Radiation Safety Policy for the Medical Use of Ionising Radiation

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Endorsing Body:	**Area Radiation Safety Committee**
Governance or Assurance Committee	**Healthcare Quality Assurance Improvement Committee**
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NHS Lanarkshire

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Consultation Process / Stakeholders:	• Medical Director • Radiation Protection Advisers • Medical Physics Experts • Radioactive Waste Advisers • Chairman, Area Radiation Safety Committee • Radiology IRMER Lead, University Hospital Monklands • Diagnostics Service Manager • Deputy Diagnostics Service Manager • Deputy Radiology Service Managers • Lead Radiologist, University Hospital Wishaw • Lead Radiologist, University Hospital Hairmyres • Clinical Director – Public Dental Service
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CHANGE RECORD			
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1. INTRODUCTION

The medical use of ionising radiation is covered by a series of statutory instruments that implement the Basic Safety Standards Directive 2013/59/Euratom in Great Britain that address the control of associated risks to workers, members of the public, patients and the environment. NHS Lanarkshire recognises its obligation under the Management of Health and Safety Regulations 1999 to assess the workplace risk to employees, patients & their families, contractors and the public. The Board's 'Health and Safety Policy Statement" requires that the risk associated with the use of ionising radiation is managed in accordance with the provisions of a Radiation Safety Policy authorised by the Chief Executive of NHS Lanarkshire Board (the 'Board').

The Employer's legal duties in all cases fall to the Chief Executive of the Board. However, management responsibilities for implementing the employer's duties can properly be delegated to designated staff, under provisions authorised by the legal employer.

The Beatson Satellite Radiotherapy Centre at Monklands Hospital is managed by NHS Greater Glasgow and Clyde. The responsibility for ensuring that the operation of this facility is in accordance with the relevant legislation belongs to NHS Greater Glasgow and Clyde.

The Executive Medical Director is responsible to the Chief Executive for providing the Radiation Safety Policy document.

The Medical Director shall report to the NHS Lanarkshire Healthcare Quality Assurance Improvement Committee annually on the implementation of the provisions of this Radiation Safety Policy and shall notify the Chief Executive forthwith in the event of any significant breaches of its provisions.

The responsibilities and remit of the Radiation Safety Committee are described in section 5. The Chairman of the Radiation Safety Committee (RSC) shall ensure that the Radiation Safety Policy is reviewed at intervals not exceeding two years.

2. AIM, PURPOSE AND OUTCOMES

The aim of this policy is to describe the radiation safety policy for the medical use of ionising radiation within NHS Lanarkshire. This policy sets up a framework to restrict any risks from exposure to ionising radiation as far as reasonably practicable while being consistent with a favourable outcome.

Any medical exposures to ionising radiation will be carried out only where justified and with the level of exposure restricted so far as is reasonably practicable for achievement of clinical purpose.

In accordance with the provisions of all relevant legislation the use of ionising radiation in NHS Lanarkshire Board shall be managed in such a way as to ensure, as far as reasonably practicable, the health and safety of its employees, of contractors and staff of other organisations working on its premises and of members of the public who may be exposed to the associated hazards.

3. SCOPE

3.1 Who is the Policy intended to Benefit or Affect?

This policy will benefit patients being treated by NHS Lanarkshire and will affect NHS Lanarkshire staff, patients & their families, contractors, members of the public and staff from other organisations working on NHS Lanarkshire premises.

NHS Lanarkshire takes care to ensure your personal information is only accessible to authorised people. Our staff have a legal and contractual duty to keep personal health information secure, and confidential. In order to find out more about current data protection legislation and how we process your information, please visit the Data Protection Notice on our website at www.nhslanarkshire.scot.nhs.uk or ask a member of staff for a copy of our Data Protection Notice.

3.2 Who are the Stakeholders

The stakeholders are the patients being treated by NHS Lanarkshire; employees of NHS Lanarkshire; members of Health Physics Greater Glasgow and Clyde Health Board; NHS Lanarkshire Radiation Safety Committee; NHS Lanarkshire Healthcare Quality Assurance Improvement Committee; NHS Lanarkshire Health Board through the Medical Director.

4. PRINCIPAL CONTENT

Policy authorised by Chief Executive, NHS Lanarkshire and Medical Director (IRMER Lead) NHS Lanarkshire.

A Specific Provisions for Ionising Radiation Safety

A.1 Safety of employees, contractors working on Board premises, and members of the public – Compliance with the Ionising Radiations Regulations 2017 (IRR17).

Provisions for the safety of members of staff and the public because of exposures to ionising radiation shall be in accordance with IRR17. The Board will ensure that it holds sufficient Registrations and Consents issued under IRR17 for all relevant installations.

The Medical Director shall be responsible to the Chief Executive for implementation of the duties of the 'Radiation Employer' as defined in IRR17 and appoint, in writing, one or more suitably qualified and certificated Radiation Protection Advisers (RPAs). The RPA's responsibilities are described in Section 5 and this shall constitute the Radiation Employer's written definition of the scope of advice which the RPA is required to give as per IRR17.

The Medical Director shall appoint, in writing, a sufficient number of Radiation Protection Supervisors (RPSs), taking advice from the RPA. The RPS's responsibilities are described in Section 5.

The Chairman of the RSC, Heads of Clinical Service, Head of Nuclear Medicine Physics, and local managers shall consult the RPA on all matters identified in IRR17 and in Section 5 of this Policy. This includes the use of x-rays, design of facilities, controls for pregnant staff members, and radiation dosimetry requirements for Board staff and contractors.

Each Clinical Director / Head of Service shall ensure after consulting the RPA that a proper set of Local Rules are in place, a local inventory is kept of each item of equipment that delivers ionising radiation within their area of responsibility and that an appropriate quality assurance programme is in place.

A.2 Keeping, use, moving and disposal of radioactive substances – Compliance with the Environmental Authorisations (Scotland) Regulations 2018 (EASR18)

All sealed or unsealed sources of ionising radiation or radioactive waste shall be held, moved, used and disposed of in accordance with the provisions of EASR 18 and other relevant legislation (e.g. Carriage of Dangerous Goods (Amendment) Regulations 2019).

The board will ensure that it holds sufficient Permits, Registrations and Notifications issued under EASR18

The Medical Director shall appoint in writing Radioactive Waste Advisers (RWAs) with appropriate experience to advise on handling of radioactive materials and disposal of radioactive waste. The responsibilities of the RWA are described in Section 5.

The Board will appoint a Dangerous Goods Safety Adviser with appropriate qualifications to advise on transport of Class7 radioactive materials, radioactive waste and emergency arrangements.

A.3 Safety of Patients – Compliance with the Ionising Radiation (Medical Exposure) Regulations 2017 (IRMER17)

Provisions for the safety of patients and carers & comforters undergoing all medical exposures shall be in accordance with IRMER17. In particular, radiation doses to patients shall be kept as low as reasonably practicable to achieve the required clinical outcome.

The Board will ensure it holds sufficient Site and Practitioner Licences issued under IRMER17 for any premises that use radioactive substances for diagnosis or therapy.

The Medical Director (IRMER Lead) shall be responsible to the Chief Executive for implementation of the duties of the 'Employer' as defined in IRMER17. These duties are:

(i) Ensuring that appropriate written procedures, including those defined as "Employer Procedures" (EP) under IRMER 17, are in place.

(ii) Ensuring that any written procedures are complied with by the referrer, practitioner and operator.

(iii) Ensuring that every practitioner or operator is appropriately trained and undergoes continuing education.

(iv) Ensuring that written standard operating protocols are in place for every type of standard radiological practice including practices involving non-medical imaging.

(v) Establishing recommendations concerning referral guidelines, including radiation doses, and ensuring that these are available to the referrer.

(vi) Establishing quality assurance programmes for written protocols and written procedures.

(vii) Regularly reviewing diagnostic and make available to operators diagnostic reference levels for medical exposures.

(viii) Establishing dose constraints for research programmes where no direct medical benefit for the individual is expected from the exposure.

(ix) Establishing dose constraints with regard to the protection of carers and comforters.

(x) Ensuring appropriate reviews are undertaken whenever diagnostic reference levels are consistently exceeded and ensuring that corrective action is taken where appropriate.

(xi) Taking measures to raise awareness of the effects of ionising radiation amongst individuals capable of childbearing or breastfeeding.

(xii) Ensuring that clinical audit is carried out as appropriate.

(xiii) Ensuring that the referrer, practitioner and the individual exposed are informed of the occurrence of a clinically significant unintended or accidental exposure and of the outcome of the analysis of this exposure.

(xiv) Establishing a system for recording analyses of events involving or potentially involving accidental or unintended exposures.

(xv) Investigating any over exposure and notifying the relevant enforcing authority within the appropriate time period of the outcome of the investigation and any corrective measures adopted.

(xvi) Collecting dose estimates from medical exposures for radiodiagnostic and interventional procedures.

(xvii) Ensuring that a suitable medical physics expert (MPE) is appointed and involved in relation to every type of exposure to which the IRMER17 apply.

(xviii) Implementing and maintaining a quality assurance programme in respect of radiological equipment permitting at minimum the assessment of dose of ionising radiation exposure to patients or any administered activity.

(xix) Drawing up an inventory of radiology equipment.

(xx) Keeping an up-to-date record of all relevant training undertaken by all practitioners and operators.

Employer's written procedures and protocols

Employer's written procedures for medical exposures in NHS Lanarkshire Board shall include a 'Document Control' procedure (Employer's Procedure 'EP19') authorised by the Medical Director, that defines the structures for the production, authorization and quality control of all employer's written procedures and protocols. The structure shall be:

- 'Level 1' employer's procedures, authorised by the Medical Director that shall apply for all medical exposures.
- 'Level 2' employer's procedures and protocols, authorised by the relevant Clinical Directors that shall apply for all medical exposures within the specific service area, specialty or modality.
- 'Level 3' employer's documents that shall include Protocols, Work Instructions, Training Documents and any other employer's documents suitable for inclusion in this quality control structure. These may be authorised by any operator entitled by the relevant Clinical Director / Lead / Head of Service.

Referral Criteria.

Recommendations concerning referral criteria shall be made available to entitled referrers via the NHS Lanarkshire Board Intranet. The Medical Director is responsible for ensuring that these recommendations are properly maintained. Each Clinical Director / Head of Service is responsible to the Medical Director for compiling and maintaining referral criteria for their own Service, if not covered by the Royal College of Radiologists "Making the best use of clinical radiology services" or the Faculty of Dental Practitioners "Selection criteria for dental radiography", and for posting these on the Intranet site. Referral criteria shall be in keeping with extant RCR and FGDP recommendations and with the provisions of employer's Level 1 procedure 'EP 4'.

Diagnostic Reference Levels.

The Medical Director is responsible for ensuring that "diagnostic reference levels" (DRLs) are in place. These DRLs shall be established, maintained and reviewed in accordance with employer's Level 1 procedure 'EP 11'. These DRLs should where possible be based on local data and also take account of national and European reference levels, where available, and shall be established and used in accordance with published guidelines.

In accordance with employer's Level 1 procedure 'EP12', the Clinical Directors / Heads of Service are responsible for establishing and maintaining a system for monitoring of exposure levels for comparison with the Board's authorised DRLs. Where it appears that an applicable DRL has been consistently exceeded, the relevant Clinical Director shall undertake a review and shall ensure that corrective action, including retraining, is taken where appropriate.

Investigation and reporting of Incidents.

Incidents involving unintended exposure; overexposure or clinically significant exposure of patients shall be investigated and reported in accordance with employer's Level 1 procedure 'EP 15'. Reference should be made to the Guidance for employers and duty-holders regarding Significant Accidental and Unintended Exposures under IR(ME)R published by the Health Improvement Scotland in April 2023.

Dose constraints for biomedical and medical research programmes

Dose constraints for biomedical and medical research programmes shall be established in accordance with employer's Level 1 procedure 'EP 16'.

Inventory of equipment

In accordance with employer's Level 1 procedure 'EP 20', each Clinical Director / Head of Service is responsible to the Medical Director for maintaining an equipment inventory for their service.

Training and entitlement of duty holders

IRMER17 requires that the processes of referral, justification, exposure, and clinical evaluation involved in medical exposures shall only be carried out by duty holders properly entitled by the employer. The duty holders are, 'Referrers', 'Practitioners' and 'Operators' (including Medical Physics Experts) and their respective duties are as described in employer's Level 1 procedure 'EP 2'.

Procedure 'EP 2' also identifies the training that is required by employees before they can

be considered for entitlement as a duty holder by the employer. Clinical Directors / Heads of Service are responsible for ensuring that a system is in place for keeping training records for practitioners and operators.

The Medical Director acts as IRMER Lead and is responsible to the Chief Executive for entitlement of Referrers. This shall include consideration of scope of entitlement, in that not all entitled referrers shall be entitled to refer for all types of medical exposures. Medical and Dental Referrers shall be entitled by generic group, rather than as individuals, and no lists of the names of referrers shall be kept. Entitlement of other registered healthcare professionals as referrers for medical exposures will be by identification of individuals. The Radiation Safety Committee will retain a record of these registered healthcare professionals. Entitlement shall be in accordance with employer's Level 1 procedure 'EP 1'

The Medical Director is also responsible to the Chief Executive for ensuring that proper provisions are in place for entitlement of Practitioners and Operators, but has authorised each of the Clinical Directors / Heads of Service to entitle these duty holders for activities falling within their areas of responsibility. Each Clinical Director / Head of Service is authorized by the Medical Director to authorize, in turn, relevant managers within their Service to assess and record those competences for which each member of their staff is properly trained and qualified, and to request entitlement for a scope of entitlement that comprises the total of these competences. Detailed provisions for entitlement of Practitioners and Operators, including definition of scope of entitlement, are described in employer's Level 1 procedure 'EP 2'

The provisions of employer's procedure 'EP 2' allow for the identification of competences for which operators are in training. Operators may participate in competences for which they are 'in training' provided that they do so under the direct supervision of an operator who is entitled by the relevant Clinical Director / Head of Service as being 'competent to supervise' for that competence.

A.4 Accountability

The Medical Director and Chairman of the Radiation Safety Committee shall take steps to ensure that the responsibilities (as described in Section 5) of the Clinical Directors, Heads of Service, Radiation Protection Adviser(s) and MPEs that arise from the Radiation Safety Policy are being properly implemented. Senior IRMER members of staff, local managers, RPAs, RWAs and MPEs shall make and submit during RSC meetings reports on implementation of their respective responsibilities. This shall include details of the extant status of (i) all necessary certification and authorizations regarding the keeping, use and disposal of radioactive materials, (ii) all necessary local rules, and employer's written procedures and protocols, (iii) resource and staffing concerns relevant to compliance with the Radiation Safety Policy, and (iv) entitlement of duty holders and availability of supporting training records.

Clinical Directors/ Heads of Service shall ensure that each Duty Holder is entitled with a written Scope of Entitlement which is supported by appropriate training and training

records; and shall oversee that training. This includes responsibility for advising the Medical Director through the Radiation Safety Committee on appropriate training requirements for Duty Holders and for reviewing such requirements regularly (with regard to review of employer's procedure 'EP 2') to ensure that they are consistent with extant national guidance

5. ROLES AND RESPONSIBILITIES

The contributing authors will be responsible for regular monitoring of this policy through the NHS Lanarkshire Radiation Safety Committee. The responsible Lead Executive Director is the Chief Executive.

A. Responsibilities and Remit of NHS Lanarkshire (NHSL) Area Radiation Safety Committee and its chairman

The Area Radiation Safety Committee will comprise:

- Radiology IRMER Lead
- Lead Radiologist from University Hospital Monklands
- Lead Radiologist from University Hospital Hairmyres
- Lead Radiologist from University Hospital Wishaw
- Lead Consultants from other departments
- Diagnostic Service Manager
- Deputy Diagnostic Service Manager
- Clinical Director for Public Dental Service
- Representative of UV Phototherapy Clinics
- Representative of Laser Protection Supervisors
- Head of Nuclear Medicine (Chair & Secretary)
- Deputy Radiology Service Managers
- Radiation Protection Advisers
- Medical Physics Experts
- Radioactive Waste Advisers

The Chairman of the Area Radiation Safety Committee shall:

- Be responsible to the Medical Director for implementation of agreed provisions relevant to the employer's legal duties under legislation relevant to the use of ionising and non-ionising radiation throughout NHS Lanarkshire Board as stated in this Policy.

- Provide a Radiation Safety Policy document to the Medical Director for their review and

acceptance of responsibility for its content.

- Appoint the members of the Area Radiation Safety Committee and ensure that the Committee meets at least annually.
- Ensure that Local Radiation Protection Safety Subcommittees meet at least annually.
- Approve the minutes of each Area Radiation Safety Committee meeting ahead of presentation to the Medical Director.
- Arrange review of the NHS Lanarkshire Radiation Safety Policy once every two years, or earlier if required, and record completion of this review in writing.
- Report to the Board's Medical Director on issues concerning the implementation of the provisions of the Radiation Safety Policy, and directly to the Chief Executive when necessary.
- Advise the Medical Director on radiation safety training requirements for IRMER duty holders.
- Review any new Regulations, Approved Codes of Practice, Guidance etc. relevant to the use of ionising and non-ionising radiation, and recommend a structured process for implementation.
- Identify and monitor all current activities and co-ordinate all developments related to the use of ionising and non-ionising radiation and the storage and disposal of radioactive substances.
- Monitor radiation related activities for compliance with extant legislation, guidelines, Local Rules and national quality standards.
- Monitor that employer's policies and procedures and any certificates or permits held by the Board are reviewed in accordance with written procedures.
- Monitor and report incidents and contact the Medical Director as necessary.
- Receive reports from the Radiation Protection Adviser, Radiation Protection Supervisors, Medical Physics Experts and Laser Protection Advisers.

The Area Radiation Safety Subcommittees may, from time to time, established Short Life Working Groups to review any parts of this Radiation Safety Policy.

B. Responsibilities of NHS Lanarkshire Medical Director

The Medical Director shall:

- Be responsible to the Chief Executive for implementation of agreed provisions relevant to the employer's legal duties under legislation relevant to the use of ionising and non-ionising radiation throughout NHS Lanarkshire Board as stated in this Policy. More specifically the Medical Director shall be responsible to the Chief Executive for implementation of the duties of the 'Employer' under the Ionising Radiations Regulations 2017, Ionising Radiation (Medical Exposure) Regulations 2017, and Environmental Authorisations (Scotland) Regulations 2018.

- Provide a Radiation Safety Policy document to the Chief Executive for their authorisation and shall co-sign the document to indicate acceptance of responsibility for its content and for overseeing implementation of its provisions.

- Report to NHS Lanarkshire Healthcare Quality Assurance and Improvement Committee annually on the implementation of the provisions of this Radiation Safety Policy.

- Approve written provisions for investigation and notification of radiation incidents in accordance IRR 17 or IRMER 17, and shall make if necessary the reports to the appropriate authority.

- Be responsible to the Chief Executive for entitlement of Referrers.

- Authorise in writing Clinical Directors / Heads of Service to assess competence and entitle Practitioners and Operators within their clinical specialty.

- Appoint in writing Radiation Protection Advisers for the purposes of the Ionising Radiations Regulations 2017.

- Appoint in writing Radiation Protection Supervisors for the purposes of the Ionising Radiations Regulations 2017.

- Appoint in writing Medical Physics Experts for purposes of Ionising Radiation (Medical Exposure) Regulations 2017.

- Appoint in writing Radioactive Waste Advisers or radiation protection experts for the purposes of the Environmental Authorisations (Scotland) Regulations 2018

- Appoint in writing Laser Protection Adviser(s), Laser Protection Supervisors, Magnetic Resonance Imaging Supervisors and UV (Dermatology) Safety Supervisors.

C. Responsibilities of the Radiation Protection Adviser

Radiation Protection Advisers (RPAs), appointed in writing by the Medical Director, shall advise the Medical Director, Chairman of the Area Radiation Safety Committee, Clinical Directors / Heads of Service, staff and appropriate outside agencies on compliance with extant radiation legislation and national quality standards. The Radiation Protection Adviser appointed must meet the criteria of competence specified by the HSE.

According to Schedule 4 of the Ionising Radiations Regulations 2017 (IRR2017) the advice provided by the Radiation Protection Adviser includes:

- The prior risk assessment and examination of plans for medical radiation installations and the acceptance into service of new or modified sources of ionising radiation in relation to any engineering controls, design features, safety features and warning devices provided to restrict exposure to ionising radiation.

- The implementation of requirements for controlled and supervised radiation areas.

- The periodic examination and testing of engineering controls, design features, safety features and warning devices and regular checking of systems of work, including any written arrangements provided to restrict exposure to ionising radiation.

- The regular calibration of equipment provided for monitoring ionising radiation and the regular checking that such equipment is serviceable and correctly used.

The advice of the Radiation Protection Adviser should cover, where relevant, but not limited to, the following:

- Optimisation and establishment of appropriate dose constraints
- Plans for new installations and the acceptance into service of new or modified radiation sources in relation to any engineering controls, design features, safety features and warning devices relevant to radiation protection.
- Categorisation of controlled and supervised areas.
- Classification of workers.
- Outside workers.
- Personal Protective Equipment (PPE).
- Workplace and individual monitoring programmes and related personal dosimetry.
- Appropriate radiation monitoring instrumentation.
- Quality assurance.
- Arrangements for prevention of accidents and incidents.
- Training and retraining programmes for exposed workers.
- Investigation and analysis of accidents and incidents and appropriate remedial actions.
- Employment conditions for pregnant and breastfeeding workers.

- Preparation of appropriate documentation such as prior risk assessments and written procedures.
- Advice on Local Rules and Systems of Work for designated radiation areas.
- Critical examinations on new radiation equipment and, where appropriate, repaired equipment or re-located equipment.
- Staff training for relevant Board employees associated with radiation including Radiation Protection Supervisors, managers, users of radiation equipment and persons who enter controlled radiation areas.

D. Responsibilities of the Radiation Protection Supervisor

The following duties which the Radiation Protection Supervisor undertakes on behalf the NHS Lanarkshire Board are carried out in collaboration with the IRMER Lead for Radiology; the Clinical Director of Public Dental Services; Radiation Protection Adviser(s); Deputy Managers of Radiology and appropriate members of the Radiation Safety Committee.

Under current radiation safety legislation, the Radiation Protection Supervisor has no legal responsibility for radiation safety. The Radiation Protection Supervisors may undertake some or all of the following:

- Report directly to the Radiation Protection Adviser, when necessary in the interest of radiation safety.

- Report immediately to the Head of Department and the Radiation Protection Adviser on unsatisfactory conditions of radiation safety; to propose measures to remedy them and to confirm that agreed remedies have been carried out.

- Provide immediate supervision for radiation protection and to ensure that protection measures are carried out in accordance with the extant Ionising Radiations Regulations, associated Approved Codes of Practice and Employer's Standard Operating Procedures.

- Keep under review the Local Rules describing arrangements for meeting the requirements of the extant Radiation Regulations, Codes and Guidance Notes, applying to the medical uses of radiation.

- Ensure that all members of staff associated with the use of x-ray and nuclear medicine equipment are adequately instructed about radiation hazards and the precautions to be observed.

- Ensure visitors to radiation areas in the department are informed as necessary of the radiation safety precautions to be observed.

- Ensure that each member of staff carrying out, or assisting with, X-ray or nuclear medicine examinations, or required to enter Controlled Radiation Areas, has read the Local Rules and has signed a statement agreeing to act in accordance with them and to retain an up-to-date record of these signed statements.

- Organise personnel radiation dose monitoring by a means approved by the Radiation Protection Adviser and to retain relevant records in the Department for two years for non-classified members of staff.

- Keep under review, radiation doses received by persons required to hold patients during X-ray or nuclear medicine examinations, to ensure that no individual is receiving significant exposure from this cause.

- Ensure that radiation over-exposures of staff, patients or visitors are reported to the Radiation Protection Adviser immediately.

- Inform the Radiation Protection Adviser when a member of staff reports that she is pregnant and to participate in review the duties of that member of staff to ensure that the developing foetus is adequately protected in terms of radiation safety as described inside the local rules.

- Ensure, in collaboration with the Clinical Directors / Heads of Service; Consultant Radiologist(s) and the Radiation Protection Adviser, that the radiation exposure of staff is as low as reasonably practicable. This will require that all working practices, the designation of Controlled Radiation Areas and the use of radiation warning signs are kept under regular review.

- Collaborate with the Radiation Protection Adviser in the preparation, review and recording of environmental monitoring.

- Ensure that the Radiation Protection Adviser is consulted when it is proposed to alter the operating conditions of any X-ray installation, whether by new or modified buildings or equipment or by changes of procedures or workload.

- Ensure that the Handover Procedure associated with X-ray equipment is followed satisfactorily.

- Ensure that a record book is kept for recording all modifications and maintenance carried out on X-ray or nuclear medicine equipment. Any work which might affect radiation quality, output or safety must be recorded.

- Ensure that personal protective equipment and clothing is examined, as specified in the Local Rules, and that a record is kept for each item.

- Ensure that appropriate procedures are applied to the operation of all X-ray or nuclear medicine equipment to avoid over-exposure of members of staff or the public.

- Ensure that all radiation monitors in the department are regularly checked, and are calibrated annually under the guidance of a Qualified Person as defined inside HSE ACoP for IRR 17.

- Provide authorisation in approved circumstances for access to Controlled Radiation Areas.

- Report to the NHSL Radiation Safety Committee when necessary and in particular after any radiation incident.

E. Responsibilities of the Medical Physics Expert

Medical Physics Experts (MPEs), appointed in writing by the Medical Director shall advise the Medical Director; Chairman of the Area Radiation Safety Committee; Clinical Directors / Heads of Service; staff and appropriate outside agencies on medical exposure issues related to radiation safety, radiation dose assessment or optimisation. The MPE appointed must meet the criteria of competence specified in IRMER 17.

The Medical Physics Expert shall be:

- Closely involved in every radiotherapeutic practice other than standardised therapeutic nuclear medicine practices.

- Involved in standardised therapeutic nuclear medicine practices, diagnostic nuclear medicine practices and high dose interventional radiology and high dose computed tomography

- Involved as appropriate for consultation on optimisation on all radiological practices not mentioned above.

- Advice on dosimetry and quality assurance matters relating to radiation protection concerning exposures.

- Advice on measurements for the evaluation of dose delivered.

- Advice on medical radiological equipment

A medical physics expert must also contribute to the following matters:

- Optimisation of the radiation protection of patients and other individuals including the application and use of diagnostic reference levels.
- Definition and performance of quality assurance of the equipment.
- Acceptance testing of equipment.
- Preparation of technical specifications for equipment and installation design.
- Surveillance of the medical radiological installations.
- Analysis of events (potentially) involving accidental or unintended exposures.
- Selection of equipment required to perform radiation protection measurements.
- Training of practitioners and other staff in relevant areas of radiation protection.
- Provision of advice relating to compliance with the Regulations.

Diagnostic radiology MPE

The MPE in diagnostic radiology will either be actively involved in, or available for consultation on, all matters concerning diagnostic and interventional radiology exposures, including research applications. Involvement will be especially warranted where doses are known to be high, e.g. CT and interventional radiology, for optimisation of doses for high risk groups such as infants, for dose constraints in health screening and for risk assessment in research proposals. These include:

- Generic risk assessment for new equipment or techniques.
- Risk assessments and dose constraints for research proposals.
- Systems for dose calculation and quantification.
- Diagnostic reference levels and review.
- Patient dose monitoring and review.
- Quality assurance including advice on quality control.
- Specification and commissioning of new equipment.
- Audit of medical exposures.
- Incident investigation including patient dose assessment
- Advice on development and implementation of employer's procedures
- Training

Nuclear Medicine MPE

The MPE in nuclear medicine must be available to advise on the following activities:

- Involvement in all applications for site or practitioner IRMER Licences.
- Advice on protocols for therapeutic administrations.
- Advice regarding dosimetry for pregnant and breast-feeding patients.
- Dose constraints for research proposals.
- Validation of new procedures and protocols for diagnostic investigations.
- Patient dosimetry (diagnosis and therapy).
- Establishment and review of diagnostic reference levels.
- Quality assurance including advice on quality control.
- Calibration of equipment (e.g. radionuclide dose calibrators).
- Specification and acceptance testing of new equipment.
- Advice on maintenance.
- Incident investigation.
- Advice on development and implementation of employer's procedures.

F. Responsibilities of the Radioactive Waste Adviser (RWA)

- The role of the RWA is advisory; responsibility for compliance with radioactive waste legislation and permit conditions lies with the permit holder (employer).

- The role of the RWA is to provide advice to the employer on radioactive waste management and environmental radiation protection. The permit holder will specify the scope of advice that a RWA is expected to give. It is likely to include:
    - Optimisation and establishment of appropriate dose constraints relating to environmental radiation protection.
    - Plans for new installations and the acceptance into service of new or modified radiation sources in relation to any engineering controls, design features, safety features and warning devices relevant to environmental radiation protection.
    - Appropriate radiation monitoring instrumentation.
    - Quality assurance.
    - Environmental monitoring programme.
    - Arrangements for radioactive waste management.
    - Arrangements for prevention of accidents and incidents.
    - Preparedness and response in emergency exposure situations.
    - Investigation and analysis of accidents and incidents and appropriate remedial actions.
    - Preparation of appropriate documentation and written procedures.

- The RWA should be able to clearly convey to the permit holder what additional specialist advice is needed and understand the resulting advice that is received.

- Where a RWA recommends that additional advice is sought from a number of specialists, it is likely to be the role of the RWA to consolidate this advice into recommendations for his employer.

- Where a RWA has been appointed on a continuing basis, they should usually be available to provide advice whenever required, although they do not need to be present on the permit holder's premises at all times.

G. Responsibilities of Managers

Any manager of a department considering any work with ionising radiation for the first time shall consult with the Radiation Protection Adviser.

Local Managers are responsible for ensuring that radiation risk assessments are performed and reviewed and the findings are implemented. They are also responsible that any personal dose readings are monitored, the production and review of Local Rules in consultation with the RPA, that appropriate investigations are instituted and that further controls are implemented where this is regarded as necessary.

H. Responsibilities of members of staff

All Members of Staff are required to work with radiation in such a way that they:

- Take reasonable care to protect themselves and others from any hazard arising from their work and thus to work safely.

- Have read and understood the Local Rules for Radiation Safety relevant to their work and to the area in which they work and agree to act in accordance with them.

- Report any hazards or incidents to the Radiation Protection Supervisor.

- Follow extant employer's written procedures and protocols.

- If they work with ionising radiation, inform their local manager as soon as possible if they become pregnant, so they can review doses, and carry out any necessary risk assessments.

- Correctly use the personal protective equipment provided for them; taking care of it and storing it correctly.

- Tell their employer about any faults with the personal protective equipment and report any damage.

- Cooperate with employers about dose measurements and assessments.
- Report any loss or damage of personal dosemeters to their employer immediately.
- Tell their employer about actual or suspected incidents which the employer has a duty to investigate, such as apparent overexposures or loss of a source.

6. RESOURCE IMPLICATIONS

Staff time in terms of training; education; audit; optimisation and reviewing the policy.

7. COMMUNICATION PLAN

The policy will be put on FirstPort and NHSL public website and communicated to staff through the management structure of NHS Lanarkshire.

8. QUALITY IMPROVEMENT – Monitoring and Review

The Board's Area Radiation Safety Committee will meet every 12 months. The meeting agenda for the committee will include ionising radiation safety. Incident reports will be reported to the Radiation Safety Committee.

Monitoring the effectiveness of this policy will be a requirement of this committee.

Annual audit of safety and regulatory compliance must be undertaken, results of which should be reported back to the Radiation Safety Committee.

9. EQUALITY AND DIVERSITY IMPACT ASSESSMENT

This policy meets NHS Lanarkshire's EDIA √

(tick box)

10. Summary

This document describes the Radiation Safety Policy for the Medical Use of Ionising Radiation within NHS Lanarkshire.

11. REFERENCES

1. Council Directive 2013/59 Euratom of 5 December 2013, Official Journal of the European union L13
2. The Ionising Radiation (Medical Exposures) Regulations 2017
3. Work with ionising radiation. The Ionising Radiations Regulations 2017. Approved Code of Practice and guidance L121
4. The Management of Health and Safety at Work Regulations 1999
5. The Ionising Radiations Regulations 2017
6. Environmental Authorisations (Scotland) Regulations 2018
7. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 & Carriage of Dangerous Goods (Amendment) Regulations 2019
8. European Commission. Radiation Protection 99, Guidance on medical exposures in medical and biomedical research, OPEC 1998 ISBN 92-828-4391-2
9. Equipment used in connection with Medical Exposure. Guidance Note PM 77 (2nd and 3rd ed.) HSE, 2006
10. iRefer: making the best use of clinical radiology services. Royal College of Radiologists
11. Selection Criteria for Dental Radiography. Faculty of General Dental Practitioners, 2018
12. Environment Agencies' Guidance on Radioactive Waste Advisers. SEPA (and other Agencies), 2020
13. Data Protection Act 2018
17. Significant accidental and unintended exposures under IR(ME)R: Guidance for employers and duty-holders. Care Quality Commission, April 2023
18. Guidance on the Establishment and Use of Diagnostic Reference Levels for Medical X-Ray Examinations. IPEM Report 88. York, UK (under revision)