ALL WALES LYMPHOEDEMA GUIDANCE:

Lymphoedema Vascular Assessment Policy (Toe Brachial Pressure Index / TBPI)

April 2013

Created by the All Wales Lymphoedema Service Leads
Background

The presence of peripheral arterial occlusive disease may contraindicate compression therapy or necessitate a reduction in the level of compression used (Best Practice for the Management of Lymphoedema 2006). As identified by Partsch (2008) intermittent compression with high pressure peaks and low pressure intervals leads to an increase in arterial inflow.

Following a thorough patient assessment utilising the care pathway for patients presenting with Lymphoedema or Chronic Oedema, the therapists will have identified risk factors that necessitate the need for Toe Brachial Pressure Index (TBPI) to exclude Arterial Disease.

These risk factors include:

- Intermittent Claudication*
- Pain at Rest / Night Pain*
- Capillary refill >3 seconds*
- Immediate blanching on elevation*
- Diabetes
- Cardiac Disease
- Rheumatoid Arthritis
- Smoker
- Over the age of 80 years

(* TBPI must be performed)

Aim

TBPI (Toe Brachial Pressure Index) provides an objective measure of the patency of the arteries supplying blood to the foot.

Objective

To calculate the ratio of the highest toe systolic pressure for each limb to the highest systolic pressure in the arm. There are limitations to the test particularly in the presence of lymphoedema (Best Practice Guidelines 2006).
Procedure

- Ensure the Vascular Assist is in working order and all required attachments connected prior to switching it on.
- Explain the procedure, reassure the patient and ensure that he/she is lying flat and is comfortable, relaxed and adequately rested (20 - 30 minutes) with no pressure on the proximal vessels.
- Complete the ‘All Wales Lymphoedema Vascular Assessment Form’ (see below)
- Apply correct sized cuff to the left arm above the elbow.
- Apply probe to the left index finger (or next available finger)
- Ensure that the equipment and the arm are at heart level.
- Follow the Vascular Assist instruction manual and record the TBPI.
- Repeat on the right arm.
- Apply toe cuff and sensor to the left big toe (or next available toe).
- Repeat on the right toe.
- Remember to save results on the Vascular Assist and Vascular Assessment form after each measurement.
- TBPI result interpretation can be done using the following:
  - using the TBPI reference chart
  - considering the quality of the waveform
  - referring to the Vascular Assist Pathway.
- Following procedure ensure patient is well informed and aware of treatment plan.
- This procedure may be repeated following assessment and clinical reasoning at their follow up review.

Factors that can affect results

- If patient is unable to lie flat, document the position in their notes and interpret results cautiously.
- Smoking.
- Drinking caffeine based beverages
- Cold temperatures (either the room or patient) - ensure the patient is kept warm
- Talking
- Moving
- Mobile phone should be switched off

Review Date: April 2015
Lymphoedema Vascular Assessment Pathway
(Toe Brachial Pressure Index / TBPI)

**ASSESSMENT**
- Lymphoedema /Chronic Oedema History
- Limb Assessment
- Skin Assessment
- Past Medical History
- Psychological Factors – compliance/education
  - Pain
  - Mobility

**Diagnosis**

**Venous related risk factors**
- Varicose Veins
- Varicose Eczema
- Venous Ulceration
- Deep Vein Thrombosis
- Cellulitis

**Apply Compression**

**Arterial related risk factors**
- Intermittent Claudication
- Pain at Rest
- Capillary Refill > 3 seconds
- Blanching on Elevation
- Cardiac Disease
- Diabetes
- Rheumatoid Arthritis
- Smoking
- Over the age of 80 years
- CVA/mini stroke

**Refer for TBPI**

- **TBPI < 0.64**
  - Abnormal indicating arterial disease
  - **Refer to Vascular Clinic**

- **TBPI = 0.64 - 0.7**
  - Apply Compression with Caution

- **TBPI > 0.7**
  - Normal indicating no arterial disease
  - Apply Compression

**Wounds**

**Collaborate with TVN**
All Wales Lymphoedema Vascular Assessment Form

Name: ____________________________ Date of Birth: ____________________________
Address: ____________________________ NHS/Hospital Number: ____________________________

Predisposing Factors: (please tick)

<table>
<thead>
<tr>
<th>Venous related risk factors</th>
<th>Yes</th>
<th>No</th>
<th>Arterial related risk factors</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Venous Ulceration</td>
<td></td>
<td></td>
<td>Cardiac Disease / Angina</td>
<td></td>
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<tr>
<td>Varicose Veins / Surgery</td>
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<td>Peripheral Vascular Disease</td>
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<tr>
<td>Phlebitis/ Thrombophlebitis</td>
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<td>CVA / TIA</td>
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<tr>
<td>Cellulitis</td>
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<td></td>
<td>Pain at Night / Rest</td>
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<tr>
<td>Deep Vein Thrombosis</td>
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<td>Intermittent Claudication</td>
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<tr>
<td>Orthopaedic Surgery</td>
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<td>Hypertension</td>
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<td></td>
<td></td>
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<td>Diabetes</td>
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<td>Rheumatoid Arthritis</td>
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</tbody>
</table>

Perpetuating Factors: (please tick)

| Limited Mobility                          | Sleeping with legs dependent |
| Smoker (      /day) /Ex-smoker             | Obesity                      |
| Age 80 years or over                     | Alcohol (      /units per week) |

Venous Characteristics

<table>
<thead>
<tr>
<th>Venous Characteristics</th>
<th>Left</th>
<th>Right</th>
<th>Arterial Characteristics</th>
<th>Left</th>
<th>Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemosiderin Staining</td>
<td></td>
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<td>Blanching on Elevation</td>
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<tr>
<td>Varicose Veins</td>
<td></td>
<td></td>
<td>Capillary Refill Time &gt; 3secs</td>
<td></td>
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<tr>
<td>Champagne Shape legs</td>
<td></td>
<td></td>
<td>Trophic Skin/ Toe Nails</td>
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</tr>
<tr>
<td>Varicose Eczema</td>
<td></td>
<td></td>
<td>Ischaemic Night Pain</td>
<td></td>
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<tr>
<td>Pedal Pulses Present</td>
<td></td>
<td></td>
<td>Loss of Pedal Pulses</td>
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<tr>
<td>Skin Warm to Touch</td>
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<td>Skin Cold to Touch</td>
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<tr>
<td>Hyperkeratosis</td>
<td></td>
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<td>Hair Loss</td>
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</tbody>
</table>

Vascular Assist Results

<table>
<thead>
<tr>
<th>Left Brachial</th>
<th>Left Toe Pressure</th>
<th>Left TBPI</th>
<th>Right Brachial</th>
<th>Right Toe Pressure</th>
<th>Right TBPI</th>
<th>Waveform</th>
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</thead>
<tbody>
<tr>
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<td>R</td>
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</table>

Toe Brachial Pressure Index TBPI

<table>
<thead>
<tr>
<th>TBPI</th>
<th>Result</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 0.7</td>
<td>Normal indicating no arterial disease</td>
<td>Apply compression</td>
</tr>
<tr>
<td>0.64 – 0.7</td>
<td>Borderline / degree of arterial disease</td>
<td>Apply compression with caution</td>
</tr>
<tr>
<td>&lt; 0.64</td>
<td>Abnormal indicating arterial disease</td>
<td>Refer to GP/ Diabetic/ Vascular</td>
</tr>
</tbody>
</table>

Referral to:

<table>
<thead>
<tr>
<th>Clinic</th>
<th>Date Referred</th>
<th>Signature</th>
</tr>
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<tbody>
<tr>
<td>Vascular</td>
<td></td>
<td></td>
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<tr>
<td>Tissue Viability</td>
<td></td>
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<tr>
<td>Dermatology</td>
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</tbody>
</table>

Therapist Sign/Name: ____________________________ Date: ________________