

Dental Radiography Study Guide for Dental Nurses

NEBDN-aligned revision and refresher resource

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1. Overview

Dental radiography is an essential diagnostic tool in dentistry and a heavily examined topic within the NEBDN syllabus. Dental nurses must understand the principles of radiation safety, the types of dental radiographs, and their legal and professional responsibilities when supporting radiographic procedures.

This guide supports NEBDN examination preparation and also serves as a structured refresher for qualified dental nurses. Assessment commonly focuses on radiation protection, safe working practices, quality assurance, and legal compliance, rather than image interpretation.

2. Core Principles / Foundations

Radiography involves the use of ionising radiation to produce diagnostic images. Fundamental principles include:

- Justification
Every radiograph must be clinically justified to ensure benefit outweighs risk.
- Optimisation (ALARP)
Radiation exposure must be kept As Low As Reasonably Practicable.
- Dose limitation
Exposure to staff and the public must remain within legal limits.
- Image quality
Images must be diagnostically acceptable to avoid unnecessary repeat exposures.

Dental radiographs commonly used include:

- Periapical
- Bitewing
- Occlusal
- Extra-oral (e.g. panoramic)

3. Radiation Physics & Biological Effects

Ionising radiation has sufficient energy to remove electrons from atoms, which can cause biological damage.

Key concepts:

- **Deterministic effects** – severity increases with dose (rare in dentistry)
- **Stochastic effects** – probability increases with dose (e.g. cancer risk)

Dental radiography uses low doses, but cumulative exposure remains a concern, making protection essential.

4. Radiation Protection & Safety Measures

Radiation protection relies on multiple control measures:

- Correct positioning of patient and equipment
- Use of rectangular collimation where available
- Appropriate exposure settings
- Safe distance and positioning of staff during exposure

Dental nurses must never:

- Hold the X-ray tube
- Hold the image receptor in the patient's mouth
- Stand in the primary beam

These actions are commonly tested as incorrect practice.

5. Quality Assurance & Image Quality

Quality assurance ensures radiographs are:

- Diagnostic
- Consistent
- Free from avoidable errors

Common causes of poor image quality include:

- Incorrect positioning

- Movement
- Incorrect exposure settings
- Processing or digital handling errors

Repeat radiographs must be avoided unless clinically justified.

6. Clinical Relevance / Application

Radiography is integrated into routine dental care:

- **Before exposure:** check justification, prepare patient, confirm safety measures
- **During exposure:** ensure correct positioning and staff safety
- **After exposure:** assist with image processing and documentation

NEBDN scenarios frequently assess:

- Safe positioning
- Radiation protection rules
- Role boundaries of the dental nurse

7. Dental Nurse Roles & Responsibilities

Dental nurses may be involved in:

- Preparing patients for radiographs
- Positioning image receptors
- Operating equipment only if appropriately trained and authorised
- Assisting with image processing and storage
- Maintaining radiation safety standards

Dental nurses must not:

- Justify exposures (unless IR(ME)R-trained and entitled)
- Interpret radiographs diagnostically

- Operate equipment without training and authorisation

Understanding scope of practice is essential.

8. Risks, Errors & Patient Safety Issues

Commonly examined risks include:

- Unnecessary repeat exposures
- Poor radiation protection practices
- Failure to follow local rules
- Inadequate documentation

Errors in radiography have legal and safety implications, not just technical consequences.

9. UK Regulations & Professional Standards

Dental radiography is governed by UK legislation and guidance, including:

IR(ME)R

- Roles: referrer, practitioner, operator
- Legal responsibilities and accountability

Ionising Radiations Regulations (IRR)

- Protection of staff and the public

GDC Standards for the Dental Team

- Working within competence
- Maintaining patient safety

Dental nurses are expected to understand how regulations apply in practice.

10. Exam-Focused Takeaways

- All radiographs must be justified
- Radiation doses must follow ALARP

- Dental nurses have a supporting, not diagnostic role
- Poor technique increases repeat exposure risk

- IR(ME)R roles are frequently tested

- Unsafe practice is both examinable and serious

If a question asks:

- “What is the nurse’s role?” → Support, prepare, protect, document

- “What action is unsafe?” → Identify radiation protection breaches

11. How to Use This Guide

This guide should be used alongside:

- Dental Radiography flashcards for key concept recall

- Online MCQs and OSCE practice for application and exam technique

This resource supports revision and professional refreshment. It does not replace supervised clinical training or IR(ME)R authorisation.