



Higher National Unit specification: general information

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Unit code: FN6H 35

Superclass: PB

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Version: 01

Unit purpose

This Unit develops the knowledge and skills required to undertake *Radiography: Dual Energy X-Ray Absorptiometry*. It is aimed at those currently working under the supervision of Health Professions Council registered Radiographers as Assistant Practitioners within a diagnostic service. An example would be clinical departments providing an imaging service.

On completion of this Unit, candidates will be able to:

- 1 Describe the anatomy, pathology and clinical criteria for DEXA scanning.
- 2 Demonstrate knowledge and understanding of use of DEXA scanning equipment and protocols.
- 3 Prepare patient prior to undergoing a DEXA scan.
- 4 Demonstrate the ability to perform a DEXA scan.
- 5 Perform post examination procedure.

Recommended prior knowledge and skills

It is recommended that candidates should hold HNC or equivalent in Diagnostic Imaging and be able to demonstrate a minimum of one year post qualification as an Assistant Practitioner in Radiography.

Credit points and level

1 Higher National Unit credit at SCQF level 8: (8 SCQF credit points at SCQF level 8*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

General information (cont)

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes of this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

This Unit will be delivered as a stand-alone Unit or as part of a Group Award (Professional Development Award) and will be delivered by a clinical diagnostic radiographer currently registered with the Health Professions Council and practicing in the appropriate clinical area with experience of clinical assessment.

Assessment

It is recommended that the Outcomes within this Unit are assessed holistically through formative and summative Clinical Assessment. Candidates should be asked to describe the anatomy, pathologies and clinical criteria for DEXA scanning. Candidates should be asked to demonstrate knowledge and understanding on the use of the scanner and preparation required prior to the scan commencing. They should be able to demonstrate that they can undertake DEXA scans and perform all the post processing procedures required to complete the examination.

The evidence from these clinical assessments must demonstrate that all Evidence Requirements have been met for each learning Outcome.

Higher National Unit specification: statement of standards

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the Knowledge and/or Skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Outcome 1

Describe the anatomy, pathology and clinical criteria for DEXA scanning.

Knowledge and/or Skills

- ◆ Skeletal anatomy
- ◆ Clinical history justifying DEXA scanning
- ◆ Referral process for DEXA scans
- ◆ Types of pathology diagnosed by DEXA scanning

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ describe the skeletal anatomy of the body parts involved in DEXA scanning
- ◆ discuss and critically evaluate clinical indications and patient history, which would justify a referral for DEXA scanning and exposure to radiation
- ◆ discuss why and by what routes, a patient would be referred for DEXA scans
- ◆ evaluate findings and discuss the potential diagnoses and implications for the patients.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates should be asked to describe the anatomy of the region covered by the DEXA scan, the potential pathologies that DEXA scanning might identify and the clinical criteria and referral process that indicates the need for a DEXA scan to be undertaken and justified.

Higher National Unit specification: statement of standards (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Outcome 2

Demonstrate knowledge and understanding of the use of DEXA scanning equipment and protocols.

Knowledge and/or Skills

- ◆ Principals of DEXA scanning
- ◆ Movement of scan head
- ◆ Protocol selection
- ◆ Radiation dose
- ◆ Radiation protection policies, procedures and protocols
- ◆ Health & Safety
- ◆ Quality assurance

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ describe the main components of a DEXA scanner and the principles of DEXA scanning
- ◆ operate the DEXA scanner including selection of correct protocols
- ◆ detail the dangers of radiation and the need to comply with legislation
- ◆ demonstrate an awareness and ability to follow procedures
- ◆ identify the protocols undertaken for different clinical histories.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates should be asked to describe how the scanner operates and obtains the images, the correct protocol selection and how to undertake the quality assurance on the equipment including any actions required if the results are outwith the required standards. The candidate should be able to demonstrate an awareness of radiation dose, the policies, procedures and protocols to be followed and how to deal with any Health and Safety issues.

Higher National Unit specification: statement of standards (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Outcome 3

Prepare patient prior to undergoing a DEXA scan.

Knowledge and/or Skills

- ◆ Pre examination questionnaire
- ◆ Pre examination measurements
- ◆ Communication
- ◆ Equipment preparation
- ◆ Moving and handling
- ◆ Metal artefacts

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ ensure that patient is both mentally and physically prepared to undergo a DEXA scan
- ◆ demonstrate that they understand the importance of gathering prescan information and measurements from the patient
- ◆ risk assess the degree of patient mobility and ensure appropriate equipment/ techniques are utilised, following relevant policies and procedures
- ◆ identify and remove metal artefacts that may appear on the images

Assessment Guidelines

Holistic Unit Assessment

It is recommended that the candidate should be able to demonstrate that all the necessary patient preparation and information gathering has been undertaken prior to commencement of the scan.

Higher National Unit specification: statement of standards (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Outcome 4

Demonstrate the ability to perform a DEXA scan.

Knowledge and/or Skills

- ◆ Positioning of patient and scan-head
- ◆ Imaging views
- ◆ Radiation protection of patient and staff
- ◆ Image acquisition

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ perform DEXA scanning with no assistance
- ◆ evaluate the need and measures used to protect patients and staff from the x-radiation
- ◆ demonstrate that the correct imaging projections have been undertaken and acquired
- ◆ assess the quality of images and positioning, identifying if any improvements can be made
- ◆ reflect and learn from the practical experience.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates should, following formative assessment, be able to successfully perform a minimum of five DEXA scans (one for each anatomical area) unaided by the Supervising Radiographer, producing the correct imaging projections through accurate positioning of the patient and equipment. The candidate should also be asked to demonstrate radiation protection measures utilised. The candidate must be able to critically evaluate the images, identifying any improvements needed and carry out a reflective analysis of their own performance.

Higher National Unit specification: statement of standards (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Outcome 5

Perform post examination procedure.

Knowledge and/or skills

- ◆ Exam data entry
- ◆ Analysis of data
- ◆ Result recording
- ◆ Result distribution

Evidence Requirements

The candidate will be required to provide evidence that he/she has the knowledge and skills to:

- ◆ record all relevant details of the DEXA examination on the Radiology Information System
- ◆ demonstrate that they can select the correct regions of interest to facilitate computerised analysis of data and recording of results
- ◆ detail the various routes for distribution of results and information to the patient.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates should be asked to demonstrate the various post examination procedures required to ensure the results are communicated to the relevant people and systems, electronically, verbally and written.

Higher National Unit specification: support notes

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

This part of the Unit specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

The Unit is designed to prepare and support candidates for the type of role they may adopt or progress to by giving them the essential underpinning knowledge and skills.

It is expected that candidates for this Unit will be currently working in diagnostic imaging services as Assistant Practitioners.

Whilst practical clinical training is essential, simulation and role play can be used to widen the practical experience in a safe and stress free environment. Additionally, knowledge can be enhanced through tutorials, discussions, guided reading and reflective practice.

The candidates will be trained under the supervision of Health Professions Council registered Radiographers and will be expected to gain competencies in undertaking DEXA scans on a range of patients with varying degrees of mobility and clinical conditions. As a result, candidates are likely to be trained and assessed predominately with live case studies.

Candidates should be aware of additional annotation to their membership of the Society and College of Radiographers (SCoR) with clear information of the extension of their skill level.

Useful information to help with this Unit can be found at the following websites:

www.sor.org

www.nos.org

also, in the following professional journals:

Synergy: Imaging and Therapy Practice

Radiography

Clinical Radiology

Higher National Unit specification: support notes (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Guidance on the delivery and assessment of this Unit

This Unit is aimed at those currently working under the supervision of Health Professions Council registered Radiographers as Assistant Practitioners within a diagnostic service

Initially, previous knowledge will need to be refreshed, particularly in the following areas:

- ◆ Ionising Radiation (Medical Exposure) Regulations (IR(ME)R)
- ◆ Control of Infection
- ◆ Moving and Handling
- ◆ Communication skills, verbal, non verbal and written
- ◆ Departmental Radiology Information System
- ◆ Departmental Standard Operating Protocols
- ◆ Policies on Confidentiality

The delivery of this Unit will be undertaken in the clinical setting by HPC registered radiographers, who are currently practicing in DEXA scanning and have experience of undertaking clinical assessments, and will encompass practical in-house training, formative and summative clinical assessment. All five Outcomes of this Unit will be assessed through clinical practice with appropriate questions used by the Assessing Radiographer and recorded in the log book. It is expected that various degrees of clinical complexity will be documented within the log book to demonstrate a diverse learning experience. The log book will also include reflection on practice by the candidate and feedback from the assessor; this will culminate in a detailed pathway to the competence of the candidate.

While practical training is essential, simulation and role play can be used to widen the practical experience in a safe and stress free environment. Additionally, knowledge can be enhanced through tutorials, discussions, guided reading and reflective practice.

Candidates are expected to undertake self directed learning and are recommended to use the websites and journals listed above.

Outcome 1

Describe the anatomy, pathology and clinical criteria for DEXA scanning.

The candidate should have the knowledge and skills to describe the skeletal parts of the anatomy demonstrated in DEXA scanning of the hip, antero posterior lumbar spine and lateral thoraco/lumbar spine, forearm and whole body. There are various clinical conditions that require a patient to be referred for a DEXA scan and the candidate should be aware of these and able to discuss the implications. Referrals for DEXA scans are often made as the result of the patient being treated for a fracture and candidates should be aware of these different referrals routes and processes. Due to the exposure to radiation, the candidate needs to be able to describe when the examination can be justified and when it cannot. The DEXA scanner is a diagnostic tool, which aids in the diagnosis of osteoporosis and osteopenia, the candidate should be able to discuss the difference between these conditions and normal bone density.

Higher National Unit specification: support notes (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Outcome 2

Demonstrate knowledge/understanding of the use of DEXA scanner equipment and protocols.

The candidate should be able to describe and operate a DEXA scanner and the component parts including the setup of the computer software and selection of the correct protocol for the patient's clinical history. A quality assurance programme requires to be followed to ensure that the equipment is working to its optimum; the candidate must be able to undertake these QA checks and know what action to take if the required standards are not met. The candidate requires to be aware of the radiation protection legislation and the policies, procedures and protocols required to comply with the legislation. Protection of staff and patients from the effects of radiation is an essential element, which the candidate must be able to explain and demonstrate. The candidate should also be aware of Health and Safety issues associated with DEXA scanning and the measures required to deal with these issues.

Outcome 3

Prepare patient prior to undergoing a DEXA scan.

Candidates should be able to demonstrate an understanding of the importance of the questions in the pre-scan questionnaire and the implications of the responses. Recording of the patient's height and weight are essential pieces of information required for the scan software prior to undertaking the scan, candidates should be able to undertake these accurately and discuss the need for this information. Patients require to be given a clear explanation of what is involved and what is expected of them, candidates should be able to demonstrate that they have a range of communication skills to undertake this and gain implied consent. The candidate needs to be able to prepare the equipment prior to each examination and assess the ability of the patient to move onto the scanner couch, utilizing appropriate equipment and techniques to aid the patient. It is essential that the candidate checks the patients and their clothing for any metal artefacts, which may affect the quality of the image

Outcome 4

Demonstrate the ability to perform a DEXA scan.

The candidate should be able to demonstrate correct positioning of the patient and equipment to obtain the best quality images possible. Before and during the procedure the candidate should implement any radiation protection measures necessary to protect both patient and staff. The candidate should then be able to undertake the scan views unassisted, acquiring the required images for the patient's clinical history. Following acquisition of the images, the candidate should be able to discuss the cases with their clinical assessor. The candidate should also be able to identify basic pathologies and reflect on their practice and ways that they can improve.

Higher National Unit specification: support notes (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Outcome 5

Perform post examination procedure.

The candidate should be able to enter all the DEXA examination details into the Radiology Information System in the correct fields. Having acquired the correct images, the candidate should then be able to identify the regions of interest to be analysed by the software programme, which will then produce accurate measurements. These measurements form the basis of the results, identifying the category that the patient falls into to, the candidate must be able to demonstrate where these results are recorded and stored. The candidate should then be able to send the results to the correct person and inform the patient of the next steps.

Assessment

The practical element of the Unit should commence with the candidate observing the Radiographers undertaking DEXA scans of the hip, antero-posterior of the lumbar spine and lateral thoraco/lumbar spine, forearm and the, whole body with post-examination discussion including evaluation of the image. This could be followed by some examination simulation so that the candidate has time to analyse and reflect on the experience and discuss with the Radiographer.

Formatively, this could then be applied practically, through Clinical Assessment, with cases selected by the Supervising Radiographer commencing with fairly mobile patients and progressing through varying levels of complexity with regard to patient positioning and levels of support equipment. The Clinical Assessment should include clear discussion on the technical aspects of patient positioning, equipment positioning and centring points. The Assessor should also evaluate the effectiveness of communication throughout the examination. The Clinical Assessments should be used to allow the candidate to reflect on their performance during an examination and can be used to direct the candidate towards a level of confidence for initiating the summative clinical assessments. This must be agreed by both the candidate and the Supervising Radiographer.

Although the Supervising Radiographer will check the final images, the Assistant Practitioner must be able to recognise good and substandard techniques in a comprehensive way and also assess the Outcome.

The number of Clinical Assessments completed is not critical but, following formative assessment, and a minimum of 5 marked assessments (one for each anatomical area), the candidate must demonstrate that they can work unassisted through a range of increasingly complex examinations. Additionally, the candidate, themselves, must indicate that they feel confident in performing these examinations: if they require further summative Clinical Assessments, these will be continued until such time as the Candidate is satisfied with their own performance.

Higher National Unit specification: support notes (cont)

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

Open learning

Not applicable.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Opportunities for developing Core Skills

There are no opportunities to develop Core Skills in this Unit.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

History of changes to Unit

Version	Description of change	Date

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General information for candidates

Unit title: Radiography: Dual Energy X-Ray Absorptiometry (DEXA)

This Unit is designed to train and support Assistant Practitioners, working clinically in a diagnostic service, to undertake DEXA scanning.

DEXA scanners use ionising radiation to produce the image, therefore, an understanding of the responsibilities of using radiation is important to protect you, your patients and colleagues. This Unit will study how to use radiation safely by applying the local rules, protocols and ionising radiation regulations.

The candidate is required to gain competencies in undertaking DEXA scans on a range of patients with various degrees of mobility and clinical conditions.

DEXA scanners, accessories and computing software, will be covered to ensure the candidate has a thorough knowledge and understanding of the equipment they may be expected to utilise in clinical practice.

Initially, previous knowledge will need to be refreshed, particularly in the following areas:

- ◆ Ionising Radiation (Medical Exposure) Regulations (IR(ME)R)
- ◆ Control of Infection
- ◆ Moving and Handling
- ◆ Communication skills, verbal, non verbal and written
- ◆ Departmental Radiology Information System
- ◆ Departmental Standard Operating Protocols
- ◆ Policies on Confidentiality

The Outcomes within this Unit will be assessed holistically through formative and summative Clinical Assessment. Candidates should be asked to describe the anatomy, pathologies and clinical criteria for DEXA scanning. Candidates will be asked to demonstrate knowledge and understanding on the use of the scanner and preparation required prior to the scan commencing. They should be able to demonstrate that they can perform DEXA scans and all the post processing procedures required to complete the examination.

Candidates will be asked to describe the anatomy of the region covered by the DEXA scan, the potential pathologies that DEXA scanning might identify and the clinical criteria and referral process that indicates the need for a DEXA scan to be undertaken and justified.

Candidates will be asked to describe how the scanner operates and obtains the images, the correct protocol selection and how to undertake the quality assurance on the equipment including any actions required if the results are outwith the required standards. The candidate should be able to demonstrate an awareness of radiation dose, the policies, procedures and protocols to be followed and how to deal with any Health and Safety issues.

Candidate should be able to demonstrate that all the necessary patient preparation and information gathering has been undertaken prior to commencement of the scan.

General information for candidates (cont)

Candidates should, following formative assessment, be able to successfully perform a minimum of five DEXA scans (one for each anatomical area) unaided, producing the correct imaging projections through accurate positioning of the patient and equipment. The candidate will also be asked to demonstrate radiation protection measures utilised. The candidate must be able to critically evaluate the images, identifying any improvements needed and carry out a reflective analysis of their own performance.

Candidates will be asked to demonstrate the various post examination procedures required to ensure the results are communicated to the relevant people and systems, electronically, verbally and written.