Good Practice Guidelines for the Use of Antiembolic Stockings

<table>
<thead>
<tr>
<th>Approved by:</th>
<th>CHS Policy Group and Clinical Quality and Governance Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>On:</td>
<td>5 October 2009</td>
</tr>
<tr>
<td>Review Date:</td>
<td>30 September 2011</td>
</tr>
<tr>
<td>Directorate responsible for Review:</td>
<td>Adult Services</td>
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<tr>
<td>Policy Number:</td>
<td>SNP007</td>
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<table>
<thead>
<tr>
<th>Signature:</th>
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<tbody>
<tr>
<td>Jenny Dowling</td>
</tr>
<tr>
<td>Head of Clinical and Professional Practice and Board Nurse</td>
</tr>
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</table>
Good Practice Guidelines for the Use of Antiembolic Stockings

VERSION CONTROL

<table>
<thead>
<tr>
<th>First Version</th>
<th>Date</th>
<th>Amendment</th>
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<tbody>
<tr>
<td>2.</td>
<td>September 2009</td>
<td>Major re-write</td>
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Good Practice Guidelines for the use of Antiembolism Stockings

1. INTRODUCTION

The purpose of this policy is to ensure the safe use and appropriate care of patients wearing anti-embolic stockings. These guidelines will provide the best practice principles in the use of anti-embolic stockings, a mechanical method of thromboprophylaxis for adult patients.

SCOPE

This policy is applicable to all qualified nursing staff employed by Leicestershire County & Rutland PCT Community Health Services. The qualified nurse should ensure that they work in line with their professional standards:

- NMC Record Keeping

Managers must ensure staff are adequately trained and competent and this is recorded within a competency framework

Deep vein thrombosis (DVT) of the leg and pulmonary embolus (PE) are a significant cause of post-operative morbidity and mortality (Hopkins 1991). One in three patients who have suffered a DVT will go on to develop post-thrombotic syndrome within five years. (Prandoni 1996: Brandjes 2000). This is characterised by many symptoms including chronic pain, swelling and skin changes. The vascular damage sustained from the DVT puts patients at a high risk of leg ulceration, and DVT prevention could therefore, have major financial implications for the NHS by reducing leg ulcer costs. Deep vein thrombosis and subsequent pulmonary embolism remain a significant hazard to hospital patients (Coleridge-smith, Hasty and Scurr 1009)


A Cochrane systematic review has found that the use of elastic compression stockings is significant in the prevention of DVT ( Kolbach 2003). A further review confirmed that elastic compression stockings are also significant in the prevention and severity of post DVT complications.

There is evidence that routine prophylaxis reduces morbidity and costs in hospitalised patients at risk of DVT (SIGN 2002)

A recognised hazard of elastic compression stockings, if incorrectly applied to vulnerable patients, is ulceration and skin damage particularly to the heels. (Tillman 1991, Partsch 1991)

The purpose of these guidelines is to reduce this risk.
2.  PRESCRIBING OF ANTIEMBOLISM STOCKINGS

Anti-embolism stockings act by applying compression to the lower leg thereby increasing venous blood flow in individuals whose level of mobility is reduced. This helps to prevent the stagnation of blood around venous valve cusps and prevents formation of thrombi in the deep veins of the calf.

CAUTION - The application of moderate pressures to patients with impaired arterial blood supply to the legs may exacerbate the arterial insufficiency and occlude blood-flow. Therefore the following is recommended.

i) A medical practitioner must prescribe anti-embolism stockings. Anti-embolic stockings are not available on prescription in the community; therefore patients must be discharged with the stockings required for the duration of their planned treatment.

ii) It is at the discretion of the person prescribing whether knee or thigh length stockings are prescribed.

iii) It is crucial that the prescriber and practitioner responsible for measuring and applying stockings, must be sure that the arterial status of the patient is sufficient to allow safe compression.

iv) The stocking compression profile should be equivalent to the Sigel profile (a pressure profile for elastic stockings) and be approximately
   - 18mmHg at the ankle
   - 14mmHg at the mid-calf
   - 8mmHg at the upper thigh

   as recommended by NICE guidelines 2007

Cautions should be taken and further advice sought from medical staff if the patient has any of the following:

- Extreme leg deformity
- Pressure ulcers to lower limb
- Dermatitis
- Recent skin graft to lower limb (within last 3 months)
- Gangrenous conditions
- Pulmonary oedema from congestive heart failure
- Severe peripheral neuropathy
- Heel pressure ulcers
- Known peripheral vascular disease
- History of intermittent claudication, rest pain or night pain
- Diabetes
- Leg Ulcers
- Trophic skin changes (cold, pale, shiny, hairless skin).
- Fragile ‘tissue paper’ skin
- Oedematous legs
- Neurovascular status
- Absent or weak foot pulses (Note: the dorsalis pedis pulse may be congenitally absent in 10% of the population; Moffatt & O’Hare 1995)

- Capillary nail refill test – this is a quick test to monitor tissue perfusion. Apply pressure to the nail bed until it turns white, on releasing the pressure, the nail bed should return to a normal pink colour within two seconds.

iv) Doppler ultrasound, carried out by a competent trained practitioner, will confirm the Ankle Brachial Pressure Index if in doubt about arterial status, however Prof. London, Vascular Surgeon, advises that patients should not have application of anti-embolism hosiery delayed because a Doppler cannot be performed. Therefore, provided claudication, night pain & rest pain have been ruled out, anti-embolism stockings can be applied

3. NURSING ASSESSMENT

All patients must be assessed prior to application of stockings to identify the presence of any contra-indications to the application of stockings. If patients transferred from acute sector to community hospitals, arterial status of patients must be reassessed prior to application.

3.1) Prior to application of anti-embolism stockings, check contra-indications to rule out potential arterial impairment (as in 2 iv)

3.2) Follow manufacturers sizing chart and fit appropriate size of stockings. Document size in nursing records. The calf and / or thigh should be measured at the greatest part. Leg length should be measured from the base of the buttocks to the heel for thigh length stockings. For knee length stockings measure from the heel to behind the knee. Incorrect measuring can cause tissue damage when stockings chosen are too small and therapeutic benefit is lost if the stockings are too large. As the position of the patient and the time of day may have an effect on the shape and size of the leg, where possible the measurement should be taken early in the morning and the patients should be standing, or if sitting the feet and knees should be at 90 degrees. Patients should have two pairs of stockings provided by the hospital on discharge.

3.3) where oedema exists re-measure every 2 days and as oedema reduces be aware that downsizing of stockings size may be necessary.

3.4) If the patient is to wear anti-embolism stockings, information and advice on caring for legs and stockings must be given – patient information leaflet.

3.5) Accurate measurement and safe fitting of the stockings is of paramount importance to achieve optimum prophylaxis and patient compliance (Lowry 1995). However it is important that patients are provided with the relevant information covering therapeutic treatments. Providing written formalised information helps to reinforce verbal information given to patients, leading to increased patient compliance (Arthur 1995)
4: USE OF ANTIEMBOLISM STOCKINGS.

4.1) Stockings should be worn for 24 hours a day unless otherwise instructed.

4.2. Patients feet and legs should be dry before stockings are applied

4.3 Stockings must be removed daily by patients or carer/nurse to allow for skin care, hygiene and assessment. Observe for marking/blistering/discolouration particularly over bony prominces and heels

4.4. Sensation, circulation and movement of the leg should be checked. The nurse/carer must check for the following symptoms;
   o discoloured toes
   o cold toes
   o tingling in the toes
   o swelling in the toes

4.5 pain or discomfort should be assessed , monitored and reported immediately and stockings removed.

4.6) Check that stockings fit smoothly as wrinkles can cause constriction and tissue damage.

4.7 Advise patients of the dangers of turning down stocking tops (thigh or knee length) and the resulting tourniquet effect.

4.8) Stockings should be washed/changed every third day. Launder as per manufacturer’s instructions.

4.9) Oily substances can degrade the elastic fibres e.g. moisturisers/emollients. – e.g. Aqueous cream is product of choice.

4.10) Advise patients to note the number of washes and to get replacement stockings as per the manufacturers instructions to ensure an adequate level of compression is maintained.

4.11) Anti-embolism stockings should be continued until medically directed to cease, usually when patient is fully mobile. Patients wearing anti embolic hosiery following hip or knee replacements usually wear stockings for 6 weeks following surgery.

5. TRAINING

All healthcare practitioners will be able to;

5.1 be competent to perform Doppler and interpret accurate results if necessary to exclude arterial impairment
5.2 be aware of contra indications for stocking use
5.3 carry out the relevant risk assessment
5.4 identify the risks associated with wearing anti-embolic stockings
5.5 demonstrate the correct application and use of the stockings
5.6 have knowledge of correct measuring techniques for safe stocking fit
5.7 have been assessed in their clinical area as competent by completing the self assessment form
5.8 contact locality tissue viability lead if any concerns
# SELF ASSESSMENT FOR STAFF APPLYING ANTI- EMBOLISM HOSIERY

**NAME OF NURSE..........................................................**

**DESIGNATION..........................................................**

**DATE.................................................................**

<table>
<thead>
<tr>
<th>PERFORMANCE CRITERIA</th>
<th>Date</th>
<th>Sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify the risks associated with wearing anti-embolic stockings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can provide evidence that patients’ arterial status has been checked and documented if signs of arterial impairment are noted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can identify the pedal pulses on the foot and is able to demonstrate this- see diagram</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Dorsalis pedis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o Anterior / posterior tibial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>o peroneal</td>
<td></td>
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<tr>
<td>Can provide evidence that patients and carers have been educated in the importance of aftercare including provision of patient information leaflet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be competent to perform Doppler assessment and interpret accurate result if deemed to be necessary for patient.</td>
<td></td>
<td></td>
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</tbody>
</table>

**SIGNED BY:**

**NURSE..........................................................**

**DATE...../...../.....**

**LINE MANAGER....................................................**

**DATE ...../...../.....**
Locations of pedal pulses of the foot
PATIENT/CARER

INFORMATION LEAFLET

HOW TO CARE FOR YOUR ANTI EMBOLIC STOCKINGS
Patient information

WHAT ARE ANTI EMBOLISM (AE) STOCKINGS?
These are stockings made with firm elastic that gives graduated compression to the leg. Most are below the knee but occasionally some are full thigh length. AE stockings help reduce the risk of blood clots or deep vein thrombosis forming in your legs whilst you are less active than normal.

HOW LONG WILL I NEED TO WEAR THEM?
You will need to wear them day and night until you get back to a normal or improved level of mobility. If you have had recent hip or knee surgery, you will need to wear them for at least 6 weeks.

HOW TO APPLY
- Insert your hand into the stocking as far as the heel
- Grasp centre of heel pocket and turn stocking inside out to heel area
- Carefully position stocking over foot and heel. The inspection hole should be on the underside of your foot.
- Pull the stocking up and fit around your heel and calf
- Smooth out any excess material, pull toe section forward to smooth ankle and instep area and allow toe comfort.
- You may require a slip sock to help apply your stockings.
- If this is not available you may apply a plastic bag over your feet prior to applying stockings as this will aid the stocking to slip over your foot easier, the bag can then be pulled out of the stocking.

DO NOT TURN TOPS OF STOCKINGS DOWN
This may constrict your circulation, form tight bands around your leg and may cause skin sores to develop.

KEEP STOCKINGS FREE FROM OILY SUBSTANCES
Avoid using oil based moisturisers in your legs as these can damage the stockings elastic fibres. Aqueous Cream is the best emollient to use to hydrate the skin.

STOP WEARING THE STOCKINGS IF …
If you have any pain, discomfort, or trauma changes to the skin or if you develop a rash it may mean you have an allergy to the elastic fibres in the stockings. Remove your stockings and report immediately to your nurse/ carer.

CHECK YOUR TOES AND FEET…
For sensation, circulation and movement. Report to your nurse/ carer immediately if you have any of the following symptoms:

- discoloured toes – either blue or white
- cold toes
- tingling – pins or needles in your toes
- swelling to your toes
- numbness in the foot or leg

This may be a sign that your stockings are too tight.
HOW DO I LOOK AFTER MY STOCKINGS?
Wash stockings by hand or in a machine at no more than 40°C, refer to manufacturers
instructions
Spin or air dry but do not tumble dry as this will damage the elastic fibres
Do not apply if wet

REMOVE YOUR STOCKING ON A DAILY BASIS
To allow for skin care, observation and hygiene purposes

FURTHER INFORMATION
If you have any further queries about your anti embolism stockings, please contact your
nurse for advice.
Locations of pedal pulses of the foot

![Pedal Pulses of the Foot](image)

- Peroneal bifurcates over lateral malleolus
- Posterior tibial, below and behind medial malleolus
- Dorsalis pedis (alongside first metatarsal)
- Pedal arch

(Adapted from Herbert 1997)
REFERENCES


**Equality Impact Assessment – Policy/ Service Screening Checklist**

**Policy Title:** Good Practice Guidelines for the Use of Antiembolism Stockings  
**Directorate:** Adult Services

**Name of person/s auditing / authoring policy:**

**Policy/ Service Content:**
For each of the following checks is this policy sensitive to people of different age, ethnicity, gender, disability, religion or belief, sexual orientation & transgender?

- The checklists below will help you to see any strength and / or highlight improvements required to ensure that the policy / procedure is compliant with equality legislation.

### A. Check for DIRECT or INDIRECT discrimination against any minority group of SERVICE USERS:

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Action required</th>
<th>Resource implication</th>
</tr>
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<tbody>
<tr>
<td>Does your policy/service contain any issues which may adversely impact people from using the services who otherwise meet the criteria under the grounds of:</td>
<td></td>
<td></td>
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<tr>
<td>1.0 Age</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1.1 Gender (Male, Female and Transsexual)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1.2 Learning Difficulties / Disability or Cognitive Impairment</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>1.3 Mental Health Need</td>
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<td>X</td>
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<tr>
<td>1.4 Sensory Impairment</td>
<td>X</td>
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<tr>
<td>1.5 Physical Disability</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>1.6 Race or Ethnicity</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>1.7 Religion or Belief (including other belief)</td>
<td>X</td>
<td>X</td>
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<tr>
<td>1.8 Sexual Orientation</td>
<td>X</td>
<td>X</td>
<td>X</td>
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</table>

If yes is answered to any of the above items the policy may be considered discriminatory and requires review and further work to ensure compliance with legislation.

### B. Check for DIRECT or INDIRECT discrimination against any minority group relating to EMPLOYEES:

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Action required</th>
<th>Resource implication</th>
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<tbody>
<tr>
<td>Does your policy/ service contain any issues which may adversely impact employees from operating the under the grounds of:</td>
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<tr>
<td>1.9 Age</td>
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<tr>
<td>2.0 Gender (Male, Female and Transsexual)</td>
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<td>2.2 Mental Health Need</td>
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<tr>
<td>2.3 Sensory Impairment</td>
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<td>2.7 Sexual Orientation</td>
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</table>
If yes is answered to any of the above items the policy may be considered discriminatory and requires review and further work to ensure compliance with legislation.

**TOTAL NUMBER OF ITEMS ANSWERED ‘YES’ INDICATING DIRECT or INDIRECT DISCRIMINATION = 0**

<table>
<thead>
<tr>
<th>Number of ‘Yes’ answers for Service users</th>
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<tr>
<td>Number of ‘Yes’ answers for Employees.</td>
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<table>
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<tr>
<th>Yes/ No</th>
<th>Comments /</th>
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<tbody>
<tr>
<td>Is there any evidence that some groups are affected differently?</td>
<td>N</td>
</tr>
<tr>
<td>Is there a need for external or user consultation?</td>
<td>N</td>
</tr>
<tr>
<td>If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?</td>
<td>N/A</td>
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<tr>
<td>Is the impact of the policy/guidance likely to be negative?</td>
<td>N</td>
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<tr>
<td>If so can the impact be avoided?</td>
<td>N/A</td>
</tr>
<tr>
<td>What alternatives are there to achieving the policy/guidance without the impact?</td>
<td>N/A</td>
</tr>
<tr>
<td>Can we reduce the impact by taking different action?</td>
<td>N</td>
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</table>

**IMPACT**

(Please Tick)  

- High  
- Medium  
- Low  

X

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

If you have answered “Yes” to any of the above questions, it is likely the policy/service will need a full EIA, please complete a full impact assessment. If you have identified a potential discriminatory impact of this procedural document, please refer it to policy/service administrator; together with any suggestions as to the action required to avoid/reduce adverse impact.

**Signatures of authors / auditors:** Tissue Viability Team  
**Date of signing:** 22 September 2009