NOTE 3  Venous Investigation Of The Lower Limb Using PPG

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 Pocket unit to perform the examination. For suggestion of suitable equipment, refer to Figure 2.

- **PROCEDURE**  Connect your Rheo Dopplex II to the Dopplex Printa II Package or Reporter Software Package (and a computer), and begin your examination, refer to Figure 3.

- **TOURNIQUET POSITION**  Figure 4 suggests position for Tourniquet.

- **EXAMINATION RESULTS**  Taking careful note of your Rheo Dopplex II display and venous waveforms, 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 venous incompetence.

- It is **ESSENTIAL** that the PPG curve is used to confirm the Refill Time.

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**FIGURE 1  PATIENT SYMPTOMS**

- SWELLING
- VARICOSE VEINS
- VENOUS OEDEMA
- VENOUS ULCERS
- VARICOSE ECZEMA
- POST-THROMBOTIC SYNDROME

**FIGURE 2  DOPPLEX EQUIPMENT REQUIRED**

- Rheo Dopplex II.
- Dopplex Printa II or Dopplex Reporter Software package.

**FIGURE 3  PROCEDURE**

- Remove footwear and stockings.
- Place foot on insulated mat.
- Adjust height to minimise weight on feet.
- Obese patients should be reclined to reduce venous compression.
- Fit sensor 10cm above the medial malleolus (use length of blue cable).
- Ensure patient is relaxed i.e., pulse rate stable
- Undertake exercise routine.

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**FIGURE 4  TOURNIQUET POSITION**

UT Tq  AK Tq  BK Tq

<table>
<thead>
<tr>
<th>Tourniquet Position</th>
<th>Limb Size</th>
<th>Tq Pressure mmHg</th>
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<tbody>
<tr>
<td>UT Tq = Upper thigh</td>
<td>S</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>70</td>
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<td></td>
<td>L</td>
<td>80</td>
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<tr>
<td>AK Tq = Above knee</td>
<td>S</td>
<td>60</td>
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<td>M</td>
<td>70</td>
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<tr>
<td>BK Tq = Below knee</td>
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NORMAL
If Refill Time (RT) is greater than 25 seconds, then venous insufficiency is not present or is not significant.

ABNORMAL
If Refill Time (RT) is less than 20 seconds then venous reflux is present. Apply the tourniquet cuff at the appropriate positions to determine the level of venous insufficiency, (See flowchart below).

DECISION MAKING FLOWCHART FOR VENOUS INCOMPETENCE

Differentiation between deep vein and calf perforator incompetence is not possible with PPG. In these cases, further investigation, i.e., Duplex scanning should be undertaken. Patients with gross oedema could produce normal results with venous incompetence present.