp). 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 Chief Radiographer and/or the Radiation Safety

Officer immediately and the apron removed from service until its shielding integrity can be checked.

4.1.2 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 radiographer 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.

4.2 Nuclear Medicine Diagnostic Procedures

Many inpatients receive low doses of radioactive materials for diagnostic imaging investigations (nuclear medicine studies), and these patients may be accommodated anywhere within the hospital. The external radiation hazard from such patients is small. The amount of radioactivity within the patient decreases rapidly with time according to the half-life of the radionuclide. In addition, the radionuclide is, in most cases, rapidly excreted from the body, mainly in the urine, so that the radioactivity in the patient is often not detectable after one to two days. It is therefore not necessary for ward staff to be issued with personal radiation monitors.

The patients are generally not a hazard to themselves, staff, visitors or other patients. If, in a particular situation, special handling or treatment of the patients is required, then advice will be given to ward staff by the Department of Nuclear Medicine. An example of this is when the patient is a breastfeeding mother.

4.2.1 Handling of body fluids from Nuclear Medicine Patients

For approximately 24 hours after the start of a nuclear medicine procedure excreta (principally urine) from these patients may be slightly radioactive. To keep contamination to a minimum, the following precautions should be taken during this time:

- Always wear rubber or plastic gloves when handling excreta. The excreta may be disposed of in the normal manner and the bed pan returned to normal service after cleansing in the usual way. The gloves should then be discarded and the hands washed thoroughly.
- If the patient should vomit or urinate etc, any soiled linen could be contaminated, so staff should:
  - wear gloves, place the linen in a clear plastic bag
  - seal the bag
  - record the time and date of contamination on the outside of the bag
  - place the bag in the pan room
  - contact the Radiation Safety Officer or Nuclear Medicine staff.

4.2.2 Breastfeeding Patients

When the patient is a breastfeeding mother, small quantities of the administered radionuclide may be present in the milk for a day or so, and it is preferable not to pass this on to the baby. In such cases, before the patient has the procedure, advise the Department

of Nuclear Medicine, who will in turn advise how long the mother should avoid feeding (expressing instead). This is will depend on the type of study being performed. Some procedures will not require any cessation of breastfeeding while for others the period is typically six to 24 hours. A breastfeeding mother may also be a source of external exposure to the child due to close contact during feeding. For this reason, bottle feeding may need to be performed by another person during the exclusion period. The close contact exclusion period may differ from the breastfeeding exclusion period. As above, the nuclear medicine department can advise these patients.

4.2.3 Patients on Renal Dialysis

Some patients on dialysis will need nuclear medicine investigations, especially bone scans. In such cases, the dialysate, particularly from peritoneal dialysis, may be contaminated, and must therefore be handled only while wearing gloves. For more information, contact the Radiation Safety Officer or a Nuclear Medicine Physician.

4.3 Nuclear Medicine Therapy Procedures

In certain diseases it is necessary to treat the patient with radioactive materials. Some treatments will always be performed in hospital, because of specific after-treatment care or because of the amount of radioactivity which is used. Other treatments are usually performed while the patient is an out-patient, for example the treatment of thyrotoxicosis with Iodine-131 or the treatment of bone metastases with Strontium-89. Occasionally, due to other medical problems, the treatment may be performed while the patient is in hospital. Generally these patients are not required to be housed in specially shielded rooms. The Radiation Safety Officer or a Nuclear Medicine Physician will give specific advice to the appropriate Nursing Unit Manager with regard to the nursing procedures for these patients. The following is general information relating to radionuclide therapy.

4.3.1 Radiation Hazards

Radiation hazards from these treatments can be considered as two separate problems - firstly the patient, having been administered a radioactive substance, is temporarily an emitter of radiation and should be treated as such. Secondly, the patient is a potential source of contamination with radioactive material. Radiation safety will therefore be considered under the following headings:

<u>External Radiation</u>

The amount of radioactive material given to the patient will vary widely. However, it is good practice to apply the same precautions to all patients to avoid confusion. Since the hazard is confined to the radiation field around the patient, radiation safety can be summarised in two words: “TIME” and “DISTANCE”. When staff are required to enter the patient's room for nursing care, it is obvious that the less time spent in a room, the less the exposure to radiation. This is not meant to imply that the patient is dangerously radioactive - on the contrary. Staff should not, however, remain in the room unnecessarily. As the radiation intensity falls off rapidly with increasing distance from the source, the time spent by nursing staff in the room in close proximity to the patient should be kept to a minimum. It is allowable to spend longer periods in the room at a distance from the patient of at least one metre.

Shielding is usually not feasible as a protective measure, since the radiation energy is too high and the amounts required would be unwieldy. Certainly, lead vinyl aprons used for diagnostic x-rays provide virtually no protection and should not be used.

The Radiation Safety Officer or Nuclear Medicine staff will monitor both the radiation emitted from the patient and radiation levels around the patient's room during treatment, and, where necessary, issue personal radiation monitors to nursing staff. These must be worn at all times whilst on duty. Electronic Personal Dosimeters (EPDs) may be provided in special circumstances.

Radioactive Contamination

For thyroid carcinoma patients being treated with radioiodine Iodine-131, only a relatively small proportion of the administered dose is taken up by thyroid tissue, the rest being excreted, predominantly via urine. It should be emphasised that the faeces are not significantly radioactive. In addition, some radioactivity is excreted by perspiration and saliva. For this reason, patients should be considered as a potential source of radiation contamination, especially during the first 48 hours following administration of the radioisotope.

If nursing staff come into contact with the patient, bed linen, etc, while in the room, they must wear a pathology gown and disposable gloves. The same gown may be used by all staff and must remain in the room at all times. Discarded gloves are to be placed in the yellow contaminated waste bag. Further, the patient's meals must be served on disposable plates and utensils should also be disposable. Plates and all utensils should be placed in a plastic bag after use which should be kept in the room until cleared by Nuclear Medicine staff. It may then be disposed of normally.

If the patient should vomit, or urinate in the bed, it must be assumed, until proven otherwise, that the contamination is radioactive. The RSO or his Deputy or, if not available, a Nuclear Medicine Physician, may be called to assess the situation and supervise the cleaning up procedures.

If nursing staff are required to help they should be gowned and gloved, as before. All soiled materials, gloves, and in this case the gown, should be placed in a separate yellow contaminated waste bag, sealed and labelled with a radioactive waste label and kept in the room until checked by the RSO, who should be notified at the earliest opportunity.

Out of hours the Radiation Safety Officer can be contacted via the hospital switchboard. In this case, provide the patient with help but leave the spill untouched if possible. Otherwise nursing staff, gowned and gloved, should clean up as much of the spill as possible using the following procedure:

- cover any spills on the floor with incontinence pads, absorbent side down, to absorb the fluid. Place the wet pads in a plastic bag and put aside in a corner of the bathroom
- place any soiled linen in a plastic bag and put aside in a corner of the bathroom for monitoring by the RSO
- Vomitus may be disposed of in the special toilet.

4.3.2 Treatment with Iodine-131

These procedures are applicable for all radionuclide therapies involving radioactive Iodine-131. This includes the treatment of thyroid cancer using sodium Iodine-131 iodide, neuroendocrine tumours using Iodine-131-MIBG, liver tumours using Iodine-131-Lipiodol and non-Hodgkin's lymphoma using Iodine-131-Rituximab (Bexxar).

Warning Signs

Radiation warning signs will be provided for the door and the patient's notes. These signs are to remain in place for the duration of the treatment. A yellow wristband marked with the radiation symbol is to be worn by the patient. The signs and the wristband are the responsibility of the Nuclear Medicine Department. The door to the patient's room should be closed at all times to ensure that the radiation sign is visible.

Linen

It may not be necessary to change the patient's linen during treatment. All linen used should be kept in the patient's room until checked by Nuclear Medicine staff on discharge of the patient. Once checked and cleared, it may be treated as any other linen.

Visitors

Access to the patient by visitors is restricted, dependent on the amount of radioactive material in the patient. In particular, no pregnant women, or children under 16, may enter the patient's room. Any individual visitor may stay a maximum of half an hour per day. These times should be strictly observed. The visitor should remain at the largest possible distance from the patient, at least two metres way. Whenever possible, the patient will be seated on the far side of the bed, with the visitor sitting just inside the door. Instruction sheets for visitors are available from the NUM in several languages for non-English speaking visitors.

Emergency Surgery or Death

Patients requiring emergency surgery during treatment, or dying during treatment, pose a risk to staff who may not know of the radioactive content of the patient. In the case of death, the death procedures in the appropriate network Clinical Business Rules must be consulted. Information on radiation safety procedures for Death of a Patient Being Treated with Radioactive Materials is available in SESLHDPR/533. In the case of emergency surgery, the medical staff concerned are to be made aware of the patient's treatment, and the Radiation Safety Officer notified as soon as possible.

Discharge of Patients

The patient will be allowed to leave hospital only when the level of radioactivity in the body has decreased to a safe level (for I-131 thyroid cancer patients, this is usually at an external dose rate from the patient of less than 25 µSv/h at 1 metre). The RSO/Nuclear Medicine staff will notify the nursing staff at that time, and record this in the patient's medical record. The room and waste/linen containers will also be checked at this time, and the room clearance signed if appropriate.

The bed linen and garbage must not be removed by the ward staff, or the room cleaned, until the RSO/Nuclear Medicine staff has certified that it is safe to do so.

Items that are above the acceptable limit will be taken to the Nuclear Medicine Department for appropriate storage.

The patient will be issued with separate instructions regarding any potential radiation hazards and precautions to take once they return home.

Emergency Situations

During working hours (Monday to Friday, 8:30am to 5:00pm), a physicist in the Department of Nuclear Medicine should be called. Outside normal working hours, request the switchboard to contact the Radiation Safety Officer or his Deputy. The switchboard also has a list of the phone numbers of the Nuclear Medicine Physicians. All incidents should be reported to the Radiation Safety Officer no later than the next working day.

Self-discharge of Radioactive Patients

When a patient who is hospitalised for radionuclide therapy indicates a desire to leave the hospital, reasonable efforts should be made to prevent the patient from leaving the hospital until the following are accomplished:

- Contact the patient's treating physician who will determine whether the patient has the capacity to give informed consent. Capacity to consent means the ability to understand the condition being treated and the risks they could cause to other persons. Psychiatric or other consultation should be requested as necessary to aid in the determination; however, the determination of the capacity to consent remains the decision of the responsible physician.

  Note: if the patient is a minor this determination shall be made of the individual who is responsible, e.g, parent or guardian, for the patient.
- Clarify the reasons for the patient's desire to leave. If possible, provide corrective action.
- Provide the patient or, in the case of a minor, the responsible individual, an explanation of the risks involved. This may include explanations by the patient’s physician, the Nuclear Medicine physician, and/or the Radiation Safety Officer.
- If appropriate, the patient’s family should be contacted to assist in clarifying the patient’s wishes and providing alternatives to discharge.
- If everything fails and the patient continues to indicate he/she will discharge himself/herself before authorised by the Radiation Safety Officer the following action should be taken:
  - If not currently present, contact the Radiation Safety Officer and the Nuclear Medicine physician immediately. Advise them of the situation. If at all possible, get the patient to remain until the RSO arrives.
  - Attempt to determine radiation levels at one metre before the patient leaves. The radiation level measurements should be taken as close as possible to the time of self-discharge. Contacting the RSO early in the process so he is present at time of self-discharge will help to ensure radiation level measurements are taken as needed.
  - Record the action taken, and the date and time of discharge into the patient's hospital record.

- Ensure that the patient completes and signs the Certificate of Removal from Hospital against Medical Advice which is on the back of the Admission Sheet.
- Provide a copy of the portion of the hospital record with self-discharge information to the RSO and the Nuclear Medicine physician.
- The RSO shall prepare a Radiation Safety incident report for Radiation Safety records. A copy of the report shall be provided to the Network General Manager.

4.3.3 Treatment with Strontium-89 (Metastron)

Patients with multiple skeletal metastases may receive an injection of Strontium-89, commercially known as Metastron, which has been proven to give relief from bone pain. This procedure is usually performed while the patient is an out-patient, however there are occasions when the treatment may be given while the patient is in hospital.

Strontium-89 is a beta emitting radioisotope so there is no significant external radiation hazard and the patient does not need to be confined to a single room. It is not necessary to limit staff access to these patients or to restrict visitors.

However, the patient's urine will be radioactive for the first two to three days after the administration and is a potential source of contamination. Strontium-89 is not normally given to a patient who is incontinent, but if a patient was incontinent, the nursing staff should:

- WEARING DISPOSABLE GLOVES, cover any spills on the floor with incontinence pads, absorbent side down.
- shower or wash the patient, soaping the affected skin thoroughly. Take care to use lukewarm water and to not break the skin.
- place soiled linen in a plastic bag and put it aside in a corner of the bedroom for monitoring by the RSO
- contact the Nuclear Medicine Department or the RSO for monitoring and decontamination if required.

Staff must always wear disposable gloves when cleaning a pan, urinal or anything else which may have become contaminated with urine.

4.3.4 Treatment with Yttrium-90 for Rheumatoid or Osteo-Arthritis

Patients with Rheumatoid or Osteo-arthritis may require treatment by radiation synovectomy. This requires the administration of a colloidal material containing Yttrium-90 directly into the synovial space. Yttrium-90 is a beta emitter so that the synovial membrane receives a high radiation exposure, however, little external radiation is produced so that it is not necessary to isolate the patient. The Yttrium-90 is administered in the Nuclear Medicine Department. If the knee joint is being treated, the leg will be bandaged into a back splint to immobilise the leg for three days. This minimises any leakage of the radioactivity from the joint. There are no restrictions for this patient when he/she returns to the ward.

4.3.5 Treatment with Yttrium-90-SIR-Spheres or Yttrium-90-Zevalin

SIR-Spheres is a therapeutic radioactive implant, comprised of beta-emitting Yttrium-90-microspheres. The average penetration of the beta particles in tissue is 2.4mm. Following

implant via a hepatic artery catheter, SIR-Spheres become embolised in the microvasculature of liver cancer where they have a local radiotherapeutic effect.

Zevalin is Yttrium-90-Rituximab and is used to treat non-Hodgkin's lymphoma.

As Yttrium-90 does not emit any gamma radiation the radiation levels external to the patient following the administration of SIR-Spheres is minimal and less than that from many common diagnostic nuclear medicine procedures. No specific radiation safety precautions need to be followed by staff on the patient's ward.

4.4 Prostate seed brachytherapy

Prostate seed brachytherapy is the permanent implantation of Iodine-125 or Palladium-103 titanium-encapsulated seeds within the prostate. The majority of these seeds are delivered as a Rapid Strand which is a linked form of seeds, and which makes embolisation or seed loss less likely in comparison to earlier prostate brachytherapy implants. However, there are usually some loose seeds which are inserted into the prostate at the time of implantation. Although the seeds are radioactive the x-rays that are emitted are poorly penetrating and easily blocked by lead. In fact, most of the radiation is absorbed in the first few millimetres of tissue surrounding each seed. Once the seeds are located within the patient the radiation levels near the patient is negligible unless a person is positioned directly in front of the patient over the anterior surface of the pelvis. The dose rate at the side of the patient is approximately eight times lower than over the anterior surface of the pelvis.

The radiation levels will decrease rapidly with increasing distance away from the patient. The dose rate at 1m from the anterior skin surface is approximately 16 times lower than directly at the anterior skin surface. At a distance of 1m, the dose rate is approximately double the natural background radiation levels in Sydney. A member of staff would need to stay at 1m from the patient for more than 1400 hours in order to reach the annual radiation limit for a member of the public.

During the first few weeks after implantation seeds may occasionally be passed during urination. This may also occur immediately post implant although is unlikely as fluoroscopy is used to detect seeds within the prostate and cystoscopy will also be performed. Evidence suggests that seed loss may occur well beyond the immediate postoperative period.

All urine from patients must be strained and assessed to check for any seeds. If seeds are present tweezers must be used to immediately remove the seed from the strainer into a lead pot. The urine, or other bodily fluids, will not be radioactive. There will be no radiation emitted from body fluids unless there is a seed present.

The patient does not need to be necessarily confined to any specific area as long as he is able to strain the urine and check for any seeds.

Not all patients will necessarily be admitted as inpatients. The procedure is an Outpatient based procedure with discharges at the end of the day. However, some patients may require admission to hospital if they unable to urinate by the end of the day. If a patient is to be admitted to hospital a single room will be preferable although not essential. A radiation warning sign will be put at the end of the bed or at the door of the room. This radiation warning sign serves as an indication to staff that all urine must be checked for seeds. It is also necessary to check both the room and linen for any seeds. If a seed is found Radiation

Oncology or the RSO should be contacted immediately and, using tweezers, the seed placed into a lead pot.

Pregnant visitors and young children are permitted to visit; however, they must spend their visiting time at a short distance away from the patient (at least 1 metre) initially after implantation. There is no problem with a short brief contact e.g. Greeting etc. The patient will be given an information sheet to call the appropriate doctor in case of any problems.

4.5 Eye plaque brachytherapy

Brachytherapy using an eye plaque is performed using either Iodine-125 radioactive seeds which are packed into the plaque in a sterile environment in a planned arrangement or a Ruthernium-106 plaque which consists of the radioactive source that is self-contained within a plaque and requires routine sterilization only before implantation. Both types of plaques are prepared in a dedicated laboratory in Radiation Oncology at Prince of Wales Hospital and are transferred to Sydney Eye Hospital on the day of implantation via hospital car by the ROMP to be directly received by the scrub nurse in theatre.

For an Iodine-125 plaque implant, a lead eye shield will be provided to cover the implant once the procedure is completed. For a Ruthenium-106 plaque, the shield is not necessary and should not be used. After implantation and fixation of the plaque (and possibly lead shield), the ROMP will survey the patient to advise nursing staff which side of the patient provides the lowest radiation level for staff to stand on while providing care in the ward. A yellow wrist band with the radiation warning sign and the words “Caution Radiation” is also placed on the patient.

Implantation of the plaque is temporary and treatment will occur while the patient stays on the ward for three to five days at which time it is then removed in theatre. The wrist band should also be removed at this time. It is important to ensure the prescribed treatment time is adhered to (i.e. scheduled implant and removal times) otherwise the incorrect prescription will be given.

When possible, the patient should be placed in a single occupancy room and a radiation warning sign placed at the entrance to the room. When this is not possible, an additional radiation warning sign at the end of the bed is acceptable. An emergency container must be located within the ward room although it is highly likely that removal will occur in theatre. In the event of an emergency, the on-call ROMP must be contacted for advice regarding any immediate radiation safety or treatment delivery effects.

Although the radiation levels are extremely low, the general rule is to minimise exposure whenever possible. It is not recommended that pregnant visitors or pregnant staff visit the patient in the ward if possible. It is advised that all visitors remain a distance of at least one metre whenever possible although short periods at shorter distances (e.g. for greeting) are permitted. Nursing staff will be required to provide patient care and will need to work at closer distances as a result. The time spent in close proximity to the patient should be minimised.

5. DOCUMENTATION

- Radionuclide Therapy Record Sheet, completed for all radionuclide therapy procedures.
- Radionuclide Therapy Discharge Form, completed following each therapy with I-131, indicating that the patient's radiation levels are sufficiently low for release, and that the treatment room is free from radioactive contamination.

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.

7. REFERENCES

[1] PD2017_032 - Clinical Procedure Safety

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

[3] The Safety Guide for Radiation Protection in Nuclear Medicine (RPS14.2) ARPANSA 2008

[4] The Safety Guide for Radiation Protection in Radiotherapy (RPS14.3) ARPANSA 2008

[5] EPA Policy on x-ray protective clothing

8. REVISION AND APPROVAL HISTORY

Date	Revision No.	Author and Approval
June 2010	draft	Richard Smart, Area Radiation Safety Officer in conjunction with the Area Radiation Safety Committee
November 2010	Revised draft	Richard Smart, revised in accordance with received comments
February 2011	0	Approved by Combined Clinical Council
January 2016	1	Periodic Review
October 2016	1	Updates endorsed by Executive Sponsor
March 2020	2	Updates endorsed by Executive Sponsor