Radiography – Risk Assessment

Core Subject

Aim: to provide an overview of the steps that need to be considered when carrying out a risk assessment for dental radiography within a dental practice.

Learning outcomes:

- You will be able to list the five key steps to risk assessment
- You will be able to explain some of the requirements of the IRR99 regulations
- You will be able to identify the annual dose limits for staff of radiation
- You will be able to list some of the required information that should be kept in a practice radiation folder

Introduction

Radiography is an invaluable tool for the dentist, providing information that is impossible to obtain by clinical examination alone.¹

Risk assessment is an important step in protecting, workers, patients and a business as well as complying with the law. The law does not expect you to eliminate all risk but you are required to protect people as far as is possible.²

In dentistry the use of radiography equipment and the taking of radiographs must be in accordance with the regulations IRR99 which is a body of regulations concerned with the protection against exposure to ionising radiation as a result of work activities. It is administered by the Health and Safety Executive (HSE) as part of the Health and Safety at Work Act 1974.³

The main aim of the IRR99 regulations is to ensure that exposure to ionising radiation from work activities is kept as low as practically possible and that doses received by patients do not exceed the dose limits specified for individuals.
Five Key Steps to Risk Assessment

1. Identify the hazard – exposure to ionising radiation
2. Who is at risk – staff and any person who might receive an accidental exposure
3. Evaluation – Can I reduce exposure levels?
4. Recording – Record the assessment and maintain in a place of safety
5. Review and Audit – Review findings on a regular basis and change when needed

(Conducting radiography audit was explored in a previous Cpd4dentalnurses.co.uk verifiable article)

Carrying Out Risk Assessment for Radiation

It is an employer’s responsibility to carry out a risk assessment before carrying out any work involving ionising radiation. The assessment should demonstrate that:

- All hazards with the potential to cause a radiation accident have been identified and
- The nature and magnitude of the risks to employees and other persons arising from those hazards have been evaluated
Where the assessment made for the purposes of this regulation shows that a radiation risk to employees or other persons exists from an identifiable radiation accident, the radiation employer shall take all reasonably practicable steps to –

- prevent any such accident
- limit the consequences of any such accident which does occur; and
- provide employees with the information, instruction and training, and with the equipment necessary, to restrict their exposure to ionising radiation

**Dose Limits**

The annual dose limits in IRR99 for staff are:

- Any employee aged 18 years or over – 20mSv per annum
- Trainees under 18 years of age – 6mSv per annum
- All other persons – 1mSv
- An employee who is pregnant - the equivalent dose to the foetus is unlikely to exceed 1mSv during the pregnancy
- An employee who is breastfeeding - the conditions of exposure are restricted so as to prevent significant bodily contamination of that employee

**X-ray Equipment**

When x-ray equipment is installed the company installing it will provide a critical examination report. This in conjunction with the acceptance, routine tests and maintenance/servicing reports will provide sufficient information for the risk assessment.

Local rules specify the working instructions of x-ray equipment, the controlled area and the contingency plans in case of an accident.
The controlled area or x-ray room is the area in which the radiograph equipment is installed and specific rules apply to the positioning of the equipment. Exterior warning lights and signs should be in place directly outside the door of the controlled area.

**Training**

Every employer should ensure that:

- employees who are engaged in work with ionising radiation are given appropriate training in the field of radiation protection and receive such information and instruction as is suitable and sufficient for them to know -

- the risks to health created by exposure to ionising radiation;

- the precautions which should be taken; and

- the importance of complying with the medical, technical and administrative requirements of the IRR99 regulations

- adequate information is given to other persons who are directly concerned with the work with ionising radiation carried on by the employer to ensure their health and safety so far as is reasonably practicable.

**Recording Information**

Every radiation employer should, in respect of any controlled area or, any supervised area, make and set down in writing local rules that are appropriate to the radiation risk and the nature of the operations carried out in that area (this means each surgery that contains x-ray equipment must have its own set of local rules). The radiation employer should ensure that the local rules are brought to the attention of those employees and other persons who may be affected by them and should appoint one or more suitable radiation protection supervisors for the purpose of securing compliance with these rules and the local rules should contain the names of the individuals appointed.

It is important to maintain a radiation file that is comprehensive and contains access to:
• Practice declaration that it complies with the IRR99 Regulations

• Record of all staff involved in radiography at the practice and details of training each person has taken part in

• Inventory of all x-ray equipment (including assessment reports/maintenance reports

• Details of all processing equipment and chemicals

• Details of risk assessment carried out

• Local rules for each controlled area

• Details of how patient safety is maintained

• Details of quality assurance (evaluation of radiographs, processing procedures, handling of chemicals, maintenance of processor equipment

• X-ray audits carried out¹⁰

**Conclusion**

It is a legal requirement that any business involved with ionising radiation complies with the IRR99 Regulations which are set out by the Health and Safety Executive (HSE) as part of the Health and Safety at Work Act 1974 and it is a legal requirement that quality assurance checks are carried out and recorded.

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**Portfolio Tip**

Why not take time to locate and read the details in your practice radiography file.
References


