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IR(ME)R Employers Procedures Dentistry

January 2024



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# Introduction

## IR(ME)R

The Ionising Radiation [Medical Exposure] Regulations 2017 IR(ME)R govern the use of ionising radiation, including x-rays, in healthcare. The purpose of IR(ME)R is to minimise the risk to patients undergoing medical exposures. A requirement of IR(ME)R is that the Employer puts in place written Employer’s Procedures [EP] for Referrers, Practitioners and Operators to ensure that radiation is used safely and appropriately.

## Example Employers Procedures

This document contains a set of example Employer’s Procedures to adapt for use. The aim is to standardise practice and ensure that all duty holders are working to the same standards. The example Employer’s Procedures provided here, and their appendices, are intended as a guide only, to demonstrate the variations and areas of practice which need to be considered when writing IR(ME)R Employer’s Procedures and should be regarded as an expression of professional opinion rather than an absolute statement on the legal position. While attempts have been made to ensure they are comprehensive, there will always be local variations, which must be taken into account.

## How to use the example Employer’s Procedures

NHS Dental Practices/Independent Clinics should adapt and complete the example Employer’s Procedures provided in this document and include these in their Radiation Protection File. All of the suggested examples and text must be carefully adapted to ensure they match local ownership and operational practice.

It is intended that each case of *red italics []* should be adapted to reflect practice. In Employer’s Procedures 14 and 15 there are options for practices/independent clinics that do research and/or non-medical imaging respectively. Please complete the section that applies and delete the text that is not relevant.

|  |  |
| --- | --- |
| [Name of practice/clinic] Employers Procedures written for dental exposures | |
| Author |  |
| Version number |  |
| Changes to previous version |  |
| Authorised by |  |
| Date of issue |  |
| Reviewer |  |
| Next review date |  |

|  |  |
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| EP1 Entitlement of Duty Holders | [Name of NHS Dental Practice/Independent Clinic] |

In *[insert* *NHS Dental Practice / Independent Clinic Named person or Employer]* is responsible for entitling people as IR(ME)R duty holders on behalf of the Employer. *[insert named person]* is responsible for deciding whether the evidence presented is sufficient for each individual to be entitled in the role of Practitioner, Operator, and/or Referrer for dental exposures.

The Employer maintains a record of the qualifications, experience and training required for each duty holder role EP1 [Appendix 1](#_Appendix_1). A range of tasks are agreed which is appropriate to the competence of the individual and supported by verifiable training and experience, and this defines the duty holder’s scope of practice. This is captured in an entitlement certificate, which is signed by [insert named person], and the duty holder.

### Entitlement of Dental Advisors ***[please delete this section if not applicable to your Dental Practice/Independent]***

In this NHS Dental Practice *[insert* *named person or Employer*] entitles Practitioner Services Division (PSD) senior dental advisors and orthodontic advisors to refer for further imaging if they identify a clinical need on review of submitted images. The assurance of competence and training of the senior dental advisors is provided by the National Services Scotland (NSS) Dental Director.

### Competence

Competence is assessed for each Practitioner and Operator by an appropriately trained person. An up-to-date record is kept of agreed qualifications, experience and training required for individuals to perform the roles of duty holders for all types of dental exposures [Appendix 2](#_Appendix_2) and [Appendix 3](#_Appendix_3)

**For NHS Dental Practices / independent clinics with multiple sites, it may be appropriate for the Lead Person at each site to assess their staff’s competence and then provide this information to the Employer or named person for entitlement.**

### Medical Physics Expert

The Medical Physics Expert (MPE) is entitled in writing on appointment. They should only be appointed if they are adequately trained and competent for this specific role and are listed on the RPA 2000 register <https://www.rpa2000.org.uk/list-of-certificate-holders/>. Medical Physicists/Technologists may also be entitled as Operators for the purposes of radiation safety surveys or equipment testing and their training records must be provided to the Employer on request.

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| EP2 Referrals for Dental Exposures | [Name of NHS Dental Practice/Independent Clinic] |

The *[referral]* criteria used at *[NHS Dental Practice/Independent Clinic]* are *[the Faculty of General Dental Practice ‘Selection Criteria for Dental Radiography’]* and copies of this document are made available to the Referrers *[in each room/on the intranet/personal copy]*. A document, which includes information about typical effective dose to the patient, is available *[in the practice/clinic on paper/ on each surgery computer/intranet].*

### When the Referrer is also the Practitioner and Operator

Where the Referrer also acts as the Practitioner and Operator for a dental exposure, they must only refer within their scope of practice as defined in their entitlement documentation. The request for the radiograph must be documented within the patient’s *[dental record/electronic record]*. Within this record the clinical indications for the radiograph should be clear, fit with the referral criteria, and the Referrer must be identifiable.

### Referring to another NHS Dental Practice/Independent Clinic, hospital or the public dental service

If a referral to carry out the dental exposure is made to an external site, then it must be within the Referrer’s defined scope of practice, completed clearly, consistent with the most recent FGDP guidance and in line with the external site’s procedures.

The essential information required is:

* Patient’s full name, date of birth and address
* Dental exposure requested
* Sufficient clinical information relevant to the dental exposure requested, such as previous diagnostic information or dental records
* Signature of Referrer
* Name of Referrer (printed)
* Date of referral
* Patient contact telephone number (if relevant and available)

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| EP3 Justification and Authorisation | [Name of NHS Dental Practice/Independent Clinic] |

### Justifying an Exposure

Justification should be carried out prior to the exposure. When justifying an exposure, the Practitioner must consider the following:

* The clinical justification for the exposure
* The risks posed by exposure to radiation
* The risk versus benefit of the equipment selected, for example the higher dose of Cone Beam CT (CBCT) or panoramic imaging is not justified when an x-ray would provide adequate diagnostic information, and
* Whether an alternative option, which does not use radiation, would deliver the same diagnostic information.

If the Practitioner is aware, at the time of justification, that a recorded clinical evaluation will not result from the exposure, then the exposure must not be authorised and cannot take place.

### Recording the Justification

If one person is acting as entitled Referrer, IR(ME)R Practitioner and Operator, the Referrer’s *[signature/ electronic personal code/personal login]* in the clinical notes next to the request for a radiograph will demonstrate authorisation of the exposure.

### Special Circumstances

It is recognised that in some specific exceptional circumstances, it may not be feasible for a Practitioner to carry out justification in advance of an exposure, such as an unplanned radiograph due to a complication mid-procedure. Should this situation arise then the Practitioner justifying the exposure should be aware and involved in the examination. Additionally, a record of authorisation and the reason why prior authorisation was not possible should be made as soon as possible within the same episode of care.

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| EP4 Patient Identification | [Name of NHS Dental Practice/Independent Clinic] |

### Patient ID

To ensure that the dental records are accurate and the exposure is delivered to the intended patient, the patient’s identity must be confirmed when they enter the dental room. For follow-up patients, the patient’s dental chart would also be available, which can be compared to a visual examination of the patient’s teeth. This can act as an additional check to ensure that the person being examined is the correct patient, and that the correct patient’s notes are open on the computer.

The Operator who undertakes the exposure is responsible for ensuring that the correct patient receives the correct exposure. The Operator must also ensure that the record is made in the correct patient’s record.

If the Operator carrying out the exposure is not the Referrer and the exposure is undertaken at a different time to the clinical assessment, the patient should be positively identified prior to exposure by asking their name, date of birth and address.

### Communication Difficulties

If the patient cannot confirm their identity the following options should considered:

* Written cards
* Translator services
* A carer or relative accompanying the patient being asked to identify the patient, or
* By examining the patients photographic identification, for example a passport or photo card driving license.

When patients are unable to identify themselves, the method used to confirm patient identity should be recorded [*in the patient’s dental record/on the referral]*.

### Discrepancies

If one aspect of the patient identifiers does not correspond between the patient’s record and the information obtained but the Operator is sure it is the correct patient, for example one digit different in date of birth or different address (previous address), then the Operator may use their professional judgement and the details may be changed. Administrative staff should be informed of the change to allow this to be amended on the patient’s [*dental record/electronic record]*.

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| EP5 Pregnancy Enquiries | [Name of NHS Dental Practice/Independent Clinic] |

### X-Ray Exposures

In line with the Faculty of General Dental Practice UK (FGDP) guidance, patients do not need to be asked if they are pregnant before an exposure.

### Dental Cone Beam CT *[delete if not used]*

In *[insert practice/clinic name]* patients [*will/will not]* be asked if they are pregnant prior to a CBCT exposure. This decision will be based on a risk assessment carried out by the MPE.

### Patient Concern

If a pregnant patient is particularly concerned about the potential for the radiograph to damage their unborn child and is not reassured by the dentist or MPE, then the Referrer/Operator may delay the radiograph if it is in the best interests for the patient’s health and wellbeing.

This decision will be documented in the patient’s [*dental record/electronic record]*.

### Risk and Benefit Information for Pregnant Patients

Information relating to the benefits and risks of an exposure will be provided to all patients, whether pregnant or not (see [EP17](#_EP17_Provision_of)).

A risk and benefit poster advising pregnant patients to inform the dentist before any type of dental treatment or procedure will be clearly displayed in the practice waiting room or treatment area [(Appendix 4)](#_Appendix_4). This should be of a size and height that it is visible to all patients.

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| EP6 Assessment of Patient Dose | [Name of NHS Dental Practice/Independent Clinic] |

### Measurement of dose

The Medical Physics Expert (MPE) will ensure that representative measurements of patient dose are made as part of the x-ray Quality Assurance (QA) programme and will recommend appropriate exposure settings based on these measurements.

### Recording of dose

The total number of exposures must be recorded in the patient’s notes*.* This will include the reason for carrying out any repeat exposures. The Operator should record that the standard settings (as recorded in the exposure protocols) for the exposure used. If there was any deviation from the standard exposure, the Operator must record details of the deviation. This may include:

* kV, mA
* Exposure time [ms]
* Dose Area Product [DAP] value
* Dose Width Product [DWP] value
* Other dose indicator e.g. exposure or sensitivity index for digital images

Equipment installed on or after 6 Feb 2018 will have a device or other feature that provides information on the relevant parameters to allow assessment of the patient dose. If available, this value should be recorded in the patient’s notes.

### Exceeding expected dose

The Operator undertaking the exposure will be aware of the range of doses or Diagnostic Reference Level (DRL) that result from the exposure factors set within the protocols. They will be able to identify any exposure which has exceeded the expected dose and understand when this is notifiable [EP10](#_EP10_Incident_Reporting). When a DRL is consistently exceeded, the MPE must be involved in the review.

### Dose Monitoring

The Employer is responsible for implementing a programme for carrying out patient dose surveys and consulting with the MPE.

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| EP7 Diagnostic Reference Levels (DRLs) | [Name of NHS Dental Practice/Independent Clinic] |

### Diagnostic Reference Levels

The Employer is responsible for setting and regularly reviewing DRLs for all standard exposures, which must meet or be below national and European DRLs where available. The MPE can provide relevant DRLs. These should be easily accessible to the Operator.

The Employer is responsible for ensuring appropriate reviews are undertaken whenever DRLs are consistently exceeded, and that corrective action is taken where appropriate.

### Establishing Local DRLs

The MPE, as laid out within their contract, will advise on appropriate Local DRLs for all standard examinations that are based on the standard exposures as listed in the exposure protocols. These Local DRLs will be set in terms of displayed information, for example Dose Area Product (DAP) or measurement such as patient entrance surface dose.

### Reviewing Local DRLs

Local DRLs will be reviewed following the regular checks of representative dose undertaken as part of the QA programme. The MPE will advise where any adjustments are necessary, having regard for any available national or European DRLs. Local DRLs will be reviewed every [*3 years].*

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| EP8 Clinical Evaluation | [Name of NHS Dental Practice/Independent Clinic] |

### Recording a Clinical Evaluation

Following a dental exposure, a suitably trained and entitled Operator must clinically evaluate each image and the findings documented in the patient’s [*dental record/electronic record]*.

This evaluation of the whole image will include:

* The identity *[signature/initials]* of the Operator undertaking the evaluation
* The details of all findings including:
* Charting of caries or alveolar bone levels where appropriate
* Findings relevant to the patient’s management or prognosis
* In the case of pre-extraction radiograph, it may be sufficient to record either ‘root form simple’ or ‘nothing abnormal diagnosed’.

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| EP9 Training and Education | [Name of NHS Dental Practice/Independent Clinic] |

### Training

The Employer is responsible for ensuring that Practitioners and Operators are adequately trained for their scope of practice. This includes training on each specific piece of equipment to be used, and radiation safety and IR(ME)R.

The Employer must ensure that training is only delivered by designated competent trainers. They must also ensure that each duty holder has an up-to-date training record, which includes their current registration details and is available to relevant enforcing authorities (an example training record can be found in [Appendix 3](#_Appendix_3)).

Employers must ensure they have evidence of the training and competence of any staff working under practicing privileges, and that they are entitled to work in the practice/independent clinic such as associates, locums and visiting independent clinicians.

### Students/Trainees

There must be ‘direct’ supervision by someone who is adequately trained, entitled and is directly accountable for the activity of the trainee.

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| EP10 Incident Reporting | [Name of NHS Dental Practice/Independent Clinic] |

### Accidental/Unintended Exposures

The individual who identifies an accidental or unintended exposure is responsible for recording all available data concerning the incident or near miss and inform the *[Employer/MPE]* within one working day. Contact details for the MPE are [*insert telephone/email*]. The patient will be informed of the exposure unless, in exceptional circumstances, it is deemed not to be in their best interests. This decision will be taken by the Practitioner with support of the Employer and will be documented in the patient’s notes. The MPE is responsible for assessing the patient’s dose and for advising the Employer whether an incident needs to be reported to Healthcare Improvement Scotland or if any other steps need to be taken.

### Recording of Accidental/Unintended Exposures

In the event that an accidental or unintended exposure of a patient, or near miss, the Operator will record on an *[incident form/other recording method]* and provide the following information to the *[Employer/MPE]:*

* The age and demographic details of the patient
* The x-ray/CT settings, the kilovolts (kVp) and milliamperes (mA) and DAP (if known)
* Any other relevant information such as error codes, time for which the exposure appeared to continue or unusual signals
* What happened and why, and
* Any other relevant information.

### Equipment

If suspected that the incident was due to an equipment malfunction, the equipment must be withdrawn from use, warning signs placed on it and not used until the reason for the incident has been clarified and any faults rectified. Incident Reporting and Investigation Centre (IRIC) should be informed of equipment failures, which either have caused harm to a patient or staff member or had the potential to do so. Further information about contacting IRIC is in [Appendix 5](#_Appendix_5).

### Learning from Incidents

Any lessons arising or changes to practice following the investigation will be implemented to ensure future risks are minimised. Relevant staff will be informed of all incidents, any lessons arising from the investigation and any changes to practice.

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| EP11 Reducing the Probability and Magnitude of Unintentional Exposures | [Name of NHS Dental Practice/Independent Clinic] |

### Audit

Regular audit will be carried out at intervals set by the Employer. Audits of compliance with IR(ME)R will include topics such as the recording of dose, and Operator training records. Clinical audits will also be conducted. These will include reviewing and improving healthcare outcomes and ensuring patient care is provided in line with best practice standards. For further information about these audits, please see [Appendix 6](#_Appendix_6) for more detail and [Appendix 7](#_Appendix_7) for a sample template.

### Equipment

Regular quality assurance is conducted of all equipment to ensure correct functioning. The Employer is responsible for ensuring that an equipment inventory is kept for all radiation equipment and that the equipment is maintained in accordance with manufacturer’s instructions.

### Training

Training and competence assessments will be undertaken for all Operators, including when new equipment and procedures are introduced.

### Incidents

Learning should be shared with all relevant staff, along with any changes implemented following incidents and near misses.

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| EP12 Document Control | [Name of NHS Dental Practice/Independent Clinic] |

All Employer’s Procedures and written protocols are held on the *[NHS Dental Practice/Independent Clinic intranet/other digital location]* and are available to all practice staff. These electronic documents are watermarked ’Uncontrolled when printed’ to indicate that these are the only controlled versions of these documents.

In this NHS Dental Practice/Independent Clinic, the procedures and protocols are reviewed [*every year]* andif there are practical changes or new equipment is installed. The revised documents are shared by [*email/staff meetings/portal].*

If a procedure or protocol changes it is the responsibility of the Authoriser to inform all relevant staff. The Author of a document is responsible for the content whilst the Authoriser is responsible for ensuring the document is in place.

Version information (for example) date of issue, version number, authoriser and date of next review is included in each document so that the current version can be easily identified and it is clear when it was last reviewed.

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| EP13 Radiology Audit | [Name of NHS Dental Practice/Independent Clinic] |

The Employer is responsible for ensuring that regular audits are undertaken to ensure that Employer’s Procedures are being complied with by duty holders. Audits should include:

* Records of quality assurance testing equipment
* Displaying/sharing of risk benefit information
* Training records and entitlements are up to date and correct for all duty holders
* The referral process, including quality of information provided, and
* Records of clinical evaluation.

Mechanisms should be in place to ensure audit results are shared, and that action plans are developed and implemented to drive improvement.

### Images

Reviews of dental images should be undertaken to grade image quality. The two-point quality rating scale should be used which is recommended for all forms of dental radiography and CBCT imaging.

Images are either rated as 'diagnostically acceptable' ['A'] or 'not acceptable' ['N']. For digital imaging, no less than 95% should be categorised as 'A', and 5% as 'N'. For film imaging, targets are 90% and 10% respectively.

When an image is rated as unacceptable, a record should be made of the nature of the deficiency, the suspected cause and the number of images taken, and remedial actions implemented as appropriate.

Further information from the FGDP can be found on their website <https://www.fgdp.org.uk/publication/guidance-notes-dental-practitioners-safe-use-x-ray-equipment>.

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| EP14 Research Exposures | [Name of NHS Dental Practice/Independent Clinic] |

If you **DO NOT** conduct research, this EP can simply state:

No research exposures are currently undertaken at [insert practice/Clinic name]

If you **DO** conduct research then please adapt the following EP:

### The Employer’s Responsibility

The Employer must ensure that all research has received approval from an ethics committee and that every request is authorised, and a clinical evaluation performed.

### The Research Practitioner

A protocol for each research project will be written by the research Practitioner and made available to all Operators in the *[research folder/electronically]*. The Practitioner must also determine that there is sufficient net benefit to allow research exposures to go ahead.

All potential participants must receive a written explanation of the research programme, its risks and have the opportunity to discuss these with a responsible person before agreeing to take part. The explanation must make it clear that treatment will not be prejudiced by failure to take part. Each participant will sign a statement indicating that the whole procedure has been properly explained, that they are voluntarily undertaking the procedure and are aware of the risks including those from the radiation exposure.

It is the responsibility of the individual Practitioner for each research study to ensure that every request is justified.

### Referrals

The Referrer must indicate in the patient’s [*dental record/electronic record]* that the request is for a research exposure.

### The Medical Physics Expert (MPE)

The MPE will be involved with the dose and risk assessment, as agreed within their contract, and will identify a dose constraint, when no direct medical benefit is expected to the individual from the exposure.

### The Operator

Operators must follow the research protocol specifically developed for the research study. They must ensure that the dose constraint set by the MPE is adhered to. They must report to *[insert* *named person/their line manager]* any instances where exposures are being made for research purposes, where this has not been clearly indicated on the request. The clinical evaluation must be performed by an appropriately entitled Operator and reported through appropriate communication arrangements.

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| EP15 Non-Medical Imaging | [Name of NHS Dental Practice/Independent Clinic] |

If you **DO NOT** conduct non-medical imaging – this EP can simply state:

Non-medical imaging will not be undertaken unless identified in this EP.

If you **DO** conduct non-medical imaging, then please adapt the following EP:

Non-medical imaging refers to exposures undertaken deliberately for purposes other than to bring a health benefit. In [insert *NHS Dental Practice/Independent Clinic name]* non-medical imaging is undertaken for:

**Adapt and supplement the following examples as appropriate:**

* Dental radiographs for employment purposes, such as for military personnel/flight crew or deep-sea divers
* Radiological imaging for insurance or legal purposes
* Radiological age assessment
* Identification of drugs or other evidence that may be concealed within a dental cavity.

Referrals for non-medical imaging exposures must be clearly identified and must be justified by a Practitioner. The dental radiographic history of each patient attending for non-medical imaging exposures should be checked by the Practitioner and recent similar examinations should be taken into account. For instance, it may not be necessary to complete a whole series of radiographs if some have been taken recently.

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| EP16 Exposure of Carers and Comforters | [Name of NHS Dental Practice/Independent Clinic] |

Carers and comforters should only provide support where the patient is unable to keep the image receptor still, or where the patient requires reassurance during a radiograph.

Where any consideration is given to the usage of a carer or comforter to support a patient the default position should be to give due consideration as to where best this patients care is to be delivered. If onward referral is required, dialogue should precede any images being taken. Consult with the team you are to refer to, as they may be better placed to generate images. The best patient outcomes should underpin these discussions.

Carers and comforters must have the risks and benefits of being present during the exposure to radiation fully explained to them before the exposure is taken. For example, see [EP17](#_EP17_Provision_of).

The Practitioner must authorise the exposure and document in the [*dental record/electronic record]* that a carer or comforter has been involved in the exposure.

### Dose

Where a carer or comforter remains in the controlled area with the patient during dental radiography a dose constraint of [*amend according to the dose constraint recommended by your MPE*] to the carer/comforter per radiography session will be used. A session is defined as one visit to the practice and may involve up to two radiographs, one orthopantomogram (OPG) or one CBCT examination.

The Operator should ensure the dose to the carer or comforter is kept as low as reasonably practicable. As such, the following restrictions apply:

* If required, the film or digital detector should be held by using a pair of forceps to avoid direct irradiation of the fingers and should not be hand-held
* It should never be necessary for the carer and comforter to hold or support the x-ray tube
* The person providing support should be positioned so that they will not be in the direct beam and should ideally stand as far away from the patient and tube as possible, and
* Any one person should not regularly provide manual support.

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| EP17 Provision of Information Relating to the Benefits and Risks of an Exposure | [Name of NHS Dental Practice/Independent Clinic] |

It is essential that, wherever practicable, and prior to an exposure taking place, the individual to be exposed or their representative is provided with adequate information relating to the benefits and risks associated with the radiation dose from the exposure.

In *[insert name of NHS Dental Practice/Independent Clinic*] this is undertaken by

**[Include appropriate options]:**

*Displaying a benefit and risk poster in a location and of a size that is accessible to all patients. Operators will bring the poster to the attention of the patient and answer any associated questions. An example poster is included in* [*Appendix 8*](#_Appendix_8)*.*

*OR*

*Provided all patients with printed information and answering any associated questions.*

*OR*

*The Practitioner or Operator having an individual risk benefit discussion with every patient before an exposure.]*

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| EP18 Equipment Inventory and Quality Assurance | [Name of NHS Dental Practice/Independent Clinic] |

### Equipment Inventory

An inventory of [*x-*ray/CT] equipment will be kept, including the type of machine, manufacturer, model and serial numbers, year of manufacture, year of installation, location and date of acceptance test. The inventory will be updated when new equipment is installed or removed.

### Quality Assurance

A Quality Assurance (QA) programme must be maintained to ensure that the equipment is fit for use and maintained effectively to provide optimum imaging. The MPE must be consulted on the contents of a QA programme - the manufacture may also be able to help. In *[insert name of practice/clinic] QA is conducted at the following frequencies:*

* *x-ray equipment - daily/weekly/monthly*
* *OPG equipment - daily/weekly/monthly*
* *CT scanner - daily/weekly/monthly*

A QA [routine testing and maintenance record] will be maintained, that records the type of test, date, the result of the test, whether the result was satisfactory, who carried out the testing and when the next test is due.

If the QA indicates a problem with the equipment then the test should be repeated. If this confirms an issue, then the [*Employer/MPE/manufacturer]* will be contacted and the equipment taken out of clinical use.

# Glossary

**Diagnostic reference level [DRL] -** Radiation dose levels, or administered activity, for typical diagnostic examinations on standard size adults and children for broadly defined types of equipment.

**Employer -** The employer, as a duty holder, is responsible for providing a framework within which professionals undertake their functions. The definition of employer relates to health and safety functions rather than employment matters.

**Entitlement -** This is the process of verifying that the duty holder has the necessary training and competencies to undertake the task as defined in their scope of practice.

**Justification -** An intellectual process of weighing up the potential benefit of an exposure against the detriment from the radiation dose received by that individual.

**Operator -** Any person who is trained and entitled to carry out the practical aspects of an exposure.

**Practitioner -** A registered healthcare professional who is entitled to take responsibility for an individual exposure. The primary role of the practitioner is to justify and authorise exposures.

**Referrer -** A registered healthcare professional who is entitled to refer individuals for exposures involving ionising radiation. In Northern Ireland, this also includes medical practitioners registered with the Medical Council of Ireland

These definitions are from the Royal College of Radiologists. Further definitions can be found at - <https://www.rcr.ac.uk/media/mmab2tga/rcr-publications_ir-me-r-implications-for-clinical-practice-in-diagnostic-imaging-interventional-radiology-and-diagnostic-nuclear-medicine_june-2020.pdf>

# Appendix 1

### EP1: Example of qualifications, experience and training required for each duty holder

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| **Registrant Group** | **IR(ME)R Duty Holder** | **Qualifications/Training/Experience required** |
| Dentist | Referrer | Registration with GDC and undergraduate dental degree with additional training if requesting CBCT |
| Practitioner | Registration with GDC and undergraduate dental degree |
| Operator | Undergraduate dental degree and local equipment training |
| Dental Hygienist or Dental Therapist | Referrer | Registration with GDC and undergraduate degree in oral health science or diploma in dental therapy or dental hygiene, with additional skills development\* |
| Practitioner | Registration with GDC and undergraduate degree in oral health science or diploma in dental therapy or dental hygiene, with additional skills development\* |
| Operator | Undergraduate degree in oral health science or diploma in dental therapy or dental hygiene, with additional skills development\* and local equipment training |
| Dental Nurse | Operator | Diploma or Certificate in Dental Nursing, Certificate in Dental Radiography\*\* and local equipment training |
| Medical Physics Expert | Operator | Science degree or equivalent  Experience in the application of physics, within dental use of ionising radiation  Recognised by an assessing body, such as RPA 2000, deemed suitable to assess competence by the Department of Health and Social Care [www.rpa2000.org.uk/mpe-recognition-scheme/]  Clear appointment to this role |
| Medical Physicist/Technologists | Operator | *Appropriate qualification* |

\* Dental hygienists and dental therapists may carry out Referrer, Practitioner and Operator duties if the duties are within their scope of practice, training and experience. If appropriate training for any duty was not included in their degree or diploma training, additional post-qualification skill development is required [e.g. for the justification, authorisation and clinical evaluation of radiographs]. A dentist may be required to report on the entire radiograph for aspects that would not be within the scope of practice of a dental hygienist or therapist. \*\* A Certificate in Dental Radiography is required if a dental nurse takes radiographs without supervision.

# Appendix 2

### EP1 Example competencies for entitlement as a duty holder under IR(ME)R at [insert name NHS Dental Practice/Independent Clinic]

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Name [NHS Dental Practice/Independent Clinic:]*** | | | |  | | | | | | |
| **Name of Duty Holder:** |  | | | | **Job Title:** |  | | | | |
| **Qualification[s] and date obtained:** | | |  | | | | | | | |
| **Registration Number:** | | | | | **Date last checked:** |  | | | | |
| **Referrer tasks** | | | | | **Assigned as competent [**Date & signature/initials of duty holder] | | | | | |
| Refer for all dental exposures [excluding CBCT] | | | | |  | | | | | |
| Refer for Cone Beam CT dental exposures | | | | |  | | | | | |
| **Practitioner tasks** | | | | | **Assigned as competent [**Date & signature/initials of duty holder] | | | | | |
| Competent to justify requests for all dental exposures | | | | |  | | | | | |
| Competent to justify requests for Cone Beam exposures | | | | |  | | | | | |
| **Operator tasks** | | | | | | | **In training**  Date & signature/initials of duty holder and assessor | | | **Assigned as competent**  Date & signature/initials of duty holder and assessor |
| Competent to carry out patient identification | | | | | | |  | | |  |
| Competent to undertake all intraoral exposures | | | | | | |  | | |  |
| Competent to undertake Pan/Lat Ceph exposures | | | | | | |  | | |  |
| Competent to undertake Cone Beam CT exposures | | | | | | |  | | |  |
| Competent to process digital images | | | | | | |  | | |  |
| Competent to process dental films | | | | | | |  | | |  |
| Competent to change chemicals in a dental processor | | | | | | |  | | |  |
| Competent to clinically evaluate dental exposures [except CBCT] undertaken at practice | | | | | | |  | | |  |
| Competent to clinically evaluate dental exposures [except CBCT] undertaken outwith the practice | | | | | | |  | | |  |
| Competent to clinically evaluate Cone Beam CT dental exposures | | | | | | |  | | |  |
| Competent to carry out quality assurance on equipment | | | | | | |  | | |  |
| **Entitled by:** | | *[Insert name of Entitler]* | | | | | | **Date:** | *[Insert date]* | |
| **Signature of duty holder:** | | *[Insert name of duty holder]* | | | | | | **Date:** | *[Insert date]* | |

# Appendix 3

### EP9 Example Training Records

|  |  |  |
| --- | --- | --- |
| ***Name [NHS Dental Practice/Independent Clinic:]*** | |  |
| **Name of duty holder:** | |  |
| **Job title:** | | *e.g. Dental Nurse* |
| **Entitlement:** | | *e.g. Operator* |
| **Training reviewed by:** |  | |
| **Date:** |  | |
| **Next training review due:** |  | |

**External Training**

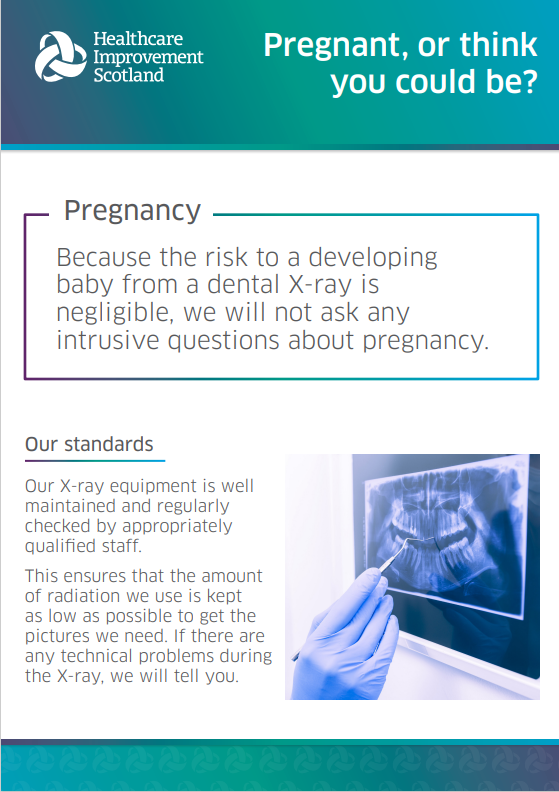
|  |  |  |
| --- | --- | --- |
| **Type of training** | **Qualification** | **Date** |
| *e.g. Dental Nurse training including radiography* | *Certificate in Dental Nursing* |  |
| *e.g. CPD training on radiation protection* |  |  |
|  |  |  |
|  |  |  |

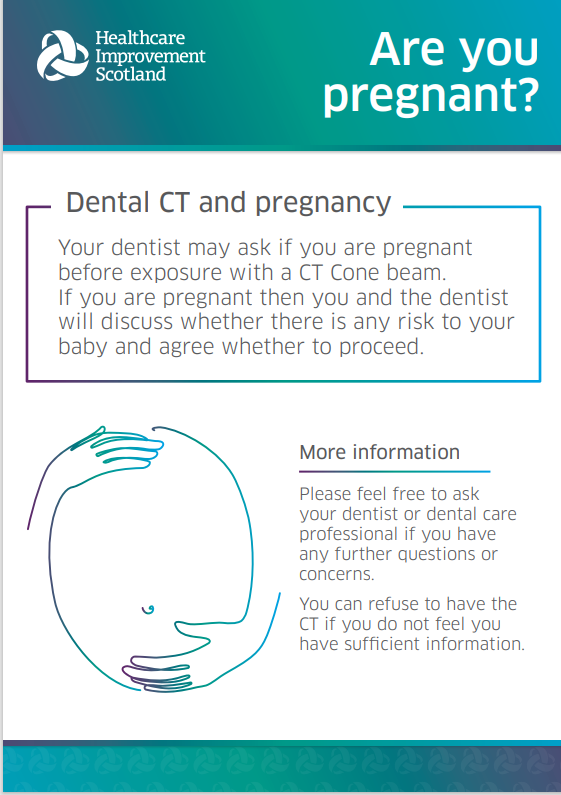
**In-house training (if applicable)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Site/Room/Equipment** | *e.g. Glasgow Dental Practice, Exam room 2, Intra oral machine* | | | |
| **Task** | |  | **Trainer initials** | **Date** |
| Switch x-ray equipment on and off | |  |  |  |
| Aware of exposure charts and protocols | |  |  |  |
| Can select appropriate exposure factors | |  |  |  |
| Undertake an intra oral dental exposure | |  |  |  |
| Use rectangular collimation | |  |  |  |
| Emergency procedure for equipment failure | |  |  |  |
| Complete room log including exposure factors/dose when appropriate | |  |  |  |
| **This person has received training on the above tasks** | | | | **Date** |
| Signature of trainer |  | | |  |
| Name of trainer |  | | | |
| Signature of duty holder |  | | |  |
|  |  |  |  |  |
| **Site/Room/Equipment** | *e.g. Glasgow Dental Practice, Exam room 2, Desktop processor* | | | |
| **Task** | |  | **Trainer initials** | **Date** |
| Switch x-ray equipment on and off | |  |  |  |
| Process a film | |  |  |  |
| Clean processor | |  |  |  |
| Change chemicals in processor | |  |  |  |
| Processor QA | |  |  |  |
| **This person has received training on the above tasks** | | | | **Date** |
| Signature of trainer |  | | |  |
| Name of trainer |  | | | |
| Signature of duty holder |  | | |  |
|  |  |  |  |  |
| **Site/Room/Equipment** | *e.g. Glasgow Dental Practice, Exam room 2, Desktop processor* | | | |
| **Task** | |  | **Trainer initials** | **Date** |
| Switch x-ray equipment on and off | |  |  |  |
| Process a film | |  |  |  |
| Clean processor | |  |  |  |
| Change chemicals in processor | |  |  |  |
| Processor QA | |  |  |  |
| **This person has received training on the above tasks** | | | | **Date** |
| Signature of trainer |  | | |  |
| Name of trainer |  | | | |
| Signature of duty holder |  | | |  |
|  |  |  |  |  |
| **Site/Room/Equipment** | *e.g. Glasgow Dental Practice, Exam room 2, Desktop processor* | | | |
| **Task** | |  | **Trainer initials** | **Date** |
| Switch x-ray equipment on and off | |  |  |  |
| Process a film | |  |  |  |
| Clean processor | |  |  |  |
| Change chemicals in processor | |  |  |  |
| Processor QA | |  |  |  |
| **This person has received training on the above tasks** | | | | **Date** |
| Signature of trainer |  | | |  |
| Name of trainer |  | | | |
| Signature of duty holder |  | | |  |
|  |  |  |  |  |
| **Site/Room/Equipment** | *General* | | | |
| **Task** | |  | **Signature of duty holder** | **Date** |
| Familiar with the responsibilities and processes described in the Employer’s Procedures and Local Rules | |  |  |  |
|  |  |  |  |  |

# Appendix 4

EP10 these posters can be displayed in A4 or larger clinical areas as appropriate to ensure visibility. There are additional posters available at <https://www.scottishdental.org/>

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# Appendix 5

### EP10 Incident Reporting and Investigation Centre (IRIC)

The Incident Reporting and Investigation Centre (IRIC) is Scotland's specialist national safety and risk management unit. Our purpose is to improve the safety of equipment and facilities in Scotland's health and social care services. Further information about IRIC can be found at: <https://www.nss.nhs.scot/browse/health-facilities/incidents-and-alerts>

If you have an equipment incident which did or could have caused harm then please email IRIC at [nss.iric@nhs.scot](mailto:nss.iric@nhs.scot). They will be able to provide advice, and if you need to complete report on the incident they will give you login details to do so.

Once you have your login details you can report the incident here: [https://www.nss.nhs.scot/health-facilities/incidents-and-alerts/report-an-incident/](https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.nss.nhs.scot%2Fhealth-facilities%2Fincidents-and-alerts%2Freport-an-incident%2F&data=05%7C01%7Ccatriona.hutcheson1%40nhs.scot%7Ca8f8ba131c8a4ab3612208dbb37e2d6b%7C10efe0bda0304bca809cb5e6745e499a%7C0%7C0%7C638301126729856483%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=Tm6vFKJf3CDGWPQ%2F8tnlSRw59umghWEjtEzgjnY3Gwg%3D&reserved=0)

# Appendix 6

### EP 11 Quality Assurance versus Audit

An underpinning theme runs through the Employers Procedures (EPs) that of ensuring that the process’ that are in place, are up to date, and achieving their intended purpose, reviewed, and updated regularly and a record that this has been checked exists. This is not just best practice this is a requirement of the legislation; your records need to be available if required.

Your Employers Procedures cannot be properly “audited” by simply assessing the quality of the images provided. Each element of your Employers Procedures needs to be quality assured. For many parts of your Employers Procedures may be a simple tick box list. A sample audit template is included in [Appendix 7](#_Appendix_7).

The legislation uses the word “audit” to describe both the process of having a checklist and completing that check itself. This word audit has acquired a particular meaning in dentistry which is not that intended in this legislation.

“Clinical Audit” and its associated methodology requires a process, which has demonstrably room for improvement, a formulated remediation exercise and a second cycle post remediation cycle of data collection. This is not what is required to satisfy IR(ME)R requirements. A simple checklist of a process, when it was carried out and by whom and a review date will suffice in most instances.

# Appendix 7

### EP11

| **QA item/process** | **What to audit**  [e.g. QA record] | **Audit considerations**  [e.g. are items up to date and satisfactory] | **Outcome/ comments/ actions required** | **Carried out by** | **Date** | **Next review due** |
| --- | --- | --- | --- | --- | --- | --- |
| **QA of Image Quality** | | | | | | |
| Quality ratings of radiographs | Image quality ratings record/log | Are up-to-date records of image quality ratings held? |  |  |  |  |
| Analysis of radiograph quality | Image quality analysis record [e.g. [Quality Assessment of Radiographic Images template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/)] | Is analysis current?  Is radiograph quality satisfactory?  Has reject image analysis been carried out?  Has corrective action been taken if required? |  |  |  |  |
| **QA of Patient Dose & Equipment** | | | | | | |
| Equipment inventory | Inventory document [e.g. [X-ray Machine Inventory template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/), ancillary equipment template] | Is inventory complete and up to date? |  |  |  |  |
| Equipment testing and maintenance | Records and reports  [e.g. [X-ray Machine Routine Testing and Maintenance Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/), [X-ray Machine Routine Surveillance Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/), external reports [from engineer, MPE, RPA]] | Is there a schedule for equipment testing and maintenance?  [e.g. dates when next tests due indicated in test records]  Have appropriate tests and maintenance been carried out [i.e. critical exam, acceptance test, routine and safety tests, maintenance, routine surveillance] at appropriate frequency?  Are reports available?  Have recommendations been actioned? |  |  |  |  |
| Assessment of dose | Reports of representative patient dose from routine testing  Local DRLs | Are local DRLs in place?  Have the representative patient doses for each machine and type of exposure been monitored and compared to the local DRLs?  If consistently higher, has an investigation been carried out and action taken? |  |  |  |  |
| **QA of Image Processing and Viewing Facilities** | | | | | | |
| Digital Imaging | External servicing/maintenance reports  Records of QA checks and tests [e.g. [Digital Detector Check Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/), [Digital Monitor Check Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/)] | Has servicing/maintenance of digital imaging system been carried out at appropriate frequency?  Is there a recorded assessment of phosphor plate/digital sensor condition and performance?  Is there a recorded assessment of monitors used for viewing digital images?  Has corrective action been taken if required? |  |  |  |  |
| Film Imaging | External servicing/maintenance reports for automatic processor  QA records [e.g. [X-ray Film Stock Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/), [Developer & Fixer Changing Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/), [Radiograph Processing Unit Cleaning Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/)]  Records of QA tests [e.g. [Radiograph Processing Unit/ Darkroom Light Test Record template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/)] | Has servicing/maintenance of automatic processor been carried out at appropriate frequency?  Are there up-to-date records of film & chemical stocks, developer & fixer changing and processor cleaning?  Have processing units/darkrooms been checked regularly to ensure they are light tight? [at least annually recommended]  Is there a recorded assessment of performance [e.g. step-wedge tests]?  Has corrective action been taken if required? |  |  |  |  |
| **QA of Training** | | | | | | |
| Staff training | Staff training records | Are there up-to-date records of training and CPD for each staff member involved in radiography?  Are these regularly reviewed? |  |  |  |  |
| **Employer’s Procedures** | | | | | | |
| Document QA | Master copy of the practice’s Employer’s Procedures | Are there practice specific Employer’s Procedures in place?  Are these reviewed regularly? [annual review recommended]  Are document control measures in place? [e.g. version no., authorisation, page numbers]  Are all duty holders aware of current version? |  |  |  |  |
| QA of compliance with the Employer’s Procedures | Relevant records and logs, observation of practice | Are the practice’s Employer’s Procedures followed by all relevant duty holders? E.g. may include audits[[1]](#footnote-2) of:   * entitlements, to ensure that duty holders’ competencies for their scope of duties have been assessed and are supported by appropriate training * referrals, justifications, authorisations and clinical evaluations * incident reporting and outcomes * research and non-medical exposures [if applicable] * any other processes specified in the procedures |  |  |  |  |
| **Employer’s Protocols** | | | | | | |
| QA of protocols | Master copy of the practice’s Employer’s Protocols | Are there practice specific Employer’s Protocols in place?  Are these being reviewed regularly? [annual review recommended]  Are document control measures in place?  [e.g. version no., authorisation, page numbers]  Are all duty holders aware of current version? |  |  |  |  |
| **Radiation Risk Assessment** | | | | | | |
| QA of Risk Assessment | Practice’s radiation risk assessment | Is there a practice specific radiation risk assessment in place?  Is this reviewed regularly [3-yearly recommended]? |  |  |  |  |
| **Local Rules** | | | | | | |
| QA of Local Rules | Master copy of the practice’s Local Rules [e.g. [Local Rules template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/)] | Are there practice specific Local Rules in place?  Are these reviewed regularly? [annual review recommended]  Are document control measures in place?  [e.g. version no., authorisation, page numbers]  Are all duty holders aware of current version? |  |  |  |  |

# Appendix 8

### EP17 this poster should be displayed in the waiting area. In size A3 or larger to ensure visibility.

1. More detailed records of each of the audits should be held. A [Record of Audit template](http://www.psm.sdcep.org.uk/content/radiation-protection/templates-for-radiation-protection/) can be downloaded from SDCEP’s Practice Support Manual. [↑](#footnote-ref-2)