Higher National Unit specification: general information

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

Unit code: FN6F 35

Superclass: PB

Publication date: July 2011

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit develops the knowledge and skills required to undertake an Antero-Posterior Chest X-Ray using Static General X-Ray Equipment. It is aimed at those currently working under supervision of a radiographer (registered with the Health Professions Council) as an Assistant Practitioner within a diagnostic service. An example would be clinical departments providing an imaging service.

On completion of the Unit the candidate will be able to:

1 Evaluate the clinical and physical condition of the patient in order to assess whether the chest X-ray should be undertaken with the patient in the antero-posterior position.
2 Demonstrate the ability to perform, to diagnostic standards, modified radiographic antero-posterior chest X-ray techniques on patients on chairs, trolleys and beds using static general X-ray equipment.
3 Critically evaluate antero-posterior chest images.

Recommended prior knowledge and skills

It is recommended that candidates should hold an HNC or equivalent in Diagnostic Imaging and be able to demonstrate a minimum of one year post qualification in employment 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 assess patients' physical abilities with regards to positioning for chest X-rays, perform antero-posterior chest examinations to diagnostic standards and critically evaluate chest images.

The evidence from these Clinical Assessments must demonstrate that all Evidence Requirements for each Learning Outcome are being met.

Higher National Unit specification: statement of standards

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

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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

Evaluate the clinical and physical condition of the patient in order to assess whether the chest X-ray should be undertaken with the patient in the antero-posterior position.

Knowledge and/or Skills

- Patients' physical and clinical conditions and mobility
- Modes of patient transport and adaptation of radiographic technique
- Types and Use of Information specific to:
  - Assessing patient abilities
  - Gathering clinical information from the Referring Team
- Refined communication skills

Evidence Requirements

The candidate will be required to provide evidence that he/she has the Knowledge and Skills to assess whether the chest X-ray should be taken in the antero-posterior position by:

- describing the physical and clinical conditions which may prevent a postero-anterior chest X-ray being performed safely
- state why a postero-anterior chest X-ray is preferred to an antero-posterior chest X-ray
- undertaking the assessment within the Policy framework of Manual Handling, Health and Safety and Infection Control
- the key principles of effective communication must be reinforced and refined with specific reflection to the scenarios that the candidate experiences throughout their Formative Clinical Assessments to enable functional communication for the Summative Clinical Assessments.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates evaluate the clinical and physical condition of the patient in order to assess whether the chest X-ray should be taken with the patient in the antero-posterior position by means of clinical assessment. Candidates may also be asked to critically evaluate their own performance during the assessment.

Higher National Unit specification: statement of standards (cont)

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

Outcome 2

Demonstrate the ability to perform, to diagnostic standards, modified radiographic antero-posterior chest X-ray techniques on patients on chairs, trolleys and beds using static general X-ray equipment.

Knowledge and/or Skills

- Relative positioning of the patient, cassette/detector, X-Ray tube and chair/trolley/bed
- Patient immobilisation specific to the chair/trolley/bed
- Radiation protection
- Diagnostic standards

Evidence Requirements

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

- successfully complete the examination to diagnostic standards, assessed by the Supervising Radiographer, on patients with a varying range of abilities. This will include patients who are able to sit upright but cannot be positioned postero-anteriorly, patients who cannot sit upright and patients on oxygen/drips/monitoring leads.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates should perform a minimum of five antero-posterior chest examinations unaided by the Supervising Radiographer (except where manual handling requires two people) on patients who cannot sit completely upright and who have monitoring leads and/or are reliant on oxygen and/or have a drip infusion.

Candidates may be asked to discuss and identify the technical aspects of the examination and carry out a reflective analysis of their own performance.

Higher National Unit specification: statement of standards (cont)

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

Outcome 3

Critically evaluate antero-posterior chest images.

Knowledge and/or Skills

- Criteria for correct patient position
- Criteria for good inspiratory effort
- Collimation to include the required anatomy
- Radiographic appearances of oxygen apparatus, monitoring leads, drip tubing and artefacts related to patients' clothing

Evidence Requirements

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

- assess patient positioning
- describe the level of inspiration achieved
- identify the radiographic appearances of oxygen apparatus, monitoring leads, drip tubing and artefacts related to patients' clothing.

Assessment Guidelines

Holistic Unit Assessment

It is recommended that candidates should critically evaluate the chest image. Candidates may also be asked to identify if the Diagnostic Reference Levels (DRLs) have been exceeded.

Higher National Unit specification: support notes

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

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

It is expected that candidates for this Unit will be currently working in a Clinical Diagnostic Radiography Department as an Assistant Practitioner. Practical clinical training is essential although 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

Useful information to help with this Unit can be found at the following web-sites:

www.sor.org (Society and College of Radiographers)

www.BIR.ac.uk (British Institute of Radiology)

and in the following professional journals:

Synergy: Imaging and Therapy Radiography
Radiography
Clinical Radiology

Guidance on the delivery and assessment of this Unit

Delivery

It is expected that candidates for this Unit will be currently working in a Clinical Diagnostic Radiography Department as an Assistant Practitioner.

The delivery of the Unit will be through the Departmental staff (this may include Radiographers, Radiologists, Radiology Nursing Staff and other staff as appropriate) and will encompass practical in-house training and formative and summative clinical assessments by Radiographers registered with the Health Professions Council who are currently practicing clinically with patients requiring antero-posterior chest X-ray examinations and who have current experience of undertaking Clinical Assessments. All three Outcomes of the Unit will be assessed through Clinical Practice with appropriate questions used by the Assessing Radiographer and recorded in a log book. The log book will also include reflection on practice by the candidate and feedback from the observer and this will culminate in a detailed pathway to competence by the candidate.

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.

Candidates are expected to undertake self-directed learning and can use the web-sites and journals listed above.

The principles of safe practice with respect to Manual Handling, Health and Safety, Radiation Safety and Protection, and Infection Control must be revisited and refreshed with specific reference to the patient unable to achieve the postero-anterior position for a chest X-Ray. Additionally, the key principles of effective communication must be reinforced with specific reflection to the scenarios that the candidate experiences throughout their Formative Clinical Assessments to enable functional communication for the Summative Clinical Assessments.

Outcome 1

Evaluate the clinical and physical condition of the patient in order to assess whether the chest X-ray should be undertaken with the patient in the antero-posterior position.

Candidates must be reminded that it is important that a postero-anterior projection of the chest is achieved where possible to achieve better visualisation of the lung fields and reduce magnification of the heart so the candidate must be able to accurately assess the patient's ability to attain this position.

Various clinical conditions and associated symptoms should be discussed to include their effect on patient abilities. These will include stroke, amputation, breathlessness, physical weakness, loss of energy and levels of consciousness. Additionally, the effects of sedation should be considered.

Assessing the ability of the patient to sit upright and to what degree can perhaps be initially addressed by role play and discussion with lots of 'What if...' and 'What would you do if…' questions to stimulate the thought processes. These questions could also encapsulate elements of Health and Safety and Infection Control.

Information on the patient's condition may be available through the text on the referral form but the candidate must also be able to communicate with the patient to ascertain what they think they can achieve: explanation of what is required must be clear regarding ascertaining if they can be examined in the postero-anterior position and, if not, what the maximised position may be.

Additionally, case notes (where available) can be referred to and the patient escort/referring team should be asked about the patient's abilities. Specific communications regarding, for example, the removal of an oxygen supply for the examination, should be discussed. If there is no patient escort, the candidate should discuss with the Supervising Radiographer. Clear instruction must be given on how to safely remove and reinstate an oxygen supply to ensure that the patient receives the prescribed flow rate post-examination. Emphasis should be placed on reducing the time the patient is without their oxygen supply. The candidate must understand why oxygen, monitoring leads and drips are required and the detriment to the patient if these are removed.

The principles of manual handling, Health and Safety and infection control must be considered during the decision-making process, eg patient stability, cassette/detector protection.

The knowledge and skills can be initiated in a safe, simulated environment with the appropriate theory delivered through tutorials and can then be applied practically with cases selected by the Supervising Radiographer commencing with fairly mobile patients and progressing through varying levels of complexity with regard to patient positioning. Link this to Outcome 2.

Outcome 2

Demonstrate the ability to perform, to diagnostic standards, modified radiographic antero-posterior chest X-ray techniques on patient on chairs, trolleys and beds using static general X-ray equipment.

Positioning of the patient, cassette/detector and X-ray tube will vary depending on how upright the patient can sit. In some cases, the examination may have to be undertaken with the patient supine. The relative positions are critical to achieving an undistorted image and the specific positions and angulations of the cassette/detector, median sagittal plane, coronal plane and central X-ray beam must be clearly understood and demonstrated practically. Internal rotation of the arms should be encouraged where possible to maximise removal of the scapulae from the lung fields.

It is important that the candidates understand the effect of the body position on the level of inspiration that can be achieved including the effect of pressure on the diaphragm from the abdominal organs in the supine position.

Trolleys, beds and chairs must be manoeuvred correctly, backrests secured in position, side rails only removed where safe to do so and brakes applied where appropriate. The principles of Health and Safety must be applied throughout. Pillows, radiographic positioning pads and other radiolucent materials can be used to support and immobilise the patient. The arms must be removed to the side of the patient and internal rotation applied if possible.

If a patient cannot have oxygen or monitoring leads removed, the candidate must be instructed on how to minimise the intrusion of these devices on the radiographic image. Drip infusion tubing, pump injectors and other medical support equipment must also be removed from the area.

The known principles of radiation protection must be applied with specific reference to collimation, exposure factors and immobilisation of the patient and cassette/detector. Additional information regarding the sensitivity of specific tissues should be related to the antero-posterior chest position — breast, lens of the eye.

Higher National Unit specification: support notes (cont)

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

Outcome 3

Critically evaluate antero-posterior chest images.

Tutorials can be used to demonstrate optimum and sub-optimal patient positions using existing antero-posterior chest images. Inspiratory effort should be assessed using the number of posterior ribs as a guide. The appearances of oxygen tubing and masks, drip infusion tubing, monitoring leads and other associated artefacts should be described and recognised. Additionally, artefacts from the patients clothing can be discussed.

Knowledge gained through these tutorials can be applied during practical observation and then during formative and summative Clinical Assessments.

Critical evaluation of the radiographic image should include:

- Rotation of the patient, eg use the medial ends of the clavicles, position of sternum relative to the spine to assess
- Angulation of the X-ray beam relative to the patient and cassette/detector, eg use the appearance of the ribs, position of the clavicles to assess
- Level of inspiration
- Beam collimation to include the required anatomy
- Image orientation and annotation
- Image identification
- Artefacts
- Exposure factors/ index or similar — ensure DRL not exceeded

Although the Supervising radiographer will always check the final image, the Assistant Practitioner must be able to recognise optimal and substandard radiographic techniques in a comprehensive way and also assess the Outcome to the condition of the patient — sometimes a fairly poor image is a good Outcome for the physical condition and mobility of the patient.

Assessment

The practical element of the Unit should commence with the candidate observing the Radiographers undertaking antero-posterior projections of the Chest with post-examination discussion including evaluation of the radiographic 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.

Clinical Assessment to include clear discussion on the technical aspects (patient positioning, cassette/detector positioning, tube angulation, centring point) and reflective analysis (patient care, effective communication, what would they do differently next time). The Assessor should also evaluate the effectiveness of communication throughout the examination – was the maximum inspiratory effort achieved for that patient?

Outcome 3

All Clinical Assessment should conclude with the Assistant Practitioner critically evaluating the image, eg no of posterior ribs seen, patient rotation, collimation, annotation, artefacts. The Assistant Practitioner should also be able to identify if the Diagnostic Reference Level has been exceeded as a refresh of existing knowledge.

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. This will include patients on oxygen support, patients with monitoring equipment and patients with drip infusions. The Formative 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 image, the Assistant Practitioner must be able to recognise good and substandard techniques in a comprehensive way and also assess the Outcome to the condition of the patient — sometimes a fairly poor image is a good Outcome for the physical condition of the patient.

The number of Clinical Assessments completed is not critical but the candidate must demonstrate that they can work unassisted through a range of increasingly complex examinations. It would be expected that they perform a minimum of five antero-posterior chest examinations unaided by the Supervising Radiographer (except where manual handling requires two people) on patients who cannot sit completely upright and who have monitoring leads and/or are reliant on oxygen and/or have a drip infusion. 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.

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)*.

Higher National Unit specification: support notes (cont)

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

Opportunities for developing Core Skills

Not applicable.

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

General information for candidates

Unit title: Radiography: Antero-Posterior Chest X-Rays using Static General X-Ray Equipment

This Unit is designed to prepare and support candidates working in a Diagnostic Radiographic environment as an Assistant Practitioner to extend their scope of practice by providing them the essential underpinning knowledge and skills required to undertake antero-posterior chest X-ray examinations using static general X-ray equipment.

You will learn how to evaluate images which are less standardised than those currently within your scope of practice and guidance on this will be given in a tutorial environment as well as during clinical practice.

The delivery of the Unit will be undertaken in the workplace (it is not College-based) through the Departmental staff (this may include Radiographers, Radiologists, Radiology Nursing Staff and other staff as appropriate) and will encompass practical in-house training and formative and summative clinical assessments by Radiographers registered with the Health Professions Council. All three Outcomes of the Unit will be assessed through Clinical Practice with appropriate questions used by the Assessing Radiographer and recorded in a log book. The log book will also include reflection on practice by the candidate and feedback from the observer and this will culminate in a detailed pathway to competence by the candidate.

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