**NOTE 1** Arterial Investigation of the Lower Limb

**HOW TO USE THIS APPLICATION NOTE**

- **PATIENT SYMPTOMS** Verify that your patient’s symptoms correspond to one or more of those listed in Figure 1.

- **DOPPLEX® EQUIPMENT REQUIRED** Select the most appropriate Dopplex® Pocket unit to perform the examination. For suggestion of suitable Dopplex equipment, refer to Figure 2.

- **PROCEDURE** If you have the Dopplex® Printa II Package or Dopplex® Reporter Software Package (and a computer), connect your Dopplex® bi-directional Doppler and begin your examination, refer to Figure 3.

- **LOCATING ARTERIES** Figure 4 suggests probe position for locating an artery.

- **EXAMINATION RESULTS** Taking careful note of your Dopplex® display and arterial waveforms (if applicable), refer to Figure 5 overleaf and compare your examination results with those shown.

- **NOTES** Refer to Figure 6 overleaf for general notes relating to this form of examination for arterial disease.

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**FIGURE 1  PATIENT SYMPTOMS**
- WALKING PAIN
- REST PAIN
- COLD FEET
- SKIN CHANGES
- WEAK OR ABSENT PULSES
- CRAMPS
- NUMBNESS

**FIGURE 2  DOPPLEX® EQUIPMENT REQUIRED**
*Multi, Maxi or Rove Dopplex® II unit, 5 or 8 MHz probe, Dopplex® Printa II Package or Reporter Software Package.*

**FIGURE 3  PROCEDURE**
- Lay patient supine and encourage relaxation.
- Connect Printa II Package or a computer to your bi-directional Doppler.
- Ensure ambient temperature is comfortable and pulse rate is stable.
- Commence examination at the common femoral.
- Apply gel.
- Hold Dopplex® probe between forefinger and thumb at a 45 degree angle and place over vessel.
- Check Dopplex® display for directional flow and record waveform.
- Proceed with next examination site.

**FIGURE 4  LOCATING ARTERIES**

![Diagram showing probe position for locating arteries.](image-url)
At the common femoral examination site in the lower limb, the Dopplex® signal is typically tri-phasic. The initial systolic flow phase is followed by a reverse flow phase where blood actually travels backwards up the leg. This is usually followed by a third phase of forward flow before the next systole.

If a distal superficial femoral obstruction is present at the same time as B above, then a shoulder may appear on the downstroke of the systolic phase. If turbulence is present, then forward and reverse flow may occur at the same time.

The waveform shows a slow rise time in systole with continuous flow throughout the cardiac cycle. (see note in Fig. 6)

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The waveform is similar to the common femoral artery but with decreased amplitude. The shape of the arterial waveform is sensitive to iliac, common femoral and superficial femoral arterial disease. As the size of the stenosis increases, the popliteal and tibial arteries may also lose the reverse flow phase. In cases of complete proximal occlusion and collateral circulation blood flow is mono-phasic and continuous over the cardiac cycle. (refer to diagrams B-D)

Although the loss of reverse flow phase in the cardiac cycle is normally an indication of the severity of arterial disease, some patients will show no reverse flow due to recent exercise or high ambient temperature, producing vasodilated distal circulation.

This note is intended as a guide only. The above Dopplex® displays are an indication only. The number of arrows actually displayed will vary according to the Dopplex® gain setting and probe position. If in doubt contact your local vascular studies unit. If you have any questions regarding the products call Huntleigh Healthcare, Diagnostic Products Division.

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