

Radiation Protection Policy

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Scope

This radiation protection policy considers the Ionising Radiation Regulations 2017 (IRR17) and the Ionising Radiation Medical Exposure Regulations 2017 (IRMER17).

This policy will be reviewed periodically to ensure that it remains relevant and effective. It will be reviewed at least annually. The radiation folder and its contents will be brought to the attention of those directly involved with dental X-rays.

The practice will ensure, as far as reasonably practicable, the health and safety of its employees, of contractors working on the premises and members of the public who may be exposed to the hazards arising from the use of ionising radiation.

The practice will ensure that all diagnostic examinations involving medical exposures are performed with radiation dose to the patient being as low as reasonably practicable (ALARP) to achieve the required clinical purpose, consistent with the employer's written procedures and protocols.

The practice is committed to a policy of restricting exposures to ionising radiation in accordance with the ALARP principle and will affect this through the following organisational arrangements, through clear actions and through the involvement of senior staff.

Responsibilities

"Employer" and "Employee"

Responsibilities under both IRR17 and IRMER17 relate to an "employer," however, in IRMER17 the term "employer" is used with a definition based on the concept of responsibility for health and safety matters rather than employment law. The employer, as a duty holder under IRMER17, is responsible for providing a framework of written procedures, written protocols, and QA programmes within which the various duty-holders undertake their functions. For the purposes of compliance with IRMER17, it is recommended that the employer's procedures should identify which individual(s), company or body corporate has been designated as the employer within the organisation.

Much of the requirements of IRR17 and IRMER17, and the guidance presented in this document, are addressed to "employees". However, where any individual who is identified as the "employer" is also required to work under the employer's procedures or local rules, they must also be considered to be an "employee" for the purposes of complying with the legislation. This will certainly be the case if the individual acts as either an IRMER practitioner, referrer, or operator (from IRMER17), or a radiation protection supervisor (from IRR17).

Overall responsibility for ensuring that a radiation protection programme is implemented and reviewed will lie with the employer, as part of the management and communication framework for Health and Safety.

Hassan Bhojani will be responsible for ensuring there are IRMER Employer's Procedures in place and stating those with responsibilities, including the following:

IRMER Employer's procedures reference	Guidance Notes for Dental Practitioners on the Safe Use of X-ray Equipment references
(a) To Identify correctly the individuals to be exposed to ionising radiation	D4 Patient identification
(b) To identify individuals entitled to act as referrer or practitioner or operator	D1 Entitlement and training of duty holders
(c) For making enquiries of individuals of childbearing age to establish whether the individual is or may be pregnant or breastfeeding	D5 Pregnancy enquiry
(d) Quality Assurance programme for written procedures and equipment	D15 Quality assurance programmes for written procedures, written protocols, and equipment
(e) Assessment of patient dose and administered activity	D9 Assessment of patient dose
(f) Use and review of DRLs	D10 Use and review of diagnostic reference levels
(g) Use of dose constraints established by the employer for research programmes	D12 Procedures for medical research programmes, including dose constraints
(h) Written Instruction for Nuclear Medicine	Not applicable
(i) Communication of benefits and risks	D6 Information on benefits and risks of exposure
(j) Recording of Clinical Evaluation	D8 Clinical evaluation
(k) Reduction of the probability and magnitude of accidental or unintended exposures	D13 Reducing the probability and magnitude of accidental or unintended exposures
(l) Clinically Significant unintended or accidental exposures	D14 Significant, or clinically significant, accidental, or unintended exposures
(m) Non-medical imaging exposures	D11 Non-medical imaging exposures (using medical radiological equipment)
(n) Carers and comforters	D7 Dose constraints and guidance for carers and comforters
Regulation 6(5)	D2 Referrals for dental radiography
Regulations 11(1)(b) and 11(1)(c)	D3 Justification and authorisation of dental radiographs and dental CBCT imaging

Radiation Protection Supervisor (RPS)

The employer must appoint one or more suitable persons as the radiation protection supervisor if there is a designated controlled area in the practice, there should be confirmation of this appointed person in writing. The key role of the RPS is to supervise the work undertaken with ionising radiation to ensure it is conducted safely and that the local rules are being adhered to.

Ideally, the RPS should be a member of the team working within the practice and is involved in dental radiography, if the practice is of a larger size, you may want to consider having two appointed supervisors.

It is common for the appointed RPS to be given additional tasks in relation to the role to support the practice safety procedures including provision of dosimetry monitoring where required, arranging for service and maintenance, record keeping and quality assurance checking. This is a recommendation as legally the responsibility of the above compliance with IRR17 lies with the employer.

Radiation Protection Adviser (RPA)

Employers must appoint and consult a minimum of one suitable RPA for advice regarding compliance with IRR17, this should cover the following dental radiography matters.

- Prior assessment of installation plans
- Acceptance into service of engineering controls, design features, safety, and warning devices in relation to new or modified radiation sources.
- Drafting and review of risk assessments, local rules, and contingency plans
- Designation of controlled and supervised areas and any requirements
- Working arrangements for pregnant employees
- Quality assurance
- Personal Protective Equipment
- Calibration of radiation monitoring equipment and checks of conditions.
- Designation of classified persons and personal dosimetry
- Prevention, investigation, and analysis of accidents
- Periodic testing of engineering controls, design features, safety and warning devices and regular checking of systems of work.

Medical Physics Expert (MPE)

IRMER17 requires employers to ensure that a suitable MPE is appointed and involved as appropriate for every type of exposure subject to regulations. An MPE is defined in IRR17 as an individual or group of individuals having the knowledge, training, and experience to act or give advice on matters relating to physics applied to exposures of the type subject to the regulations, and whose competence is formally recognised by the Secretary of State. The list of registered MPEs can be found on the RPA2000 website: <http://www.rpa2000.org.uk/mpe-recognition-scheme/>.

For dental radiography, the MPE must be involved as appropriate for the following matters:
Consultation on optimisation of patient doses Giving advice on:

- Dosimetry and QA in relation to exposures
- Measurement methods for the evaluation of the dose delivered to patients.

- Dental X-ray equipment and ancillary equipment (e.g., digital image receptors, phosphor plate or film processors, computer screens used for interpreting radiographs, etc)

Contributing to:

- Preparation of technical specifications for equipment and installation design
- Acceptance testing of dental X-ray equipment.
- The definition and performance of QA programmes for dental X-ray and ancillary equipment • Optimisation of doses to patients and others (such as carers and comforters)
- Application and use of diagnostic reference levels
- Analysis of events involving suspected or actual accidental or unintended exposures
- Selection of equipment to perform radiation protection measurement.
- Training of IRMER practitioners and other staff in radiation protection
- Advising the employer regarding compliance with IRMER17

Summary of essential actions when commencing with dental X-ray equipment for the first time

Hassan Bhojani will be responsible for completing the checklist of evidence that essential actions have been undertaken. A checklist for this can be found within the **Guidance Notes for Dental Practitioners on the Safe Use of X-ray Equipment** Guidance on Page 17.

Registration with the Health & Safety Executive (HSE)

Employers must register their “work with a radiation generator” with the Health and Safety Executive (HSE).

Registrations in England, Scotland and Wales all require an application to be

submitted to HSE via a dedicated website at <https://services.hse.gov.uk/bssd/>.

The registration process requires the employer to provide information, such as the business name, address, and number of premises, and make declarations that certain specific requirements of IRR17 have been met. Several of these will require the employer to appoint and consult a suitable radiation protection adviser (RPA) in order to fulfil them. Registration applications attract a fee which must be paid for the process to be completed.

From 1st October 2023, the required information needed to register has been updated by the HSE. This will affect new applications and the HSE may require further information from existing registrations. Practices are not required to take any action if already registered, the HSE will make contact directly for updated information requests.

The registrant will receive their certificate back in a summary of 3 documents - 1. Registration Certificate 2. Registration Summary & 3. Transaction Confirmation. It is vital that the Certificate and Summary are available at practice level.

Notifying HSE about Radon

Any employer who owns premises where employees work in an atmosphere where the annual average radon gas activity concentration has been assessed to be above 300 becquerels per cubic metre of air should also make a notification to HSE using the same process as above. Notifications

are free of charge. In this situation, the employer must also consult a suitable radiation protection adviser regarding any protection measures that may be necessary.

All employers are advised to use the interactive map on Public Health England's UK Radon website at <https://www.ukradon.org/> to determine if their premises are in areas that may be affected by radon.

Local Rules

The local rules must contain at least the following information.

- Name(s) of the appointed Radiation Protection Supervisor(s).
- The identification and description of each controlled area and a summary of the arrangements for restricting access.
- An appropriate summary of working instructions.
- Identification or summary of any contingency arrangements indicating the reasonably foreseeable accidents to which they relate.
- The dose investigation level.

The local rules should be drawn up by the Legal person in consultation with the RPA.

Legal Person's - (Employer and/or Practice Owner) Written Procedures for Patient Protection

Patient Identification

To ensure that the wrong patient is not x-rayed, where there is any possibility of error for example if a patient is referred to another site or operator), the patient will be asked to confirm their name, address, and date of birth.

Arrangements for Pregnant Staff

Employees of child-bearing potential involved with radiography must be informed of the theoretical risk to the foetus arising from exposure to ionising radiation, the additional dose limits that apply during pregnancy and the conclusions of the risk assessment regarding the need, or otherwise, to inform their employer if they become aware that they are pregnant.

Clinical Evaluation of Radiographs

Each radiograph shall be evaluated in writing by the dentist treating the patient (or prescribing treatment where the patient is treated by a therapist or by a hygienist) and provide information enough for a later audit. For example:

- Caries identified.
- Only findings relevant to the patient's management or prognosis need to be recorded.
- For pre-extraction radiograph records for example 'root form simple' or 'nothing abnormal diagnosed'.

Quality Assessment

A principal objective of the employer's QA programme is to ensure the consistent production of radiographs of adequate quality for diagnostic purposes while minimising patient doses as far as

possible. It is therefore important to monitor image quality performance on a regular basis and a simple subjective image quality rating system is proposed for this

The use of a two-point scale is now recommended for all forms of dental radiography and dental CBCT imaging, where the images are rated either 'diagnostically acceptable' ('A') or 'not acceptable' ('N')

in accordance with the table below. These recommended performance targets represent what is observed to be achievable in the majority of well-managed Dental Practices.

Quality Rating	Basis	Target (% of radiographs or CBCT images in sample)	
		Digital imaging	Film imaging
Diagnostically acceptable ('A')	No errors or minimal errors in either patient preparation, exposure, position, image reconstruction and of sufficient image quality to answer the clinical question	Not less than 95%	Not less than 90%
Diagnostically not acceptable ('N')	Errors in either patient preparation, exposure, positioning, image (receptor) processing or image reconstruction which render the image diagnostically unacceptable	Not greater than 5%	Not greater than 10%

All new patients should be asked when they last had radiographs taken and every effort should be made to retrieve these from the patient's previous dentist.

Radiographs must be stored safely and retained for the same time as all other parts of the patient record. In paper-based practices or practices that retain paper records for storing artefacts such as referral letters and other correspondence analogue radiographs should be mounted and stored within the record. Digital radiographs should be stored electronically.

Service and Maintenance

Your practice will need to establish its own maintenance and service arrangements based on the requirements of IRR17. Typically, service and planned preventative maintenance will be undertaken annually.

A critical examination and acceptance test needs to be undertaken on new equipment or following any significant modification or repair.

Dental radiography equipment needs to have routine equipment performance and radiation safety checks including patient dose measurements completed every 3 years. Depending on the extent of local QA undertaken, Cone Beam CT equipment may need annual equipment performance and radiation safety checks undertaken. Consult with your MPE.

Clinical Audit/Peer Review

Conducting a clinical audit ensures the delivery of an effective and efficient service by identifying good practices and highlighting areas for improvement. Practitioners should use clinical audits to ensure practice remains evidence-based, to demonstrate quality assurance and to always act in the best interest of the patient.

The employers' QA programme would involve a defined process to ensure that image quality is rated, and results are analysed so that agreed performance targets can be compared. The audit should be undertaken by an operator who is adequately trained and experienced in taking dental radiographs, there are two alternative approaches that can be used.

1. A prospective evaluation whereby image quality ratings are assigned and recorded for all radiographs as they are being-viewed.
2. A retrospective evaluation whereby an example of radiographs is drawn from the records at regular intervals, the image quality ratings are assigned and recorded, and the results are analysed.

In both cases, the audit should be undertaken at least every 6 months and the sample size should be no less than 100 images, unless there are not enough images to facilitate this number.

Separate modalities; CBCT, Ceph, & OPT, for example, should be treated as separate audits.

Document Control

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The latest approved version of this document supersedes all other versions, upon receipt of the latest approved version all other versions should be destroyed, unless specifically stated that previous version(s) are to remain extant. If in any doubt, please contact the document Author.

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