



Australian Government

Department of Education, Employment and Workplace Relations

HLTTEC301C Operate X-Ray machine

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Descriptor

This unit describes the competencies required to operate and maintain a diagnostic X-ray machine for use in clinical practice in accordance with radiation safety guidelines

Application of the Unit

Application

Work performed requires a range of well developed skills where some discretion and judgement is required. Individuals will take responsibility for their own outputs and limited responsibility for the output of others

Note:

- This unit of competency applies in Queensland only to health sector employees who do not have formal qualifications in diagnostic radiography and who are seeking, or have obtained, a licence under the Radiation Safety Act as approved by the Chief Executive, Queensland Health
- The licence applies to rural and remote areas as determined by the Chief Executive, Queensland Health, and is limited to the use of radiation apparatus for plain film radiography of the chest and extremities

This unit of competency does not apply to dental radiography

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills

This unit contains Employability Skills

Elements and Performance Criteria Pre-Content

Elements define the essential outcomes of a unit of competency.

The Performance Criteria specify the level of performance required to demonstrate achievement of the Element. Terms in *italics* are elaborated in the Range Statement.

Elements and Performance Criteria

ELEMENT

1. Operate an X-ray machine

PERFORMANCE CRITERIA

1.1 Operate machine in accordance with the manufacturer specifications and with organisation guidelines, the Radiation Safety Act and Regulations

1.2 Operate and store machine in accordance with organisation and state OHS guidelines and regulations

ELEMENT**PERFORMANCE CRITERIA****2. Monitor and maintain an X-ray machine**

- 2.1 Monitor basic machine operation
- 2.2 Ensure machine is serviced regularly by a qualified X-ray engineer
- 2.3 Report breakdowns swiftly to a qualified X-ray engineer in accordance with *organisation guidelines*
- 2.4 Ensure all repairs are carried out by a qualified X-ray engineer or under the guidance of a qualified X-ray engineer
- 2.5 Maintain records of services and repairs in accordance with organisation guidelines
- 2.6 Regularly clean machine in accordance with manufacturer's specifications

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit.

Essential knowledge:

The candidate must be able to demonstrate essential knowledge required to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

This includes knowledge of:

- A basic understanding of the Radiation Safety Act 1999
- Basic knowledge of the properties of X-rays
- Clinical consequences of poor radiography for the client and legal consequences for the operator
- Control factors affecting the X-ray beam
- Duty of care
- Exposure standardisation
- Identification of the major bones and bony landmarks involved in the radiography of areas of the body allowable under radiography licensing requirements.
- Operation of the types of equipment encountered in rural and remote areas
- Radiation protection principles and personal monitoring
- Radiographic radiation safety
- Terminology used in radiography
- The licensee's radiation safety and protection plan
- Working knowledge of an X-ray beam collimator (construction, components, operation,)
- Working knowledge of an X-ray generator (basic function, relationship to X-ray tube)
- Working knowledge of an X-ray machine control panel (timer, relationship to generator and X-ray tube)
- Working knowledge of an X-ray tube (construction, components, operation)

Essential skills:

It is critical that the candidate demonstrate the ability to effectively do the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the identified work role

REQUIRED SKILLS AND KNOWLEDGE

This includes the ability to:

- Address client care requirements while in the care of an X-ray operator
- Apply interpersonal skills to communicate effectively with clients
- Apply problem solving skills to use available resources, prioritise workload and to communicate effectively in the range of client contact situations
- Appropriately apply medical ethics
- Communicate with referring medical practitioners and with clients and carers
- Meet the licensing requirements for X-ray operators
- Monitor and maintain X ray machine in accordance with organisation guidelines and manufacturer specifications
- Operate an X-ray machine in accordance with organisation guidelines and legislative requirements
- Take into account opportunities to address waste minimisation, environmental responsibility and sustainable practice issues, including appropriate practices to ensure efficient use of resources
- Use manual skills to operate the X-ray machine
- Use numeracy skills ranging from the ability to complete basic arithmetic calculations such as addition, subtraction, multiplication, division to recording data
- Use oral communication skills as required to fulfil job roles in a safe manner and as specified by the organisation, including skills in:
 - asking questions
 - providing clear information
 - listening to and understanding workplace instructions
 - clarifying workplace instructions when necessary
 - literacy in English or a community language, depending on client group and organisation requirements
- Use reading and writing skills as required to fulfil job roles in a safe manner and as specified by organisation at a level of skill that may range from the ability to understand symbols used in OHS signs, to reading workplace safety pamphlets and procedure manuals, keeping maintenance records and following manufacturer specifications for equipment use and maintenance
- Use literacy support available in the workplace that may range from having access to support or assistance from radiographer, to having no communication supports available

Evidence Guide

EVIDENCE GUIDE

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The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate this competency unit:

- The individual being assessed must provide evidence of specified essential knowledge as well as skills
- This unit is most appropriately assessed in the workplace or in a simulated workplace setting under the normal range of workplace conditions
- Assessment may be conducted on one occasion but should include a range of clients, reflecting the diverse nature of those for whom service is provided in the workplace context
- A diversity of assessment tasks is also essential for holistic assessment

Context of and specific resources for assessment:

- Assessment should replicate workplace conditions as far as possible
- Resources essential for assessment include:
 - Radiation Safety Act 1999
 - Radiation safety and protection plan
 - X-ray machine operating manuals
 - Occupational health and safety guidelines
 - procedures manuals
 - access to relevant workplace or appropriately simulated environment where assessment can take place

Method of assessment may include:

- Written examination to assess theoretical and applied knowledge
- On-the-job or role play assessment of prescribed radiographic skills, in particular correct and appropriate use of the X-ray machine
- Observation of work activities
- Authenticated transcripts of relevant education / training courses

EVIDENCE GUIDE

- Access and equity considerations:*
- All workers in the health industry should be aware of access and equity issues in relation to their own area of work
 - All workers should develop their ability to work in a culturally diverse environment
 - In recognition of particular health issues facing Aboriginal and Torres Strait Islander communities, workers should be aware of cultural, historical and current issues impacting on health of Aboriginal and Torres Strait Islander people
 - Assessors and trainers must take into account relevant access and equity issues, in particular relating to factors impacting on health of Aboriginal and/or Torres Strait Islander clients and communities
- Related units:*
- This unit can be assessed independently
 - However holistic assessment practice with other X-ray operation units of competency is encouraged

Range Statement

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

- Equipment may include:*
- Fixed irradiating apparatus (for diagnosis)
 - Mobile irradiating apparatus (for diagnosis)

RANGE STATEMENT

Organisation and legislative guidelines may include:

- X-ray operators licence (for use of irradiating apparatus for diagnosis)
- Radiation Safety Act 1999
- Possession by the licensee of a radiation safety and protection plan
- X-ray machine operating manuals
- OHS guidelines
- Procedures manuals

Unit Sector(s)

Not Applicable