

**Certificate in Clinician Performed Ultrasound
(CCPU)
Syllabus**

Pleural Effusion

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Pleural Effusion Syllabus

Purpose

This unit is designed to cover the theoretical and practical curriculum for pleural effusion ultrasound.

Prerequisites

Learners should have completed the Applied Physics in Ultrasound unit.

Course Objectives

On completing this course learners should be able to:

- Demonstrate detailed understanding of the relevant anatomy
- Understand the causes of pleural fluid in the clinical setting
- Demonstrate knowledge of ultrasound techniques associated with lung, pleural, and diaphragmatic pathologies.
- Understand the different techniques of ultrasound guided drainage and the advantages, disadvantages and different skill levels required for these techniques.
- Attain proficiency in ultrasound image optimisation in order to enable appropriate diagnosis
- Understand the limitations of ultrasound of the chest

Course Content

The course will present learners with the following material:

- Pleura and pleural space
- Chest Wall
- Lungs
- Pneumothorax
- Diaphragm
- Heart, Liver, Spleen, Kidneys
- Surface Landmarks of Thorax
- Diaphragm

The utility of thoracic ultrasound in:

- Pleural and diaphragmatic pathology
- Pleural thickening Collapse / consolidation
- Paralysed hemidiaphragm
- Hemothorax and empyema

Ultrasound techniques associated with:

- Patient positioning
- Identifying normal lung movement via intercostal views.
- Pleural effusion, including the different echogenic patterns, recognising loculations and estimating the depth of fluid collection from the skin surface
- Pleural thickening and its differentiation from fluid
- Collapsed/consolidated lung and its differentiation from effusion

- The different techniques of ultrasound guided drainage (indirect v direct method) and the advantages, disadvantages and different skill levels required for these techniques.
- In general, the direct method within plane visualization (i.e. with real time visualization of the needle throughout the procedure) should be reserved for those with greater experience and specific training in these techniques.

Limitations and Pitfalls:

Understand the limitations of ultrasound of the chest

Training

- Recognised through attendance at an ASUM accredited Pleural Effusion course. (Please see the website for accredited providers)
- Evidence of the satisfactory completion of training course is required for unit award.

Teaching Methodologies for the Pleural Effusion courses

All courses accredited toward the CCPU will be conducted in the following manner:

- A pre-test shall be conducted at the commencement of the course which focuses learners on the main learning points.
- Each course shall comprise at least three (3) hours of teaching time of which at least one and a half (1.5) hours shall be practical teaching. Stated times do not include the physics, artefacts and basic image optimization which should be provided if delegates are new to ultrasound.
- Learners will receive reference material covering the unit curriculum.
- The lectures presented should cover substantially the same material as the ones printed in this curriculum document.
- An appropriately qualified clinician will be involved in both the development and delivery of the unit and course (they do not need to be present for the full duration of the course).
- The live scanning sessions for this unit shall include sufficient live patient models to ensure that each candidate has the opportunity to scan. Models will include normal subjects and patients with pleural effusions. If the latter are unavailable, suitable phantoms can be used. Practical procedures shall be taught on suitable phantoms.
- A post-test will be conducted at the end of the course to ensure the required learning objectives are met.

Assessments

- Two (2) formative assessments of clinical skills, specifically related to the assessment of pleural effusion ultrasound
- One (1) summative assessment of clinical skills, specifically related to the assessment of pleural effusion ultrasound

All assessments are to be performed under the supervision of the Primary Clinical Supervisor using the competence assessment form supplied at the end of this document.

Please refer to section 8 of the [CCPU Regulations](#) for information regarding timing and exclusion of these assessments in the logbook.

Logbook Requirements

- Twenty (20) plural effusion scans, including:
 - At least five (5) positives
 - Five (5) aspirations/tube insertions under supervision, using the indirect method for guidance
- A maximum of 50% paediatric cases (14 years and under) may be included in the logbook. Record in the column provided.
- All scans must be clinically indicated
- All cases must be compared with gold standard findings (such as comprehensive imaging, pathological findings or if these are unavailable then clinical course)
- All logbook cases must be signed off by a suitably qualified supervisor (see section 6 of the [CCPU Regulations](#))
- At the discretion of the ASUM CCPU Certification Board candidates may be allowed an alternative mechanism to meet this practical requirement

Minimal Imaging Sets

The following are proposed as minimal imaging sets for focused ultrasound examinations for the CCPU units. It is understood that in many cases more images should be recorded to fully demonstrate the abnormality. In some cases the patient's condition will not allow the full set to be obtained (e.g. in an unstable patient), in which case the clinician should record whatever images are obtainable during the time available to adequately answer the clinical question without allowing the ultrasound examination to interfere with ongoing medical treatment. If local protocols recommend more images for a particular examination, then these should be adhered to.

- Longitudinal and transverse images of the effusion
- Images should include the costophrenic angle
- Chest wall depth and either depth to lung or effusion depth should be recorded

ASUM CCPU Competence Assessment Form

Pleural Effusion Ultrasound

Candidate: _____

Assessor: _____

Date: _____

Assessment type: Formative (feedback & teaching given during assessment for education) ☐
 Summative (prompting allowed but teaching not given during assessment) ☐

To pass the summative assessment, the candidate must pass all components listed

Prepare patient

Position
Informed

Competent Prompted Fail

Prepare Environment

Lights dimmed if possible

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Probe & Preset Selection

Can change transducer
Understands roles of the different transducers
Selects appropriate preset
Discusses & justifies choice of probe orientation
Understands effect of filters (e.g. THI & multibeam/crossbeam) on lung imaging

Data Entry

Enter patient details

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Image Acquisition

Optimisation (depth, freq, focus, gain)

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Images & explains normal structures

Chest wall
Ribs / costal cartilages
Pleural space
Pleural sliding
Able to use M mode & explain its role & limitations
Lung
Diaphragm
Liver and spleen
Heart

Images & explains normal artefacts

Lung (pleural) sliding

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Identifies & explains the basis of common artefacts
Scatter
Lung curtain

Interprets images of pathology (using library images if necessary)

Pleural thickening
Pleural fluid
Locally invasive disease (mesothelioma)

Record Keeping

Labels & stores appropriate images
Documents any pathology identified
Completes report

Each view adequate / inadequate

Documents focussed scan only

Describe findings briefly

Integrates ultrasound findings with clinical assessment and explains how the findings might change management

Machine Maintenance

Cleans / disinfects ultrasound probe
Stores machine and probes safely and correctly

For Formative Assessment Only:

Feedback of particularly good areas: _____

Agreed actions for development: _____

Examiner Signature: _____ Candidate Signature: _____

Examiner Name: _____ Candidate Name: _____

Date: _____