



Australian Government

Department of Education, Employment and Workplace Relations

HLTPAT414D Measure spirometry-flow volume loop

Release: 1

HLTPAT414D Measure spirometry-flow volume loop

Modification History

HLT07 Version 4	HLT07 Version 5	Comments
HLTPAT414C – Measure spirometry/flow volume	HLTPAT414D – Measure spirometry/flow volume	Unit updated in V5. ISC upgrade changes to remove reference to old OHS legislation and replace with references to new WHS legislation. No change to competency outcome.

Unit Descriptor

Descriptor

This unit describes the knowledge and skills required to prepare a client for measure of spirometry/flow volume loop, and to provide a report as an aid to the diagnosis and management of ventilatory impairment

Application of the Unit

Application

Work will be performed within a prescribed range of functions involving routine methods and procedures that require the exercise of some discretion and judgement

Spirometry measurement is commonly conducted in hospitals and respiratory physicians rooms, in occupational settings and by pathology collectors in laboratory and collection centre settings

All activities are carried out in accordance with organisation policies, procedures and infection control guidelines

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

PERFORMANCE CRITERIA

1. Prepare *spirometer and materials* for use

- 1.1 Ensure materials and spirometer selected are clean and in working order
- 1.2 Conduct *performance check* of spirometer

2. Prepare *client* for procedure

- 2.1 Arrange client bookings according to organisation procedures
- 2.2 Receive and check request for spirometry measurement for *background client information*
- 2.3 Correctly identify client and reassure and inform the client regarding the procedure
- 2.4 Record and document *client details*
- 2.5 Assess client for *contraindications* for performing spirometry
- 2.6 Obtain clarification from requesting medical officer when necessary
- 2.7 Calculate reference values
- 2.8 Explain procedure clearly and simply and demonstrate to client

ELEMENT**PERFORMANCE CRITERIA****3. Perform spirometry**

- 3.1 Initialise equipment to commence recording and record *additional information*
- 3.2 Coach client through procedure with the provision of continuous instruction, encouragement and reassurance
- 3.3 Assess client throughout the procedure for ability to continue
- 3.4 Identify recording as *technically correct*
- 3.5 Provide client with feedback on performance
- 3.6 Produce minimum of three technically correct recordings
- 3.7 Repeat spirometry as necessary to comply with *current standards* for reproducibility
- 3.8 Make technically acceptable measurements according to current standards
- 3.9 Select indices for report in accordance with current standards
- 3.10 Correctly assess the need for administration of a bronchodilator in accordance with current standards and medical officer request
- 3.11 Identify and respond to *clinical emergencies* in accordance with organisation emergency procedures

ELEMENT**PERFORMANCE CRITERIA****4. Repeat spirometry measurement**

- 4.1 Following the administration of a bronchodilator by an *authorised person*, allow sufficient time for its peak effect before proceeding
- 4.2 Initialise equipment to commence recording and record additional information
- 4.3 Coach client through procedure with the provision of continuous instruction, encouragement and reassurance
- 4.4 Ensure recording is technically correct
- 4.5 Provide client with feedback on performance
- 4.6 Produce a minimum of three technically correct recordings
- 4.7 Repeat spirometry as necessary to comply with current standards for reproducibility
- 4.8 Make technically acceptable measurements according to current standards
- 4.9 Select indices for report in accordance with current standards

5. Complete spirometry measurement

- 5.1 Assist client as required on completion of procedure
- 5.2 Review follow up arrangements with client
- 5.3 Respond appropriately to client's questions
- 5.4 Dispose of or clean materials in accordance with organisation policies and procedures, and infection control guidelines
- 5.5 Clean, restock and store equipment according to manufacturer's guidelines
- 5.6 Complete report to technically acceptable standards and forward to physician for interpretation
- 5.7 Forward report and interpretation to requesting medical officer
- 5.8 Enter details of client and test completed on to database and/or hospital information system

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:

- Anatomy and physiology relevant for spirometry measurement
- Basic maths&statistics relevant for spirometry measurement
- Basic pharmacology related to respiratory function relevant for spirometry measurement
- Common causes of client non compliance and the appropriate remedies
- Complications and contraindications for clients undergoing spirometry measurement
- Confidentiality requirements of client information
- Conversion of volumes from atmospheric temperature and pressure (ATP) to body temperature and pressure saturated (BTPS)
- Emergency procedures in the event of a clinical emergency relevant in the performance of a spirometry
- Instrument quality control
- Principles and validation techniques of spirometry
- Protocols for spirometry measurement and conformance to standards
- Purpose of spirometry measurement
- Recognition of patterns of normal/abnormal results related to both respiratory disease and technical factors relevant for spirometry measurement
- Relevance of environmental factors eg temperature, humidity
- Respiratory therapy products eg nebulisers, inhalers, spacers
- Routine maintenance policy and procedures for equipment
- Use of reference values relevant for spirometry measurement

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

REQUIRED SKILLS AND KNOWLEDGE

the context of the identified work role

This includes the ability to:

- Communicate with client to elicit maximum co-operation to produce optimal results
- Comply with policies and procedures including those of WHS and infection control
- Correctly assemble and operate equipment
- Deal with conflict
- Demonstrate ability to produce a spirometry measurement which accurately reflects the maximal expiratory ventilatory capacity of the client
- Demonstrate an ability to communicate effectively with clients/carers in relation to the procedure and manage clients'/carers' anxiety level
- Identify and respond to contraindications before and during test
- Identify and respond to technical errors in recording
- Identify steps that must be taken to ensure equipment and environment is safe
- Perform basic cardiopulmonary resuscitation
- Recognise boundaries of responsibilities and refer problems to supervisor or other appropriate health professional
- Recognise errors due to client performance and technical faults
- Recognise malfunction in respiratory therapy products
- Take into account opportunities to address waste minimisation, environmental responsibility and sustainable practice issues
- Use basic computer skills relevant to spirometry measurement
- Use reading and writing skills as required to fulfil job roles in a safe manner and as specified by the organisation at a level of skill that involves reading and documenting clinical information and understanding procedure manuals
- 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
 - effective verbal and non verbal communication skills with a range of internal and external persons
 - literacy in English or a community language, depending on client group and organisation requirements
- Use numeracy skills ranging from the ability to complete basic arithmetic calculations, recording stock levels and statistical information
- Use problem solving skills including an ability to use available resources
- Work with others and display empathy with client and relatives

Evidence Guide

EVIDENCE GUIDE

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
- Observation of workplace performance is essential for assessment of this unit
- Consistency of performance should be demonstrated over the required range of situations relevant to the workplace
- Where, for reasons of safety, space, or access to equipment and resources, assessment takes place away from the workplace, the assessment environment should represent workplace conditions as closely as possible

Context of and specific resources for assessment:

- Access to appropriate workplace where assessment can take place
- Relevant organisation policy, guidelines, procedures and protocols

Method of assessment

- Observation of work activities
- Written tasks
- Relevant formal and informal education/training courses
- Case studies and scenarios
- Interviews/questioning
- Log of assessment with tasks and milestones
- Portfolio of tests performed

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 delivered and assessed independently, however holistic assessment practice with other pathology 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.

RANGE STATEMENT

Spirometer type may be a self-contained device or may be connected to a computer and may include:

- Rolling seal
- Water seal
- Bellows
- Pneumotach
- Turbine
- Hot wire
- Ultrasonic

Materials may include:

- Bronchodilator
- Delivery device
- Tubing
- Filters
- Mouthpiece
- Noseclip

Performance check must include:

- Calibration
- Quality control procedures, including use of physiological and physical standards
-

Clients may include:

- Children
- Adolescents
- Adults
- Elderly
- Inpatients/outpatients

Background client information may include:

- Medical history
- Co-morbidities
- Need for use of additional precautions
- Medications, particularly bronchodilator use
- Use of bronchodilators for measurement
- Contraindications

RANGE STATEMENT

Client details may include:

- Name
- Medical record number
- Date of birth
- Height
- Weight
- Client symptoms including cough, wheeze, dyspnoea
- Gender
- Ethnic background
- Workplace/ward/unit
- Requesting physician

Contraindications may include:

- Severe respiratory distress
- Physical limitations
- Cognitive impairment
- Haemoptysis of unknown origin
- Pneumothorax
- Unstable cardiovascular status eg recent myocardial infarction
- Acute thoracic, abdominal, or cerebral aneurysmata
- Recent eye surgery
- Acute disorders affecting test performance eg vomiting, nausea or fainting
- Recent thoracic or abdominal surgical procedures

Additional information may include:

- Room temperature
- Barometric pressure
- Humidity

Technically correct must include:

- No hesitation at start ie extrapolated volume within standards
- Evidence of maximal effort ie existing standards regarding time to PEF, reproducibility
- No cough within first second
- End of test criteria achieved
- Reproducibility of FEV1, FVC&PEF,

RANGE STATEMENT

Current standards include:

- Thoracic Society of Australia and New Zealand (TSANZ)
- Australia and New Zealand Society of Respiratory Scientists (ANZSRS)
- American Thoracic Society (ATS)
- European Respiratory Society (ERS)

Clinical emergencies may include:

- Severe respiratory distress
- Cardio-respiratory arrest

Authorised person may include:

- People authorised to administer bronchodilator according to relevant state/territory legislation relating to the administration of medication

Unit Sector(s)

Not Applicable