University Hospitals Birmingham
NHS Foundation Trust

CONTROLLED DOCUMENT

Radiation Safety Policy

CATEGORY:	Policy
CLASSIFICATION:	Health and Safety
PURPOSE	To ensure the safe use of ionising and non-ionising radiation by the Trust.
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Essential Reading for:	Directors of Sites in which ionising and/or non-ionising radiations are used Managers of Departments or Services in which ionising and/or non-ionising radiations are used
Information for:	All staff

Contents

Version Control

Version	Title	Issue Date
1.0	Radiation Safety Policy	Jan 2004
2.0	Radiation Safety Policy	25/10/2012
3.0	Radiation Safety Policy	18/08/2015
4.0	Radiation Safety Policy	19/02/2019
4.1	Radiation Safety Policy	20/08/2020
5.0	Radiation Safety Policy	09/05/2023
5.1	Radiation Safety Policy	16/01/2024

1. Policy Statement

1.1 The purpose of this policy and its associated documents is to ensure, as far as is reasonably practicable, the safety of exposed individuals, members of the public (including the families of exposed individuals), staff, and others who may be exposed to hazards arising from the use of:

1.1.1 Ionising radiations, including

- X-rays
- gamma rays
- beta particles
- alpha particles

1.1.2 Non-ionising radiations, including

- lasers
- magnetic fields
- ultrasound
- ultra violet (UV)
- optical radiation sources

1.2 The Trust will ensure that an appropriate radiation protection programme is implemented and reviewed and that appropriate organisational arrangements are in place to facilitate it (see Appendix A).

1.3 The Trust will ensure that the legal obligations contained within the Regulations described in sections 7.1 and 7.3 are met.

2. Scope

2.1 This policy applies to all areas and activities of the Trust and to all individuals employed by the Trust including contractors, volunteers, students, locum, Bank and agency staff and staff employed on honorary contracts. staff and staff employed on honorary contracts.

2.2 This policy applies to outside workers whilst on sites managed by the Trust. An outside worker is defined in the Ionising Radiations Regulations 2017 (IRR17) as “any person who is carrying out services in a controlled or supervised [radiation] area but who does not have an individual contract of employment with the employer responsible for that area..

2.3 This policy applies to members of Trust staff operating as outside workers on sites not managed by the Trust.

2.4 Compliance with the Regulations, Codes of Practice and Guidance (see References, Section 7) covering the use of ionising and non-ionising radiation will ensure that radiation doses for all personnel

and exposed individuals will be as low as reasonably practicable.

3. Framework

3.1 This section describes the broad framework for ensuring radiation safety. Detailed operational instructions for the implementation of this policy are contained within the associated documents listed in section 7.

3.2 The Chair of the Radiation Safety Board shall approve all procedural documents associated with this policy and any amendments to such documents, and is responsible for ensuring that such documents are compliant with this policy.

3.3 Any failure to comply with this policy and its associated documents could lead to disciplinary action which could result in dismissal.

3.4 The Trust will:

3.4.1 Maintain a radiation safety management structure to implement radiation safety requirements;

3.4.2 Appoint Radiation Safety Advisers (RSA) (section 4) to advise on all matters concerning the safe use of ionising or non-ionising radiations;

3.4.3 Where appropriate, appoint Supervisors to cover each department using ionising or non-ionising radiation to enable work with radiation to be carried out in a safe manner and ensure that local rules are followed;

3.4.4 Where appropriate, appoint Site Officers to assist in compliance with the Environment Agency Site Permit and local procedures.

3.4.5 Comply with the relevant Regulations, Codes of Practice and Guidance (see References, section 7) covering the use of ionising and non-ionising radiation;

3.4.6 Comply with the standard conditions and schedules included in radioactive substances permits issued by the Environment Agency under the Environmental Permitting (England and Wales) Regulations;

3.4.7 Where necessary, when using an exemption under the Environmental permitting (England and Wales) Regulations, comply with the relevant guidance issued by the environment agencies;

3.4.8 Ensure that medical examinations involving the use of ionising radiation will only be carried out where there is sufficient medical justification, and in accordance with associated standard operating procedures and protocols;

3.4.9 Ensure that ionising radiation doses to exposed individuals

from diagnostic procedures are kept as low as reasonably practicable consistent with the intended clinical outcome;

3.4.10 Ensure that therapeutic doses of ionising radiation are in accordance with site-specific medical treatment portfolios developed and reviewed within the Radiotherapy quality system or protocols within Nuclear Medicine controlled documents;

3.4.11 Ensure that ionising radiation doses for all personnel and members of the public will be as low as reasonably practicable;

3.4.12 Ensure clinical audits of compliance with the Ionising Radiation (Medical Exposures) Regulations 2017 [IR(ME)R] are carried out;

3.4.13 Ensure that staff are provided with appropriate Personal Protective Equipment suitable for the type of ionising or non-ionising radiation being used;

3.4.14 Ensure that, where advised by a Radiation Protection Adviser, staff working with ionising radiation are appropriately monitored (see Appendix B); and

3.4.15 Ensure that all staff are provided with training and instructions appropriate to their role (see Appendix C).

3.5 Radiation Facilities and Equipment

3.5.1 All radiation facilities are designed to meet the requirements of relevant Regulations, Codes of Practice and Guidance Notes (Section 7) to ensure that doses are below relevant nationally agreed dose constraints and the appropriate security measures are included.

3.5.2 Local Rules are in place to cover areas in which ionising radiation or non-ionising radiations is used, as advised by the appropriate Radiation Safety Adviser. The Local Rules contain or reference operational instructions designed to minimise radiation doses. Compliance with Local Rules is overseen by the relevant Radiation Safety Supervisor (see section 5.10)

3.5.3 Radiation doses to staff who work with ionising radiation are monitored as deemed appropriate by a Radiation Protection Adviser (see Section 4).

3.5.4 The optimisation of radiation doses to exposed individuals is a prime factor in the selection and use of diagnostic equipment.

3.5.5 Quality assurance tests, including tests before the equipment is put into clinical use and subsequent regular checks at appropriate intervals, are carried out (see

Appendix E and Appendix F).

3.5.6 When new facilities are being planned or new equipment is acquired the appropriate Radiation Safety Adviser (see Section 4) is involved to advise on the best method of achieving the required dose constraints.

3.5.7 Advice is sought from the relevant Medical Physics Expert (see Section 4) regarding the technical specification, selection, purchase and replacement of all ionising radiation equipment.

3.5.8 Any equipment or apparatus used in connection with medical exposures is, as far as reasonably practicable, selected, installed and maintained so that it is capable of restricting the exposure of the exposed individual in accordance with the intended clinical purpose.

3.5.9 The Trust ensures that a critical examination of all installed equipment emitting ionising radiation has been carried out before it is used. Responsibility for performing this critical examination lies with the installer; a Radiation Protection Adviser must be consulted with regards to the nature and extent of any critical examination and the results of that examination.

3.5.10 A Magnetic Resonance Safety Expert (MRSE) must provide safety advice and testing of MRI equipment.

3.5.11 Other radiation sources such as UV and ultrasound must also be examined by an appropriate Radiation Safety Adviser before use.

3.5.12 Equipment capable of emitting ionising or non-ionising radiation will not be brought on to site for any purpose, including but not limited to purchase, lease, loan, demonstration or trial without prior consultation with a Radiation Safety Adviser and consideration of indemnity where appropriate. An appropriate Health and Safety Adviser may also be involved for non-radiation matters.

3.5.13 Loan, demonstration and trial equipment will be subject to the same safety and quality checks as permanent equipment.

3.5.14 Where facilities require to be permitted to hold open or closed radioactive substances, they are to be constructed to the appropriate standard; a Radiation Protection Adviser and Radioactive Waste Adviser will be appointed and consulted on compliance.

3.5.15 Any radioactive material will be transported in accordance with the relevant Regulations and procedures (see Section 7).

3.5.16 All equipment involved with the measurement of radiation hazards in connection with the Ionising Radiations Regulations will be tested annually under the supervision of the Qualified Person following national guidelines. Compliance with this requirement will be monitored by the relevant Radiation Protection Committee.

3.5.17 All equipment used to calibrate or otherwise monitor performance of treatment machines (e.g. linear accelerators) will be tested according to recognised radiotherapy procedures.

3.5.18 Safe Working Practices must be established for the safe use of ionising radiation equipment, MRI scanners, and hazardous optical equipment.

3.6 Risk Assessments

3.6.1 A radiation risk assessment is carried out for each area, room or installation in which a radiation activity takes place, prior to any work commencing.

3.6.2 These risk assessments are reviewed at regular intervals not exceeding 3 years, and prior to any significant changes to activity, technique, equipment or location

3.6.3 Where risks are identified, appropriate measures will be put in place to reduce the dose and hence risk to as low as reasonably practicable. Such measures must include the following in the order specified below:

- Engineering controls (e.g. shielding, interlocks and other safety features);
- Changes to working procedures and provision of training to ensure these are correctly followed; and
- Personal protective equipment (e.g. lead aprons, thyroid shields and glasses).

3.7 Medical Exposures

All medical exposures involving the use of ionising radiation will be carried out within a management framework defined by the Trust's IR(ME)R Employer's Procedures (section 8).

4. Definitions Table

Term	Definition, including regulatory requirements
Radiation Safety Advisers	Generic term used in this Policy to refer to Radiation Protection Adviser, Radioactive Waste Adviser, Laser Protection Adviser, MR Safety Expert and Optical Radiation Safety Adviser

Term	Definition, including regulatory requirements
Radiation Protection Adviser (RPA)	Provides advice on the safe use of ionising radiation; required by IRR17; certificated by RPA 2000
Radioactive Waste Adviser (RWA)	Provides advice on the safe disposal of radioactive materials; assists in applying for, and complying with, the conditions of the permits issued by the Environment Agency; required by EPR16; certificated by RPA 2000
Laser Protection Adviser (LPA)	Provides advice on the safe use of lasers; checks lasers before first use and at regular intervals; recommended in the MHRA Guidance on Lasers, intense light source systems and LEDs; certificated by RPA 2000
MR Safety Expert (MRSE)	Provides advice on the safe use of Magnetic Resonance equipment; performs quality assurance tests on MRI equipment; recommended in the MHRA safety guidelines for magnetic resonance imaging equipment in clinical use; certificated by IPEM
Medical Physics Expert (MPE)	Carries out or advises on (as appropriate) technical specifications of equipment, exposed individual dosimetry, dose optimisation, clinical radiobiology, radiation risk assessment, quality assurance of equipment and development and use of techniques and equipment for medical ionising radiation exposures; required by IR(ME)R2017; certificated by RPA 2000
Dangerous Goods Safety Adviser, (DGSA)	Advises on compliance with the transport of radioactive materials; required by the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009; certificated by the Department for Transport.
Qualified Person	Advises on and authorises testing of equipment used for the measurement of ionising radiation; required by IRR17
Approved Dosimetry Service (ADS)	Provides personal radiation dosemeters to staff working with ionising radiation; required by IRR17; approved by the HSE

5. Duties

5.1 Chief Executive

The Chief Executive is responsible for ensuring that an appropriate management structure is maintained to implement, monitor and review the Radiation Safety Policy. They will ensure the Trust:

5.1.1 Appoints appropriately qualified and experienced Radiation Safety Advisers as defined in Section 4;

5.1.2 Appoints appropriately trained Radiation Safety Supervisors, following the advice of the relevant Radiation Safety Adviser;

5.1.3 Establishes Standard Operating Procedures and Protocols which meet the requirements of the Ionising Radiation (Medical Exposures) Regulations 2017 (IRMER17);

5.2 Deputy Chief Executive Officer (DepCEO)

The DepCEO is responsible for ensuring that the Trust:

5.2.1 Informs the Health and Safety Executive (HSE) of the intention to start work with ionising radiation, obtaining notification, registration and/or consent as appropriate to the types of work being performed;

5.2.2 Informs the HSE of any significant changes to the work involving ionising radiation or to the Trust (for example change of name or main address);

5.2.3 Notifies the relevant Inspectorate or Agency of any incident involving ionising or non-ionising radiation as required (see Appendix D); and

5.2.4 Holds a licence for the administration of radioactive substances on each of the Trust's sites, and that any person justifying the administration of radioactive substances holds an appropriate licence ("ARSAC licenses") as required by IR(ME)R.

5.3 Site Managing Directors and General Managers

Site Directors of Operations and General Managers are responsible for monitoring and auditing the arrangements within their Site to check that staff and facilities are complying with this policy.

5.4 Clinical Service Leads

CSLs are responsible for ensuring that all medical staff within their Site, Group or Department comply with the requirements of this policy and associated procedural documents.

5.5 Departmental/Service Managers

5.5.1 Departmental/Service Managers have delegated responsibility for ensuring the provision of radiation protection, staff and exposed individual dose monitoring and radiation equipment quality assurance programmes within each department.

5.5.2 The Manager may choose to further delegate responsibilities, in writing, to appropriately trained members of staff.

Managers will ensure that:

5.5.3 Local rules and written systems of work have been drawn up with guidance from the appropriate Radiation Safety Adviser and are reviewed appropriately;

5.5.4 Staff are provided with personal radiation monitors in accordance with any advice from the RPA as appropriate;

5.5.5 Staff wear personal radiation monitors appropriately and return them for evaluation at the required intervals;

5.5.6 Staff carrying out work with ionising or non-ionising radiation are appropriately trained and that records of this training are kept;

5.5.7 Any work involving ionising radiation, lasers and MRI is carried out in accordance with local rules (under the supervision of the local supervisors) and staff are notified of any changes in these local rules;

5.5.8 The necessary risk assessments are completed before carrying out work with ionising or non-ionising radiation;

5.5.9 Risk assessments are reviewed every 3 years or whenever there is a significant change in working practice;

5.5.10 Any special measures required to restrict doses to staff, particularly for pregnant staff, are implemented;

5.5.11 A formal, recorded investigation is carried out whenever a member of staff receives a dose of ionising radiation exceeding the local investigation level set in the local rules or a dose of non-ionising radiation exceeding an exposure limit and any necessary action is taken to reduce doses in the future;

5.5.12 All medical radiation exposures are carried out in accordance with the Trust's Procedures for IR(MER) 2017;

5.5.13 Any equipment or apparatus used in connection with medical exposures will, as far as reasonably practicable, be selected, installed and maintained so that it is capable of restricting exposure of the exposed individual in accordance with the intended clinical purpose;

5.5.14 An inventory of their own ionising radiation equipment is kept and all such equipment both satisfies radiation safety requirements and is also included in appropriate replacement programmes;

5.5.15 Quality assurance tests are carried out at the appropriate intervals on all equipment involved in exposed individual exposure with ionising and non-ionising radiation (See Appendix A and Appendix F);

5.5.16 Incidents involving radiation are appropriately recorded and analysed for trends or common themes (see Appendix D);

5.5.17 Advice is sought from the appropriate Radiation Safety Adviser on whether an incident requires notification to the relevant inspectorate or agency;

5.5.18 The appropriate Radiation Safety Adviser is consulted when the department is considering using ionising or non-ionising radiation for the first time or will be implementing a change in practice;

5.5.19 An appropriate Radiation Safety Adviser is notified when new ionising or non-ionising radiation equipment is installed so that the appropriate commissioning tests and critical examinations are undertaken before use;

5.5.20 Equipment that produces or measures ionising or non-ionising radiation is not brought on to site for demonstration, trial or testing purposes without prior consultation with a Radiation Safety Adviser and consideration of indemnity;

5.5.21 All instruments used for monitoring levels of ionising radiation in controlled and supervised areas are tested and examined annually; and

5.5.22 In relation to work with radioactive materials, the Manager will ensure:

- The Radiation Protection Adviser, Radiation Safety Adviser and Site Officer (section 5.11) are informed before any work with a new radionuclide commences or there are significant changes in workload, stock or disposal of radioactive material including transfers of work to new rooms or premises;
- The Department complies with the Environmental Permitting (England and Wales) Regulations and amendments in relation to keeping and using radioactive materials and the local limits established by the Site Officer in relation to quantities of radioactive material held and for disposal.
- The appropriate reports (e.g. monthly stock values, disposal values etc.) are sent to the Site Officer;
- Arrangements within the Department are monitored and audited to ensure that staff and radiation facilities comply with this policy; and
- Recommendations made following inspections of their radiation facility (equipment and building) are followed up and actioned when necessary.

5.6 Line managers of staff working with radiation will ensure that:

5.6.1 Staff are advised, informed and trained appropriately (see Appendix C);

5.6.2 They publicly promote a culture of value and respect in their day to day relationships thus reinforcing the key principles of the policy; and

5.6.3 They respond to any concerns raised in a timely fashion;

5.7 Staff (including contractors and volunteers)

It is the responsibility of every employee working with ionising or non-ionising radiation to:

5.7.1 Be aware of the local rules and precautions necessary to carry out their work in a safe manner;

5.7.2 Not expose themselves or any other person to radiation to a greater extent than is reasonably necessary for the purpose of their work;

5.7.3 Follow any local rules or procedures and thus comply with relevant legislation;

5.7.4 Report incidents or defects in equipment in accordance with the associated Incident Reporting Procedure;

5.7.5 Use and look after any protective equipment that is provided;

5.7.6 Use, look after and return personal dosemeters appropriately;

5.7.7 Inform their line manager or RPS in writing as soon as possible if they are pregnant; and

5.7.8 The staff of commissioned services working at other Trust premises will work to their own Trust's policies and procedures.

5.8 Radiation Safety Board (RSB) and Radiation Protection Committees (RPCs)

5.8.1 The RSB monitors radiation safety across the Trust, including a regular review of all occupational, medical and public exposure to radiation. It provides assurance to the Trust Health, Safety and Environment Committee.

5.8.2 The Radiation Safety Board oversees the 4 Radiation Protection Committees, namely:

- Radionuclides,
- Radiotherapy,
- X-Ray,
- Non-Ionising Radiation.

5.8.3 The chairperson of each RPC is responsible for arranging to meet in accordance with the timeframe defined within the committee's terms of reference.

5.8.4 Terms of Reference for the RSB are included in Appendix G

5.9 Radiation Safety Advisers (Ionising or Non-Ionising):

5.9.1 It should be noted that Radiation Safety Advisers provide advice to the Trust and do not have direct responsibility for compliance with legislation or guidance.

5.9.2 RSAs have a duty to keep up to date with radiation safety requirements and maintain their competence in order to maintain their certification as advisers.

5.9.3 Appendix H lists the Trust's Radiation Safety Advisers

5.10 Radiation Safety Supervisors

Radiation Safety Supervisors are members of the operational team who:

5.10.1 Are familiar with the requirements of the relevant local rules, legislation and guidance;

5.10.2 Assist the Departmental / Service Managers in ensuring that the local rules and procedures are read, understood and followed by the relevant staff;

5.10.3 Radiation Safety Supervisors are:

- Radiation Protection Supervisors (RPS); for ionising radiation)
- Laser Protection Supervisors (LPS);
- MR Responsible Persons;

5.10.4 Additional tasks are outlined in the appropriate local rules and procedures;

5.10.5 Responsibility for all tasks described above remains with the Trust;

5.11 Site Officer

5.11.1 The Site Officer assists the RPA and RWA in ensuring compliance with the Environmental Permitting Regulations (EPR)

5.11.2 The Site Officer will be familiar with the site's Environment Agency Permit and the relevant parts of the Regulations.

5.11.3 The Site Officer:

- Monitors the records of the quantities of radioactive material kept on, and disposed from, a particular site

- Advises the Department or Service Manager, RPA and RWA if the site's Permit limits are likely to be exceeded.
- Prepares annual summaries of the releases of radioactive materials to air and water for submission to the Environment Agency in accordance with the EPR; and
- May assign to each working area, limits for the quantities of radioactive material which can be kept and used, and limits for the accumulation and disposal of radioactive waste.

5.12 Medical Exposures

The Ionising Radiation (Medical Exposures) Regulations 2017 [IR(ME)R] defines certain duty holders associated with the process of carrying out medical exposures. These are:

5.12.1 Referrer

The referrer is responsible for supplying the practitioner with sufficient medical data to enable the practitioner to justify the exposure.

5.12.2 Practitioner

The practitioner is responsible for justifying the exposure and, within the extent of their involvement, keeping the dose to the exposed individual as low as reasonably practicable consistent with the intended purpose.

5.12.3 Operator

Operators are staff who carry out practical aspects of the exposure, including performing medical exposures, calibration, quality assurance or maintenance of the equipment used. They are responsible for ensuring that, within the extent of their involvement, they keep the dose to the exposed individual as low as reasonably practicable consistent with the intended purpose.

5.12.4 General

All staff acting as operators or practitioners must (legally) follow the IR(ME)R procedures laid down by the Trust and must take legal responsibility for those parts of any procedure for which they are responsible.

6. Implementation and Monitoring

6.1 Implementation

6.1.1 This policy will be available on the Trust's Intranet and external internet site. The policy will also be disseminated through the management structure within the Trust;

6.1.2 Appropriate training will be provided, as described in

Appendix C

6.1.3 Managers will ensure that radiation protection responsibilities are included in personal development review and personal objectives of their staff.

6.2 Monitoring

6.2.1 Appendix I provides full details on how the policy will be monitored by the Trust

7. References

7.1 Ionising Radiations: Regulations

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (legislation.gov.uk)

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment (Amendment) Regulations 2011 (legislation.gov.uk)

The Carriage of Dangerous Goods (Amendment) Regulations 2019 (legislation.gov.uk)

The Environmental Permitting (England and Wales) Regulations 2016 (legislation.gov.uk)

The Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2016 (legislation.gov.uk)

The Environmental Permitting (England and Wales) (Amendment) Regulations 2018 (legislation.gov.uk)

The Environmental Permitting (England and Wales) (Amendment) (No. 2) Regulations 2018 (legislation.gov.uk)

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) 2017

The Ionising Radiation (Medical Exposure) Regulations 2017 (legislation.gov.uk)

The Ionising Radiation (Medical Exposure) (Amendment) Regulations 2018 (legislation.gov.uk)

The Ionising Radiations Regulations 2017 (legislation.gov.uk)

The Justification of Practices Involving Ionising Radiation Regulations 2004 (legislation.gov.uk)

The Justification of Practices Involving Ionising Radiation (Amendment) Regulations 2018 (legislation.gov.uk)

The Ionising Radiation (Basic Safety Standards) (Miscellaneous Provisions) Regulations 2018 (legislation.gov.uk)

The Radiation (Emergency Preparedness and Public Information) Regulations 2019 (legislation.gov.uk)

7.2 Ionising Radiations: Codes of Practice, Guidance Notes, Health Service Guidance etc.

The examination, testing and calibration of portable radiation protection instruments. | NPL Publications (GPG14)

Guidance to the Ionising Radiation (Medical Exposure) Regulations 2017 (publishing.service.gov.uk)

The High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005 (legislation.gov.uk)

Ionising Radiation (Medical Exposure) Regulations: Implications for clinical practice in radiotherapy Guidance from the Radiotherapy Board (rcr.ac.uk)

IR(ME)R: Implications for clinical practice in diagnostic imaging, interventional radiology and diagnostic nuclear medicine | The Royal College of Radiologists (rcr.ac.uk)

L121 - Work with ionising radiation: Approved Code of Practice and guidance (hse.gov.uk)

The Medical and Dental Guidance Notes. A good practice guide to implement ionising radiation protection in the clinical environment. Institute of Physics in Engineering & Medicine IPEM) 2002, York (awaiting update)

Notes for guidance on the clinical administration of radiopharmaceuticals and use of sealed radioactive sources (publishing.service.gov.uk)

Protection of Pregnant Patients during Diagnostic Medical Exposures to Ionising Radiation | The Royal College of Radiologists (rcr.ac.uk)

Radioactive Substances Legislation guidance (publishing.service.gov.uk)

Report 109 Radiation Protection in Nuclear Medicine - IPEM

Significant and unintended exposures: guidance for employers and duty-holders August 2020 (cqc.org.uk)

Working safely with ionising radiation Guidelines for expectant or breastfeeding mothers (hse.gov.uk)

7.3 Non-Ionising Radiations: Regulations

The Control of Artificial Optical Radiation at Work Regulations 2010 (legislation.gov.uk)

The Control of Electromagnetic Fields at Work Regulations 2016 (legislation.gov.uk)

7.4 Non-Ionising Radiations: Guidance

A guide to the Control of Electromagnetic Fields at Work Regulations

2016 (hse.gov.uk)

Magnetic resonance imaging equipment in clinical use: safety guidelines - GOV.UK (www.gov.uk)

MHRA Guidance on Lasers, intense light source systems and LEDs - GOV.UK (www.gov.uk)

Non-binding guide to good practice for implementing Directive 2013/35/EU Electromagnetic Fields. Volume 1, Practical guide - Publications Office of the EU (europa.eu)

The British Medical Ultrasound Society. Guidelines for the safe use of diagnostic ultrasound equipment

7.5 General Legislation

The Management of Health and Safety at Work Regulations 1999 (legislation.gov.uk)

8. Associated Policy and Procedural Documentation

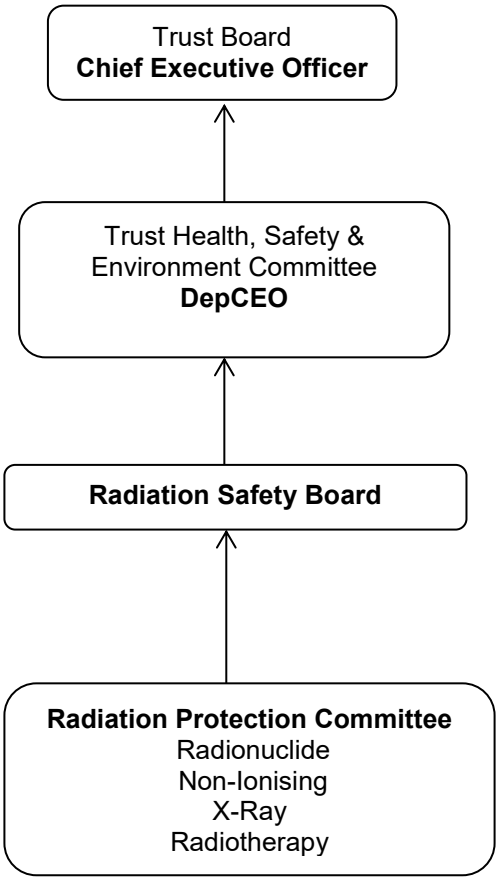
8.1 Local Rules, produced in accordance with the Ionising Radiations Regulations 2017, are held in the relevant departments' documentation.

8.2 IR(ME)R Employer's Procedures describing how the Trust complies with the Ionising Radiation (Medical Exposures) Regulations 2017 are held as Trust controlled documents

8.3 The Trust Policy and Procedure for the Reporting and Management of Incidents including Serious Incidents requiring Investigation includes incidents involving radiation

8.4 The Trust Waste Policy refers to this Radiation Safety Policy in relation to radioactive waste

Appendix A. Trust Radiation Protection Management structure



Appendix B. Personal Radiation Monitoring and Classified Workers

B.1. General

B.1.1 Radiation dose monitoring for staff regularly using ionising radiation will be routinely carried out as deemed necessary by the RPA. This may include whole body, eye and extremity monitoring as appropriate.

B.1.2 Periodic monitoring of other staff (including extremity and eye monitoring) and of environmental doses in the workplace will be carried out as deemed appropriate by the RPA.

B.1.3 All personal monitoring for the Trust will be carried out by a dosimetry service approved by the Health and Safety Executive for dose assessment. Dose records will be managed by a dosimetry service approved by the HSE for record keeping.

B.1.4 The Trust will follow the advice of the RPA regarding the designation of staff as classified persons (see B.2) and the need for monitoring.

B.1.5 Local rules for ionising radiation will specify local investigation levels. Whenever a staff member receives a radiation dose greater than the investigation level, the Departmental / Service manager will carry out a formal, recorded investigation with advice from the relevant RPA. The manager has responsibility to implement any changes identified by the investigation.

B.2. Classified Workers

B.2.1 If an employee is likely to receive a dose more than three-tenths of the employee dose limits (or 15mSv to the eye) they must be designated as a Classified person in accordance with the Ionising Radiations Regulations

B.2.2 Radiation monitoring is legally required for Classified persons

B.2.3 Designated classified workers are required under IRR17 to be under the medical supervision of a relevant doctor. This could be an Appointed Doctor recognised by the HSE or an Employment Medical Adviser.

B.2.4 Medical examinations are required when first classified and for periodic health reviews at least yearly. Details must be retained in the employee's health record.

B.2.5 For non-classified workers, the responsibility for medical supervision of staff in respect of radiation exposure will lie with the Consultant Occupational Health Physician.

Appendix C. Staff Training – Radiation Safety

C.1. All employees must be given suitable and proportionate information to avoid being unnecessarily exposed to ionising and non-ionising radiation.

C.2. All staff working with ionising and non-ionising radiation must receive radiation protection training to a level commensurate with the work being performed and the degree of hazard involved.

C.3. All staff working with ionising or non-ionising radiation must be trained to follow the relevant local rules and safe working instructions in their department.

C.4. Training Requirements

C.4.1 Level 1 Training

All staff must receive basic radiation safety training as part of the Health and Safety component of their Trust Induction and 3 yearly Mandatory Training.

Whilst these staff may not work in controlled and/or supervised areas it is recognised that a general awareness of the use of radiation within the Trust including signage and access restrictions is required to aid the prevention of inadvertent exposure.

Level 1 training must include a description of each type of radiation-related safety sign found within the Trust

C.4.2 Level 2 Training

Staff who regularly work in or around controlled and/or supervised areas for example domestic cleaners, porters must also receive department training in accordance with the specific systems of work for the working environment. This should be completed at local induction and refreshed annually.

Level 2 training will consist of a briefing note of local requirements

C.4.3 Level 3 Training

Staff who regularly work in the controlled and/or supervised area during procedures involving radiation for example a nurse / ODP in theatre, Cardiac Physiologist working within Cardiac Catheter Labs must also:

- Complete the Moodle training module for Local Rules; and
- Receive department training in accordance with the specific systems of work for the working environment, or watch a video describing the radiation hazards in the area

This must be completed at local induction and refreshed annually.

C.4.4 Level 4 Training

Staff who work directly with ionising radiation for example Radiographers, Assistant Practitioners and Radiologists must have appropriate qualifications and training for their role.

They must complete:

- Moodle training modules for Local Rules,
- Moodle module for IR(ME)R employer's procedures
- Department training in accordance with the specific systems of work for the working environment.

This must be completed at local induction and refreshed annually.

Specific training requirements for specialist roles are outlined in C.7

C.4.5 Medical Staff

All GMC-registered medical staff will receive specific training in relation to referral procedures and referral guidelines at Trust Induction and have 3 yearly refresher training.

Training will include:

a. Radiation Safety Training at the appropriate level (1-4)

b. Moodle module on the relevant IR(ME)R Procedures

c. Training on how to refer for procedures involving ionising or non-ionising radiation

d. Training on the risks and benefits of medical exposures to radiation.

Training described in a. and b. above will be required at induction and refresher; training described in c. and d. will be required at induction only.

C.4.6 Non-Medical Referrers

Non-Medical Referrers will be entitled to refer for imaging procedures following completion of training as defined within the Trust Non-Medical Referrer Procedure. Training must be refreshed every 3 years.

C.4.7 Classified Persons

Clinical staff identified as classified persons must complete Level 4 training. Non-clinical staff will complete Level 3. Both clinical and non-clinical staff will be informed of the following:

- The requirements for a medical review or examination.
- The use of passbooks if operating as an outside worker.

- The requirement to cooperate with their employer with regard to the additional requirements associated with classification.
- Timely and adequate communication of concurrent employment.

C.4.8 Students / Bank / Locum / Agency / Volunteers

This staff group must be provided with the level of training described above, as relevant to their job role.

C.4.9 Radiation Protection Supervisors (RPS)

RPS should receive training in both the legislative requirements surrounding the role of the RPS as well as training in the hazards and methods for restriction of exposure specific to their area of work e.g. dental, radiography, cardiac catheter laboratory etc.

Training must be refreshed every 3 years; if an RPS has not had refresher training within 5 years they will be removed from the role until training has been completed.

C.4.10 Outside workers

An outside worker is any person who is carrying out services in a controlled or supervised area but who does not have an individual contract of employment with the employer responsible for that area.

Outside workers must be afforded the same level of radiation protection as Trust employees; this includes training, instruction and personal protective equipment.

Further details are provided in the Outside Workers Procedure

C.5. Training Records

C.5.1 Records of Level 1 training delivered through the Trust mandatory training programme must be recorded, kept and maintained by the Trust's education team.

C.5.2 Records of departmental training at Levels 2, 3 and 4 must be recorded, kept and maintained by the staff member's Line Manager.

C.5.3 Each site must report compliance to Level 2, 3 and 4 training requirements to the relevant Radiation Protection Committee. The Radiation Safety Board will report exceptions to the Health, Safety and Environment Committee.

C.6. Review and Approval of Training

C.6.1 Training content will be approved by the Radiation Safety Board.

C.6.2 If the Radiation Safety Board identifies significant changes to relevant legislation and/or guidance, training requirements will be defined, updated and provided as appropriate.

C.7. Specific Training Requirements

Activity	Training Requirement
Medical exposures	All Practitioners and Operators must have received training as required by the Ionising Radiation (Medical Exposure) Regulations (IRMER17). They must have received adequate instruction, including practical experience, in the techniques being used.
Administrations of Radiopharmaceuticals	Staff acting as practitioners for the clinical administration of radiopharmaceuticals or the clinical use of sealed radioactive sources must have appropriate licence issued under the Ionising Radiation (Medical Exposure) Regulations 2017.
	All operators administering radiopharmaceuticals to exposed individuals must have permission, in writing, from the ARSAC certificate/licence holder covering the particular type of administration (examination).
Lasers	All staff operating therapeutic lasers must have received training as specified in the Medicines and Healthcare products Regulatory Agency guidance.
Magnetic Resonance Imaging (MRI)	All staff operating MRI equipment must have received training and be approved by the responsible person listed in the local rules (MRI) as specified in Medicines and Healthcare products Regulatory Agency guidance and the Control of EMF at Work Regulations.
Transport of radioactive materials	All staff transporting radioactive materials must be trained as required by The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations and the latest ADR.

Appendix D. Incidents

D.1. All radiation incidents will be reported in accordance with the Trust's Incident Reporting Policy.

D.2. Remedial radiation safety training will be considered if lack of competence is identified as the cause of an incident or has contributed to it.

D.3. Some incidents may need to be reported to external agencies. The appropriate Radiation Safety Adviser will advise when this is necessary.

D.4. If it is necessary for an incident to be reported externally, the DepCEO must be informed beforehand (save where an immediate report is required on safety grounds). If outside normal office hours, the Executive On-call must be informed.

D.5. Examples of when relevant outside agency may need to be advised of an incident include:

D.5.1 Staff doses above legal limits have to be notified to the Health & Safety Executive (HSE).

D.5.2 Significant or clinically significant accidental or unintended exposures to exposed individuals have to be notified to the Care Quality Commission in line with the Department of Health Guidance.

D.5.3 Lost or stolen radioactive sources have to be reported to the Environment Agency and the police (and possibly the HSE).

Appendix E. Equipment Quality Assurance Programme (Ionising Radiation)

Task	Responsibility	Performed By	Frequency
Preventative maintenance	Departmental/ Service Manager	Manufacturer/ Outside Service Contractor In-house clinical technologists (radiotherapy equipment)	As recommended by Equipment supplier
Radiation protection & equipment performance surveys	Departmental/ Service Manager	RRPPS	Community dental: 3 yearly Hospitals x-ray: annually Mammography: 6 monthly Radionuclide facilities: annually
		Radiotherapy Physics Service	Radiotherapy Equipment: As specified in radiotherapy procedures
Calibration of radiation protection instrumentation	Departmental/ Service Manager	RRPPS	Annually
Quality assurance test by department	Departmental/ Service Manager	Nominated departmental staff	As determined by local protocols
Commissioning test	Departmental/ Service Manager	RRPPS/ Radiotherapy Physics Service/ Nuclear Medicine	Before use on exposed individuals
Critical examinations	Equipment Installer	Equipment Installer	Before use

Appendix F. Equipment Quality Assurance Programme (Non-Ionising Radiation)

Task	Responsibility	Performed By	Frequency
Preventative maintenance	Departmental/ Service Manager	Manufacturer/ Supplier	As recommended
Equipment performance	Departmental/ Service Manager	RRPPS	Annually
Quality assurance test by department	Departmental/ Service Manager	Nominated departmental staff	As recommended by Adviser
Commissioning test	Departmental/ Service Manager	RRPPS	Before use on exposed individuals

Appendix G. Terms of Reference, Radiation Safety Board

Radiation Safety Board - Terms of Reference

1. Purpose

The Board will ensure that the Trust has assurance of a robust governance structure for Radiation Safety matters. Each of the Trust wide Radiation Protection Committees will report into the board and seek authorisation and approval to implement variations to the current methods employed with regards to radiation safety in the University Hospitals Birmingham NHS Foundation Trust.

It is responsible for providing assurance to the Health, Safety and Environmental Trust Committee (HS&E) that structures, policies, systems and processes are effective to deliver the achievement of safe Radiation use. If not assured, the Board will oversee the appropriate actions for improvement or escalation of relevant issues to the HS&E Trust Committee for consideration.

The Committee will promote an open and transparent reporting and learning culture across the separate radiation protection committees to support quality, safety and clinical optimisation of radiation use.

2. Membership

The core membership should include the following:

1. General Manager – Medical Physics / Imaging (Chair)
2. Quality and Governance Lead (Imaging)
3. Chair of Radiotherapy RPC (Head of Radiotherapy Physics)
4. Chair of Radionuclides RPC (Head of Nuclear Medicine)
5. Chair of Xray RPC (Head of Imaging)
6. Chair of Non-ionising (Head of Imaging)
7. Trust RPA (Head of RRPPS)
8. Radiologist – Radiation responsibility
9. Clinical Compliance
10. Administrative services – Meeting Minutes

The Chair may extend invitations to other personnel with relevant responsibilities or expertise as necessary to deal with the business on the agenda. Members, having read all of the papers

beforehand will act as 'champions', engaging with colleagues and peers to disseminate the information discussed and agreed.

3. Quorum

The meeting will be deemed quorate with a minimum of 8 attendees out of the membership ensuring reasonable representation in addition to either the Chair or the Deputy Chair. It is not expected that this will not be a regular occurrence.

An appropriate deputy should be nominated to attend in the absence of each member. Deputies will count towards the quorum and must be fully briefed before attendance.

The Radiation Safety Board will be used as a task and finish group. The quorum for those meetings will be assessed by the chair depending upon the agenda. Board decisions will only be made following an opportunity for all four radiation protection committees to be represented.

4. Frequency

Meetings will be held every quarter, dates will be provided for the calendar year in advance. Additional or extended meetings can be called at the request of the Chair subject to issues being identified.

5. Monitoring Attendance and Minutes

Members have a responsibility to attend at least 75% of meetings; a running total of attendance will be maintained in the meeting minutes.

All meetings of the Committee must produce minutes and action logs which must accurately capture the discussion, decisions and actions agreed. The minutes and action log will be sufficiently detailed as to provide a clear audit trail of issues discussed.

Minutes should be ratified at the subsequent meeting for accuracy. Copies of the draft and ratified minutes will be circulated to the core members of the committee. The minutes and action log should be circulated no later than 14 days following the meeting to afford those individuals enough time who have a responsibility to complete an action.

6. Key Responsibilities

- Review the outcomes and actions of the 4 radiation protection committee reports.
- Agree the report for the HS&E Trust committee

- Agree Radiation Safety information to be disseminated around the Trust
- Agree a collaborative way to implement nationally governed legislation across the Trust
- Advise on the Trust Radiation Safety Framework
- Escalation of concerns related to non-compliance to regulatory requirements etc to Trust Board

7. Reporting

The agenda template will be used for all committee meetings; this agenda has been agreed to suit the requirements of the Committee. Additional items to be placed on the agenda should be sent to the Chair no later than 7 working days in advance of the meeting.

Correspondence in relation to meetings e.g. minutes, papers, room bookings, meeting invites and cancellations will be sent by the Imaging Services PA.

Minutes will be sent to:

- All members of the committee

8. Meeting agenda:

Item	Responsibility
Apologies for absence	Chair
Minutes of the previous meeting	Chair
Review of actions	Chair
Report Escalations - Radiotherapy	RPC Chair Radiotherapy
Report Escalations – Radio nuclide	RPC Chair Radio nuclide
Report Escalations - Xray	RPC Chair Xray
Report Escalations – Non-Ionising	RPC Chair Non-Ionising
Finalisation of Trust HS&E report	Chair

AOB	All

9. Monitoring Effectiveness:

The Committee will formally review on an annual basis that:

- Members have attended 75% of meetings annually and the quorum is consistently met.
- The agreed numbers of meetings (annually) have taken place.
- The Terms of Reference are reviewed and are up-to-date being fit for purpose.
- Any changes to the Committee Terms of Reference will be managed by the Chair.

Appendix H. Trust Radiation Safety Advisers

H.1. RRPPS

- H.1.1 Radiation Protection Advisers (RPA) for diagnostic and radiotherapeutic uses of ionising radiation.
- H.1.2 Radioactive Waste Advisers (RWA)
- H.1.3 HSE-approved personal monitoring service (ADS) providing whole body, extremity and eye dosemeters for ionising radiation
- H.1.4 Ionising radiation instrument calibration service and Qualified Persons for the calibration and testing of both radiation protection and diagnostic radiology quality assurance instruments
- H.1.5 Medical Physics Experts (MPE) for diagnostic radiology and nuclear medicine
- H.1.6 Laser Protection Adviser (LPA)
- H.1.7 MR Safety Experts (MRSE)
- H.1.8 Radiation surveys and quality assurance testing of diagnostic x-ray equipment, gamma cameras, PET-CT scanners, Magnetic Resonance Imaging, lasers and other non-ionising facilities and quality assurance tests of ultrasound equipment

H.2. Radiotherapy Physics

- H.2.1 MPEs for radiotherapy treatments
- H.2.2 Assist the RPAs in the provision of protection advice for radiation therapy.
- H.2.3 Quality Assurance testing and calibration for radiotherapy equipment

H.3. Nuclear Medicine Physics

- H.3.1 MPEs for nuclear medicine and bone mineral densitometry
- H.3.2 Site Officer
- H.3.3 Quality assurance testing of nuclear medicine imaging equipment

H.4. Occupational Health

- H.4.1 Appointed Doctor for medical surveillance of classified radiation workers

H.5. External Appointment

- H.5.1 Dangerous Goods Safety Adviser (DGSA)

Appendix I. Monitoring Matrix

MONITORING OF IMPLEMENTATION	MONITORING LEAD	REPORTED TO PERSON/GROUP	MONITORING PROCESS	MONITORING FREQUENCY
Inspections to cover: risk assessments, personal monitoring, training (local rules, competencies to use equipment and IRMER) and equipment records	Site Managing Directors	Radiation Protection Committee	Senior Management Team will carry out rolling inspections of their departments	Rolling Programme
Summaries of significant non-compliances and incidents with respect to the relevant legislation	As appropriate: General Manager Departmental/ Service Manager Relevant Protection Supervisor	Radiation Protection Committee	Verbal or written report (non-attending RPSs) Datix incidents	Quarterly

Written report – Exposed individual Radiation Safety issues	Radiation Safety Board	Chair of Health, Safety and Environment Committee	Provide Health, Safety and Environment Committee with a report highlighting by exception any Radiation Exposed individual Safety issue that needs to be addressed by the Trust	Quarterly
Written report – Radiation Health and Safety Issues	Radiation Safety Board	DepCEO/Chair of Health Safety and Environment Committee	Provide HS&E with a report highlighting by exception any Radiation Health and Safety issues that need to be addressed by the Trust	As appropriate
Programme of radiological equipment performance and radiation protection surveys	Departmental/ Service Manager	Chair of relevant Radiation Protection Committee	Review of written reports issued by Medical Physics and local quality assurance tests	Annual
Action from Radiation Protection Committee meetings	Radiation Safety Board	Chair of relevant Radiation Protection Committee	Completed Actions	Quarterly