

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

**Proximal Deep Vein Thrombosis  
(DVT)**

## Deep Vein Thrombosis (DVT) Syllabus

### Purpose:

This unit is designed to cover the theoretical and practical curriculum for proximal deep vein Thrombosis (DVT) ultrasound.

### Prerequisites:

Learners should have completed the ASUM Physics Image Optimisation unit or accredited equivalent course.

### Training:

Recognised either through attendance at an ASUM accredited DVT course or equivalent.

### Assessments:

Learners are required to provide evidence of satisfactory completion of training sessions, supervised ultrasound scans and documentation in a logbook.

### Course Objectives

Upon completion of this course learners should be able to:

- Demonstrate detailed understanding of the relevant anatomy
- Demonstrate knowledge of ultrasound techniques associated with DVT
- Attain proficiency in ultrasound image optimisation in order to enable appropriate diagnosis
- Understand the limitations of proximal DVT ultrasound

### Course Content

#### Anatomy and anatomical relationships to adjacent structures and surface anatomy:

- IVC
- External iliac vein
- Long saphenous vein
- Common femoral vein
- Femoral vein (and understand the importance of NOT using the incorrect term “superficial femoral vein”)
- Deep femoral vein
- Popliteal vein

#### **Techniques, physical principles and safety**

##### Patient positioning:

- Supine with leg externally rotated & abducted
- Decubitus or prone for popliteal fossa
- Seated or standing if difficult to see veins

##### Techniques to improve visualisation:

- Valsalva manoeuvre
- Flow augmentation
- Reverse Trendelenburg positioning

- Curved probe in the obese patient

#### Imaging:

The above veins in transverse and longitudinal planes using:

- B-mode compression ultrasound
- Pulsed wave Doppler ultrasound
- Colour Doppler ultrasound

#### Diagnostic Criteria:

Recognise normal anatomy and the sonographic appearance of DVT, including:

- Echogenic material within vein lumen
- Incompressible vein
- Absence of blood flow

#### Measurements and Artefacts

#### **Limitations and Pitfalls**

- Patient body habitus
- Variable anatomy e.g. duplex veins
- Chronic DVT
- Partially occluding thrombus
- More distal or isolated pelvic vein thrombus

#### **Teaching Methodologies for DVT 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 2 hours of teaching time of which at least 1 hour 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.
- Clinical algorithms for low, intermediate and high risk patients should be discussed.
- Learners will receive reference material covering the course 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 the development and delivery of the 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 appropriate pathologies. Given that it may be difficult to find subjects with sufficient pathology, it is appropriate to include a practical 'image interpretation' session in which candidates must interpret images of the relevant pathology.
- A post-test will be conducted at the end of the course as formative assessment.

#### **Assessment and Logbook**

- Evidence of satisfactory completion of training sessions

- Evidence of assessment of competence (summative assessment) signed off by a suitably qualified assessor (DDU, Radiologist, DMU or AMS or sonographer registered by NZ MRTB in the relevant field, CCPU in the relevant field or other qualification as approved by the CCPU Board).
- The original completed competence assessment form is to be sent to ASUM with the candidate's completed log book.
- Logbook requirements need to be completed, and logbooks need to be submitted within two years of completing an accredited course.

### **Formative Assessment**

- 2 formative assessments (directly supervised with suggestions and advice provided during the scan)

### **Summative Assessment**

- Summative assessment is to be performed and signed by a suitably qualified assessor (see above) using the competence assessment form supplied at the end of this document (or equivalent if deemed sufficient by ASUM at their discretion).

### **Logbook Requirements**

- Evidence of completion of logbook signed off by a suitably qualified supervisor (DDU, Radiologist, DMU or AMS or sonographer registered by NZ MRTB in the relevant field, CCPU in the relevant field or other qualification as approved by the CCPU Board).
- 15 proximal DVT scans. At least half must be clinically indicated and including 2 positives. Scans do not necessarily need to be directly supervised but validated by a suitably qualified supervisor (see above).
- All cases must be compared with gold standard findings (such as comprehensive imaging, pathological findings or if these are unavailable then clinical course).
- 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.

- External iliac vein - colour Doppler
- External iliac Vein - pulsed Doppler demonstrating respiratory variation and augmentation (abnormality of spectral Doppler should prompt examination of iliac veins and IVC).
- Grey scale images or loops demonstrating compression of
  - common femoral vein
  - saphenofemoral junction
  - proximal femoral and deep femoral vein
  - mid and distal femoral vein
  - proximal and distal popliteal vein

**ASUM CCPU Competence Assessment Form  
Proximal DVT 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

|                                     |  | Competent | Prompted | Fail |
|-------------------------------------|--|-----------|----------|------|
| <b>Prepare patient</b>              |  |           |          |      |
|                                     | Position   |           |          |      |
|                                     | Informed   |           |          |      |
| <b>Prepare Environment</b>          |  |           |          |      |
|                                     | Prepares equipment   |           |          |      |
| <b>Probe &amp; Preset Selection</b> |  |           |          |      |
|                                     | Can change transducer  |           |          |      |
|                                     | Selects appropriate transducer                                 |           |          |      |
|                                     | Selects appropriate preset                                     |           |          |      |
| <b>Data Entry</b>                   |  |           |          |      |
|                                     | Enter patient details  |           |          |      |
| <b>Image Acquisition</b>            |  |           |          |      |
|                                     | Optimisation (depth, freq, focus, gain)                        |           |          |      |
| <i>Identifies</i>                   | <b>Deep veins from external Iliacs to popliteal veins</b>      |           |          |      |
|                                     | Venous anatomy   |           |          |      |
|                                     | Other relevant anatomy   |           |          |      |
| <b>Grey Scale Images or Loops</b>   |  |           |          |      |
| <i>Demonstrates</i>                 | Compression of common femoral vein                             |           |          |      |
|                                     | Saphenofermoral junction                                       |           |          |      |
|                                     | Proximal femoral   |           |          |      |
|                                     | Deep femoral vein  |           |          |      |
|                                     | Mid & distal femoral vein                                      |           |          |      |
|                                     | Proximal & distal popliteal vein                               |           |          |      |
| <b>Performs dynamic testing</b>     |  |           |          |      |
|                                     | Uses B Mode compression appropriately                          |           |          |      |
|                                     | Uses Colour Doppler appropriately                              |           |          |      |
|                                     | Uses pulsed wave Doppler appropriately                         |           |          |      |
| <b>Knowledge and Understanding</b>  |  |           |          |      |
|                                     | Understands sonographic appearance of DVT                      |           |          |      |
|                                     | Explains limitations and role of Proximal US in DVT assessment |           |          |      |

**Artifacts**

Identifies & explains the basis of common artefacts

| Competent | Prompted | Fail |
|-----------|----------|------|
|           |          |      |

**Record Keeping**

Labels & stores appropriate images  
 Documents any pathology identified  
 Completes report  
 Describe findings briefly  
 Integrates ultrasound findings with clinical assessment and explains how the findings might change management

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**Machine Maintenance**

Cleans / disinfects probe  
 Stores machine and probes safely and correctly

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**For Formative Assessment Only:**

Feedback of particularly good areas: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Agreed actions for development \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Examiner Signature: \_\_\_\_\_ Candidate Signature: \_\_\_\_\_

Examiner Name: \_\_\_\_\_ Candidate Name: \_\_\_\_\_

Date: \_\_\_\_\_