

Employer's procedures

Cavendish House Dental Care & Imaging Centre

ENTITLEMENT AND TRAINING OF DUTY HOLDERS

Objective

To ensure that structures are in place for entitlement of IRMER17 duty holders, and that records will be kept and maintained of agreed qualifications, experience and training required for individuals to perform the roles of duty holders for all types of dental exposures undertaken at Cavendish House Dental Care.

Process of entitlement

Entitlement is demonstrated by Dr Stuart Ellis (the entitler) recording an individual's permitted duties on behalf of the employer. The entitler must decide whether the evidence of adequate training presented is sufficient for each individual to be deemed competent and to be entitled in the role of IRMER practitioner, operator, and/or referrer for dental exposures. For each duty holder, the permitted duties should be specified.

Duty holders will be informed by Dr Stuart Ellis of their entitlement and of the need to maintain their competency in line with the recommendations of the GDC, and for dental CBCT exposures, section 3.10 of the Dental Guidance Notes – Second Edition.

When referrals are made from other practices, Dr Stuart Ellis will entitle the dentists at the other practices as referrers and, if necessary, as operators for clinical evaluation depending. This may be established by means of a service-level agreement between the two practices.

The medical physics expert (MPE) will be considered to be entitled as an operator on appointment. This appointment will be made in writing.

Training and education requirements

Each duty holder is responsible for maintaining their own personal training record containing an up-to-date record of qualifications, evidence of training and continuing professional development. This will be assessed by Dr Stuart Ellis on an annual basis.

On induction of new staff and with the implementation of any new dental X-ray equipment, ancillary equipment or equipment software, there must be associated training which must be documented within each duty holder's training records. Their duties should be reassessed by Dr Stuart Ellis.

Practitioners and operators shall satisfy themselves that they have appropriate training and experience to undertake duties that they are entitled to perform. They must not carry out any duty for which they have not been trained and entitled.

Any students or other trainees may undertake any aspect of the duty for which they are being trained provided if this is done under the supervision of a person who is themselves adequately trained and entitled for that duty (e.g., nurses undergoing training to become competent in dental radiography being supervised in the positioning the image receptor, patient and X-ray tube, selecting exposure settings). This must be 'direct' supervision and the supervisor shall take responsibility for the activity as if they had carried it out themselves.

Where the employer enters into a contract with another to engage a practitioner or operator (e.g., agency staff or MPE), the latter (e.g., MPE) shall be responsible for keeping their training records.

Qualifications, experience and training required for individuals to perform each duty holder role:

Registrant group	IRMER17 duty holder	Qualifications/training/experience required
Dentist	Referrer	Registration with GDC with additional training if requesting dental CBCT
	Practitioner	Registration with GDC and undergraduate dental degree, with additional training if justifying dental CBCT
	Operator	Registration with GDC, undergraduate dental degree and local equipment training, with additional training if clinically evaluating or exposing dental CBCT
Dental nurse	Operator	Registration with GDC, diploma or certificate in dental nursing (include radiography if taking radiographs) and local equipment training
Dental hygienist	Referrer	Registration with GDC and appropriate qualification e.g., diploma in dental hygiene and dental therapy with additional skills development
	Operator	Appropriate qualification and local equipment training.
Dental therapist	Referrer	Registration with GDC and appropriate qualification e.g., diploma in dental hygiene and dental therapy with additional skills development
	Operator	Appropriate qualification and local equipment training
Medical physics expert	Operator	Science degree or equivalent. Experience in the application of physics, within dental uses of ionising radiation. Written appointment to this role

REFERRALS FOR DENTAL X-RAY EXAMINATIONS

Objective

To outline how a referral may be made for a dental X-ray examination.

Responsibilities

The employer must establish referral guidelines for dental exposures, including radiation doses, and shall ensure that these are available to all referrers.

Process of referral

A clinical history and examination of every patient is performed prior to requesting any dental radiograph or dental CBCT examination.

1. When the referrer is also the IRMER practitioner and operator

Where the referrer also acts as the IRMER practitioner and operator for a dental exposure, they must ensure that the request for the exposure is documented within the patient's dental record. Within this record the clinical indications for the X-ray should be clear, fit with the referral criteria, the referrer must be identifiable and authorisation of the exposure as justified must be completed.

2. When the referrer is not the IRMER practitioner or operator

2.1 Accepting external referrals

The referrer will be supplied with a copy of the referral guidelines (accessed via the website).

When accepting referrals for X-ray examinations from other dental practices, the IRMER practitioner will ensure that the referring practice has provided the following information on a suitably completed referral form:

- patient's full name, date of birth and address
- dental examination requested
- type of imaging requested
- sufficient clinical information to justify the radiographic exposure requested
- information required from the radiographic exposure
- digital signature of referrer
- name of referrer (printed) and GDC registration number
- date of referral

Each request for a radiographic examination will be justified and authorised prior to an exposure and this will be recorded on the patient' records.

2.2 *Referring to another dental practice*

The referrer requesting the radiograph must be provided with a copy of the referral guidelines by the employer at the practice that will be carrying out the exposure. The referrer will ensure that the request is in line with these guidelines. If it is likely that multiple referrals will be made to another dental practice, then a service level agreement should be established between the two practices.

A request card, referral form or letter will be completed by the referrer and be sent to the operator before the dental exposure is carried out.

The essential information required on each request card, referral form or letter is listed in 2.1 above.

3. Referral guidelines

The referral guidelines used at this practice are:

Guidance Notes for Dental Practitioners on the Safe Use of X-Ray Equipment (2nd Edition) PHE/FGDP 2020

A copy of this document is made available to the referrers, on the Practice Intranet (on the Radiation Protection page), and on the CBCT referral website.

There are several other documents which can be used to provide referral guidelines for dental CBCT. The European Academy of Dental and Maxillofacial Radiology (EADMFR) produced Consensus Guidelines including a list of Basic Principles for dental CBCT use, seven of which are relevant to referrals for dental CBCT.

The European Commission published evidence-based guidelines on the use of dental CBCT in 2012, and the Faculty of General Dental Practice (UK) published the third edition of their Selection Criteria for Dental Radiography guidelines in 2013 (updated 2018) which includes aspects of the use of CBCT.

Both the FGDP(UK) guidelines and the European guidelines are suitable for use as referral guidelines for dental CBCT. In terms of specialist practice, referral guidelines for dental CBCT have been developed for orthodontics, implant dentistry and endodontics. An extensive list of potentially useful publications, including referral guidelines for dental CBCT, is contained within a review from 2015.

Links to all of the above documents can be found at <https://www.cavendish-imaging.com/referralguidance>

JUSTIFICATION AND AUTHORISATION OF DENTAL RADIOGRAPHS AND DENTAL CBCT IMAGING

Objective

To ensure that every dental exposure (e.g., dental radiograph or dental CBCT examination) is justified and authorised.

Responsibilities

It is the responsibility of an entitled dentist/hygienist/therapist to justify each individual dental exposure taking the following into account:

- Specific objectives of the exposure and the characteristics of the individual involved
- Total potential diagnostic or therapeutic benefits, including the direct health benefits to the individual and the benefits to society, of the exposure
- Individual detriment that the radiation exposure associated with the exposure may cause
- Efficacy, benefits, and risk of available alternative techniques having the same objective but involving no or less exposure to ionising radiation

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

Process for Justification and Authorisation – ‘in-house’ radiography or dental CBCT imaging

When the referrer, who is a dentist/hygienist/therapist and also an entitled IRMER17 practitioner, deems it in the patient’s best interests to have a dental exposure, then the referral in the clinical notes indicates that it is also deemed to be a justified exposure. (For dental CBCT imaging the IRMER17 practitioner must be a dentist).

Process for Justification and Authorisation – referrals from other dental practices

If referrals for dental exposures are accepted from other practices the follow procedure applies:

1. Referrer must have a Service Level Agreement and must have declared to have obtained training in CBCT at Level 1 and Level 2 if referring for a CBCT scan
2. Referrer must be a GDC registered dentist or GMC registered medical practitioner
3. The referral will be assessed by Dr Stuart Ellis
4. The exposure must not be undertaken unless Dr Stuart Ellis authorises the exposure
5. The authorisation will be recorded in the patient’s clinical records
6. The justification for the exposure will be recorded in the clinical records

Special Circumstances Regarding Authorisation

It has been recognised that, in some specific circumstances, it may not be feasible for authorisation to be carried out in advance of an exposure. Should this situation arise then the person justifying the exposure should be present in the room while the X-ray is carried out and authorisation of the exposure must occur as soon as possible within the same episode of care.

Circumstances where this may occur are during treatments where it is not in the best interests of the patient for the dentist to leave them to document authorisation in the patient's dental record.

At all other times authorisation will be carried out in advance of the dental exposure.

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PATIENT IDENTIFICATION

Objective

To ensure that each justified dental exposure is delivered by an entitled operator to the intended patient.

Responsibilities

The operator who undertakes the exposure is responsible for ensuring that the correct patient receives the correct exposure.

The process for patient identification

To ensure that the dental records are accurate, every patient's identity (ID) is confirmed when the patient enters the dental room, prior to the dental assessment starting. If an operator, other than the dentist, e.g., dental nurse, carries out this identification there should be a verbal handover confirming ID to the dentist prior to the clinical examination starting.

For patients who are not referred from another practice, where possible, the operator must ask the patient to give three identifiers. The procedure must be positive and active e.g.:

- "please confirm your name?"
- "please confirm your address?"
- "please confirm your date of birth?"

Where patients are referred from another dental practice, three additional questions should be asked to verify the patient's identity, such as:

- "please confirm the area or tooth this X-ray is for?"
- "please confirm who sent you for this X-ray?"
- "please confirm why are you having this X-ray?"

These details should be checked against the patients' dental records. 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 the tooth/teeth to be imaged are still present.

If the patient is deaf these questions can be asked using written cards. If the patient through illness, physical or mental disability, or language barrier is not able to confirm their identity:

- always treat them with dignity and respect
- a carer or relative may be asked to identify the patient if they are escorted
- examine any personal photographic identification they may have such as a passport or photocard driving licence

- for patients with language difficulties, the operator may identify the patient through an interpreter or relative if one is available

When the patient is unable to identify themselves, the method used to confirm patient identity should be recorded in the patient's dental record.

Differences between patient identifiers

If one aspect of the patient identifiers does not correspond between the patient's record and the information obtained, e.g., one digit different in date of birth or different address (old address), but the operator is able to positively confirm the patient's identity, then the operator may use their professional judgement and the details may be changed. Clerical staff should be informed of the change to allow this to be changed on the patient's dental record.

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PREGNANCY ENQUIRY

Objective

To outline the requirements for pregnancy enquiries prior to a dental exposure.

Scope

Pregnancy enquiries are made for all females of childbearing age.

The ionising radiation dose involved with dental radiography or dental CBCT imaging is low and consequently pregnancy is not usually an issue of concern

If a pregnant patient is concerned about the potential for the radiograph to damage their unborn child, and is not reassured by the dentist, or medical physics expert, then the dentist may consider delaying the radiograph if it is in the best interests of the patient.

This decision should be documented in the patient's dental record.

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INFORMATION ON BENEFITS AND RISKS OF EXPOSURE

Objective

To ensure that wherever practicable, and prior to a radiograph or dental CBCT image being taken, the patient or the patient's representative is provided with adequate information relating to the benefits and risks associated with the radiation dose from the procedure.

Responsibilities

The IRMER practitioner/operator who undertakes an exposure is responsible for ensuring that the patient is informed about the benefits and risks associated with the radiograph prior to it taking place.

Procedure

Describe the benefits to the patient in terms of the expected positive outcome from the examination for example diagnosis informing or monitoring treatment and explain that the risk from the radiation exposure is low.

The following wording could be considered:

"The risks associated with dental radiography are extremely small under normal conditions and the radiograph will help inform your treatment."

To help put the risk into perspective dental radiography can be compared to other exposure situations. For example:

"The radiation dose from two bitewing radiographs or one panoramic radiograph is roughly equivalent to that received during a one-hour plane flight."

and

A poster developed by the Clinical Imaging Board that provides information on the benefits and risks of exposure during dental radiography is displayed in the patient waiting area

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DOSE CONSTRAINTS AND GUIDANCE FOR CARERS AND COMFORTERS

Objective

To identify when carers or comforters should be used to provide support to patients during an exposure and how doses to carers and comforters can be minimised.

To establish appropriate dose constraints and guidance for the exposure of carers and comforters.

Scope

Carers or 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. Examples include the support and comfort of young children; and the support and comfort of patients with additional needs.

Dose constraints

Where a carer or comforter remains in the room with the patient during dental radiography a dose constraint must be applied to the carer or comforter's exposure, based on the advice of the MPE. This should normally apply to exposures occurring within a specific episode of care, e.g., a single visit to a dental practice. The dose constraint would not normally be expected to exceed an effective dose of 0.1 mSv.

Responsibilities

The employer must undertake a risk assessment (with the advice of the MPE) to estimate the potential dose to the carer or comforter and to set a suitable dose constraint, and it should be ensured that the dose likely to be received by the carer/comforter is less than the dose constraint.

The IRMER practitioner is responsible for justifying and authorising the exposure of the carer / comforter. This must be considered separately to the justification and authorisation of the exposure of the individual undergoing the dental radiograph / dental CBCT imaging.

The operator who undertakes the exposure is responsible for ensuring that the carer or comforter is informed about the potential radiation exposure and for obtaining consent to proceed.

Procedure

The instructions below must be followed.

1. If a carer or comforter has to remain in the controlled area during an X-ray exposure they must adhere to the following procedure:
 - stand as far away as possible from the X-ray tube head and out of the path of the main X-ray beam and not hold or support the X-ray tube head, collimator or image receptor with their hand
 - wear a personal dosimeter (if advised by the MPE)

- Record the dental X-ray exposure factors (to enable an estimate of the dose).
2. In exceptional cases, where the patient is unable to hold an image receptor in position or requires other assistance, a carer or comforter may assist provided that they adhere to the following procedure:
- do not hold the X-ray tube head, collimator or image receptor with their hand
 - if practicable, use artery forceps to position and hold the image receptor
 - wear a protective apron
 - wear a personal dosimeter (if advised by the MPE)
 - Record the dental X-ray exposure factors (to enable an estimate of the dose)

Such assistance should not be provided by any person who is pregnant.

Carers and comforters will be made aware of the low risk associated with a dental X-ray examination and will be asked whether they are willing to receive the small dose. The procedure 'Information on benefits and risks of exposure' will be used to explain the risk.

A note will be made in the patient record whenever a carer or comforter has been involved in an exposure, detailing the relationship of the of the carer or comforter to the patient, the type of support given and the number and type of exposures.

The note must also include the signature of an IRMER practitioner who justified the exposure of the carer or comforter.

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CLINICAL EVALUATION

Objective

To ensure every dental exposure undertaken has a corresponding recorded clinical evaluation. The aim of this is to document the findings from reporting on the dental radiograph or dental CBCT image.

Responsibilities

The dentist, as an entitled operator, is responsible for ensuring that an accurate and timely clinical evaluation is recorded in the patient's dental record.

Process of recording a clinical evaluation

Following a dental exposure each image must be clinically evaluated by the dentist (or the referrer for CBCT scans), and the findings documented in the patient's dental record.

This evaluation of the whole image shall include:

- A. The identity, either signature or initials, of the operator undertaking the evaluation
- B. Details of all the radiological findings, for example:
 - charting of caries (or suspected caries for CBCT)
 - findings relevant to the patient's management or prognosis
 - in the case of a pre-extraction radiograph, it may be sufficient to record either 'root form simple' or 'hooked roots'
 - any unexpected or potentially serious incidental findings

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ASSESSMENT OF PATIENT DOSE

Objective

To enable assessment of patient dose for any dental exposure to be undertaken by recording the exposure settings used.

Responsibilities

The medical physics expert (MPE) will ensure that representative measurements of patient dose are made as part of the X-ray equipment quality assurance programme; and recommend appropriate exposure settings based on these measurements.

The MPE will compare representative measurements of patient dose with relevant national or local diagnostic reference levels and recommend any necessary action to address any deficiencies.

The operator undertaking the exposure will ensure that data required to assess patient dose is recorded, as outlined below.

The process for recording factors relevant to dose

When practicable, all operators initiating a dental radiographic exposure will adhere to the standard settings as laid out in the dental practice's guideline exposure protocols.

If the standard settings are not used, then the actual exposure settings used will be recorded.

These 'off-protocol' settings, along with the total number of exposures will be recorded in the patient's notes. This will include the reason for carrying out any repeat exposures. With CBCT the full exposure details will be recorded in the electronic radiographic exposure log for each patient.

If the standard settings are not used and the dental X-ray equipment provides a read-out of the dose or dose area product (DAP) delivered, then the operator will record the DAP value or other dose indicator within the patient's dental electronic radiographic log.

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USE AND REVIEW OF DIAGNOSTIC REFERENCE LEVELS

Objective

To establish suitable local diagnostic reference levels (DRLs) for each type of dental X-ray equipment used by the employer, and to ensure these are reviewed at appropriate intervals.

Responsibilities

The medical physics expert (MPE) will:

- a) ensure that representative measurements of patient dose are made as part of the X-ray equipment quality assurance programme
- b) use the representative measurements of patient dose to recommend appropriate local DRLs, or to review and if appropriate, update existing local DRLs and recommend any changes to radiography practices
- c) where there is evidence that patient doses consistently exceed one or more local DRLs, assist the employer to undertake a thorough review of radiographic practices, and recommend any changes that are necessary

The employer will:

- d) in consultation with the MPE, establish local DRLs for each type of dental X-ray set that is in clinical use, having due regard to European and national DRLs where available
- e) make the local DRLs available to the operators
- f) where patient doses consistently exceed one or more local DRLs, take action to improve the current techniques or justify their continued use, in accordance with the advice of the MPE
- g) where patient doses consistently exceed twice the national DRL, immediately withdraw the equipment from clinical use until improvements can be made, or replace it, in accordance with the advice of the MPE
- h) communicate any corrective action that may be required, to staff

The operator will:

- i) when possible, ensure that after each exposure for which a local DRL is set, any available dose information (e.g., the DAP value displayed on the equipment) is considered in relation to the local DRL
- j) when it is suspected that a local DRL has been exceeded, record the exposure settings used, along with any extenuating circumstances, in the Radiation Protection folder.
- k) as soon as it is suspected that a local DRL is being consistently exceeded, inform the employer and/or MPE so that the reasons may be investigated immediately

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NON-MEDICAL IMAGING EXPOSURES (USING MEDICAL RADIOLOGICAL EQUIPMENT)

No non-medical exposures are undertaken at this practice.

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PROCEDURES FOR MEDICAL RESEARCH PROGRAMMES, INCLUDING DOSE CONSTRAINTS

This practice does not undertake research exposures

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REDUCING THE PROBABILITY AND MAGNITUDE OF ACCIDENTAL OR UNINTENDED EXPOSURES

Objective

To ensure that the probability and magnitude of unintentional exposures is kept as low as reasonably practicable

Responsibilities

The employer will ensure that all staff involved with dental radiography or dental CBCT imaging are adequately trained, competent and entitled, and that an equipment inventory is kept on all radiation equipment and that the equipment is maintained in accordance with manufacturer's instructions.

All duty holders shall comply with the *employer's procedures*.

IRMER practitioners and operators shall ensure that the doses arising from an exposure are kept as low as reasonably practicable consistent with the intended purpose.

Process

The dental practice will reduce the risk of unintended exposures by adopting the following, records of which can be found in the radiation protection file and/or the monthly audit folder.

- *employer's 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
- feedback will be given to dental professionals following any incident
- training and competency assessments will be undertaken including when new equipment and procedures are introduced
- induction programmes for new staff
- grading and review of quality of dental images
- clinical audit
- audit of procedures
- good practice and technique applied
- investigation of near-miss incidents

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SIGNIFICANT, OR CLINICALLY SIGNIFICANT, ACCIDENTAL OR UNINTENDED EXPOSURES

Objectives

To ensure that any unintended or accidental exposures are appropriately investigated.

To ensure that the referrer, the IRMER practitioner, and the patient or the patient's representative are informed of the occurrence of any clinically significant unintended or accidental exposure, and of the outcome of the analysis of this exposure.

Process for informing

If the operator suspects the patient may have received a significant accidental or unintended exposure, it should be reported to Dr Stuart Ellis and/or the MPE as soon as possible.

Take note of all display or control settings, save all images including rejects. If the incident was due to an equipment malfunction, the equipment should be removed from service pending an investigation. The MPE will advise whether instances of equipment failure should be reported to the manufacturer and/or the MHRA.

Dr Stuart Ellis should discuss the exposure with the appointed medical physics expert (MPE) to determine an estimate of the patient dose.

If the MPE advises that the exposure is significant, Dr Stuart Ellis will, on the advice of the MPE:

- notify the Care Quality Commission (CQC) within two weeks of the incident occurring
- arrange for a detailed investigation of the circumstances of the event and if necessary, a more detailed assessment of the dose received
- notify the CQC of the outcome of the investigation and any corrective measures adopted, within twelve weeks of the incident occurring

If the MPE advises that the exposure is clinically significant, Dr Stuart Ellis should, in addition to notifying the relevant enforcing authority, ensure that the referrer and IRMER practitioner are informed of the exposure and estimated dose as soon as possible. The referrer or IRMER practitioner should then discuss the exposure with the patient, or the patient's representative.

Recording

The investigation into the exposure should be documented together with the outcomes of the analysis, including estimated patient dose. This should be done in consultation with the MPE. The report should be retained in the radiation protection file and, if the exposure is clinically significant, copies provided to the referrer, IRMER practitioner and the patient or the patient's representative.

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