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| https://www.ahcs.ac.uk/wordpress/wp-content/uploads/2014/05/IQIPSlogo-300x106.png | **Clinical Physics** |  |
| **Name of Department: Vascular Ultrasound** | |

# Lower Limb Arterial Duplex

**Patient Preparation:**

Check patients identification

Explain test procedure

Obtain verbal consent or implied consent (if patient gets undressed / lies down for scan)

Take relevant history from patient

Ask patient to undress as appropriate

**Scanner Preparation:**

The probes should be cleaned with T-Spray (which must be allowed to dry on the probe for 10 minutes). Alternatively, Distel disinfectant wipes can be used to clean probes for immediate use, in between patients. After scanning an infectious patient, the room should be deep cleaned (order though the helpdesk) and the scanner cleaned according to the manufacturer’s protocol.

**Procedure:**

1. May be requested for intermittent claudication, rest pain or graft surveillance.
2. Unless otherwise stated the scan should include the infra-renal aorta down to the distal crural vessels. Obtain spectral Doppler samples from each vessel.
3. Velocity ratio measurements should be made where stenoses are observed.
4. The material used for the bypass graft (PTFE or autologous vein) and the anatomical sites of its proximal and distal anastomoses (femoro-popliteal above or below the knee, femoro-distal, etc) should be outlined in the request form and noted in the report. Peak systolic velocities within a graft should be measured and reported. Low resistance blood flow may appear in bypass graft in the early postoperative period but this is normal and can persist up to 6 weeks post surgery.

**Criteria:**

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| **Degree of stenosis** | **Velocity Ratio** *(Hennerici)* |
| 0 to 50% diameter reduction | VR <2 |
| ~50% | VR 2 |
| 50% to 75% diameter reduction | VR ≥2 but <4 |
| 75% to 99% diameter reduction | VR ≥4 |
| occluded | No flow detected |

**Report:**

The report should contain the site of any occlusion, stenosis or aneurysm. The degree of any narrowing should be quantified (see criteria above). The size of any aneurysms should be reported. Vessels not observed e.g. due to calcification, bowel gas or dressings should be noted.

Reports will be available on PACS.

Diagrams will be drawn in complex cases and where they add value to the report.

An urgent report should be given to the referring consultant if indicated i.e. acute occlusion of a graft or native artery, large aneurysms, rest pain etc.

**Recommended images to be stored on PACS:**

* Longitudinal image(s) of abdominal aorta showing diameter measurement(s)
* Spectral Doppler waveform in distal EIA, CFA, PFA origin, SFA, popliteal artery, distal ATA, distal PTA and distal peroneal artery
* Where stenosis is detected, store spectral Doppler velocity pre- and within stenosis (either same image or multiple images)
* Where stenosis / occlusion is detected, store B-mode / colour Doppler images as necessary

For bypass grafts:

* Images of proximal and distal anastomoses where possible
* Inflow vessel spectral Doppler waveform
* Spectral Doppler waveform / velocities within graft
* Spectral Doppler waveform in the vessel distal to graft
* Where stenosis / occlusion is detected, store B-mode / colour Doppler images as necessary
* Store images of any other relevant pathology detected
* Nb. In a one-stop clinic environment where time is limited, it may be difficult to record all of the above images

**Reference:**

Hennerici M, Neuerburg-Heusler D 1998 Vascular Diagnosis with ultrasound. Thieme, Stuttgart, pp 179-180