IR(ME)R procedures and protocols

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Procedure:
Patient Identification

- When does this happen?
  - On entering the dental room?
  - When dental nurse calls patients into x-ray room?
  - When the dentist examines the dentition?
- How is this completed?
  - Asking active questions
  - Using dental records (for f/u patients only)
  - Consider language barriers/age/mental capacity
  - Different for new vs follow up
- Is it clear who is responsible for ensuring the patient is correctly identified prior to an exposure?
  - Dentist
  - Dental nurse/hygienist/therapist

Referral

- How is this documented?
  - In the patients dental record?
  - On a separate referral?
  - Consider external referrals?
  - What information must be included?

This could be documented within a procedure to ensure standardisation of practice (although not one of the required Schedule 1 procedures)

Justification and Authorisation

- Justification and authorisation need to occur before the x-ray is carried out
  - Where is this recorded?
  - Is this a standardised approach?
  - Have you considered emergency situations when it may not be possible for this to happen prior to the exposure?
- Are guidelines issued by a practitioner used by operators to authorise against?

  This could be documented within a procedure to ensure standardisation of practice (although not one of the required Schedule 1 procedures)

Procedure:
Pregnancy enquiries

- Dental x-ray imaging is, by general professional consensus, not damaging to a developing foetus except for vertex occlusal

- Consequently no formal pregnancy enquiries are required under IR(ME)R . Therefore a procedure could just state that these enquires are not made

- However a patient may be asked about their pregnancy status for psychological reasons

Procedure:
Assessment of Dose

- Exposure factors should be recorded in order to allow for an assessment of dose to be undertaken if necessary

- Within dental practice it is accepted practice to only record the factors if the standard settings on the exposure charts are deviated from

- If the x-ray equipment provides a dose indicator such as DWP or DAP this should be recorded

Procedure:
Assessment of Dose

- What information is recorded?
- By whom?
- Where?

It may also be worth mentioning that if a dose indicator is provided by the equipment, then this may be considered with regard to the DRL.

Procedure:
Diagnostic Reference Levels

- DRLs are set at the 75th percentile, so 25% of patients are likely to exceed this value
- DRLs can be set locally to reflect local practice (LDRLs)
- Can be set following a dose survey by the MPE
- Based on group of patients, so cannot be compared directly to an individual, however they can be used as a ‘signpost ‘

Procedure:
Diagnostic Reference Levels

- What DRLs are in place?
- Are they on display or included within the exposure chart?
- How often are they reviewed and by whom?
- How would you know if they are being consistently exceeded?
- What actions are taken by the employer if they are being consistently exceeded?
- Procedure should state that they are not expected to be exceeded when good and normal practice is applied

Procedure:
Clinical Evaluation

- How is this recorded?
  - In the patients dental record?
  - On a the day list?
- By whom?
  - The operator carrying out this task should be identifiable
- What should it contain?
  - Details of any findings or no abnormality detected

For CBCT, if a large field of view has been used there is a duty to report on the whole image not just the dental area

Incident reporting

- What is reported?
  - Incidents or include ‘near miss’
- Responsibilities
  - For reporting incident and to whom?
  - Involving the MPE/RPA
  - Investigation
  - External reporting is necessary
  - Feedback to other staff members
- When
  - Any timescales

This could be documented within a procedure to ensure clarity and standardisation of practice (although not one of the required Schedule 1 procedures)

Procedure: Reducing the probability and magnitude of an unintentional exposure

All of the good practice undertaken

- Employers procedures and protocols will be in place and regularly reviewed to ensure they match local practice
- All equipment will regularly undergo quality assurance to ensure it is functioning correctly
- Additional equipment QA checks carried out if over 10% of images are deemed unacceptable
- Staff feedback given following incidents
- Training and competence assessments will be undertaken including when new equipment and procedures are introduced

Procedure:
Reducing the probability and magnitude of an unintentional exposure

- Induction programmes for new staff
- Grading and review of dental images
- Clinical audit including audit of procedures
- Good practice and technique applied
- Investigation of near miss incidents
- Peer review of images – looking at image quality to include positioning, collimation, density, sharpness and exposure

Procedure: Document QA

- Outline the document control required for IR(ME)R documentation
  - How often procedures/protocols will be reviewed
    - What about if practice changes between these times?
  - Version number
  - Author
  - Authorised by
  - Issue date
  - Review date
  - Page no
  - Watermarked with ‘uncontrolled when printed’

Audit

- Whilst not a required procedure under Schedule 1, it may be sensible to outline what audits are to be undertaken
  - Who is responsible for carrying them out
  - Timeframes
- Some examples of clinical audit are:
  - Assurance that all procedures and protocols are current and will be reviewed by the review date
  - An audit of duty holders' entitlement along with their supporting qualifications and training. This audit should ensure that their entitlement matches the duties performed and that it is supported with evidence of training and continuing professional development

Audit continued

- An audit of referrals to ensure that they have been made according to the procedure and that a clinical evaluation has been carried out in line with the clinical evaluation procedure.
- An audit of referrals to ensure that they have been justified and authorised and that the practitioner can be identified
- An audit of patient dose should be undertaken 3 yearly by the MPE. These audits could be used to establish local DRLs

Procedure: Research

- May not be required if no research is undertaken
- Procedure needs to consider
  - Dose constraints - when no direct medical benefit is expected to the individual from the exposure
  - Target doses - for patients which are expected to receive a diagnostic or therapeutic benefit from the exposure
  - Special attention for justification
  - Volunteers
  - Informed of risk regarding radiation in advance

Procedure: Medico-legal

- May not be required if no medico-legal exposures are undertaken
- Procedure needs to consider
  - What medico-legal exposures are undertaken?
  - Special attention for justification and optimisation

Occupational Health Surveillance

- An occupational heath surveillance exposure means medical surveillance for workers
- For example
  - Dental examination prior to working on an oil rig where there are no dental provisions
  - Dental examinations for aircrew or military personnel

This could be documented within a procedure to ensure clarity and standardisation of practice (although not one of the required Schedule 1 procedures)

Training and Education

- There may be benefit in outlining the approach taken to training and education
  - Describe induction
  - Clarify who holds training records
  - How scopes of practice are reviewed
  - Clarify situation for students or 3rd party employees

This could be documented within a procedure to ensure clarity and standardisation of practice (although not one of the required Schedule 1 procedures)

Written Protocols

Written protocols should:

- Be specific to each piece of equipment
- Be specific to each examination
- Demonstrate document control

Protocols should include:

- Adult or paediatric
- Occasionally also include clinical indications
- Exposure parameters/settings

Exposure Charts

- Should be available for each X-ray machine
- Be pre-programmed into equipment where this function is available
- Should demonstrate document control

Example Adult Protocols – exposure chart

Examination	X-ray Machine Settings	kV	mAs	mA	sec	FSD or FFD cms	Ref. Dose	Specific Comments
Upper 1-3	Adult and incisor	65	1.4	7	0.2	2	1.4 mGy	Rectangular collimation should be used whenever clinically possible
4-5	Adult and premolar		1.75		0.25		1.9 mGy	
6-8	Adult and molar		2.8		0.4		2.0 mGy	
Lower 1-3	Adult and incisor	65	1.12	7	0.16	2	1.1 mGy	As above
4-5	Adult and premolar		1.4		0.2		1.4 mGy	
6-8	Adult and molar		2.24		0.32		1.6 mGy	
Bitewing	Adult and appropriate tooth	65	2.24	7	0.32	2	1.6 mGy	As above
Occlusals	Adult and occlusal	65	2.24	7	0.32	2	1.6 mGy	As above
Lat Ceph	Standard	90	-	20	0.3	150	40mGycm^2	
Panoramic	Standard jaw	73	-	8	10	-	80mGycm^2	If possible, limit field to area of interest in line with written protocols

Example Adult Protocols

Adults (over 16 years of age)

Type of dental exposure	Clinical indication	Comments
OPG	Unusual eruption patterns Unusual morphology Extensive and general periodontal breakdown	Whole mouth is required
	Impacted teeth on one side	Select setting that includes the side required only
	Delayed eruption Unexplained missing teeth	Limit the area of the jaw imaged to the minimum area required
	Assessment of wisdom teeth prior to planned surgical intervention	Select setting to cover the wisdom teeth and not the whole mouth, unless specifically requested