



CLINICAL PRACTICE GUIDELINE

Venous thromboembolism: Graduated compression stockings

This document should be read in conjunction with this [Disclaimer](#)

Aim

To reduce the short term and long term morbidity / mortality associated with venous thromboembolism in obstetric and gynaecological patients.

Background

Thromboprophylaxis is either mechanical or pharmacological prophylactic treatment designed to assist in the prevention of the development of a blood clot. Deep vein thrombosis (DVT), the formation of a clot in one of the deep veins of the body, is the single most preventable thrombo embolic disorder, and is asymptomatic in many cases. Graduated compression stockings (GCS) are designed to achieve a pressure gradient, with pressure increasing from the ankle to the knee or thigh. The sequential compression profile of the stocking is aimed to mimic the deep leg vein calf muscle pumps, to promote efficient and effective emptying of vein circuits and respective valvular systems, without adverse effects on arterial circulation. There is evidence that routine prophylaxis reduces morbidity and costs in hospitalised patients at risk of DVT.¹

The GCS are considered relatively safe because they do not increase bleeding risk. However there are no trials to support the use of GCS in pregnancy and the puerperium with recommendations being extrapolated from other studies.

Key points¹

1. Accurate measurement and safe fitting of the stockings is of paramount importance to achieve optimum prophylaxis and patient compliance.²
2. Use non-slip socks when mobilising rather than rolling up (from the toes).
3. Graduated compression stockings are commercially available as both below knee and full length stockings. Most controlled trials have used full length stockings. Studies comparing above knee and below knee stockings have been too small to determine whether or not they are equally effective. Currently there is little available evidence of the comparative effectiveness of knee and thigh length stockings.²
4. Ensure that patients who develop oedema or post-operative swelling have their legs re-measured and graduated compression stockings (GCS) refitted.

Contraindication

If a woman has arterial insufficiency, graduated compression hosiery may cause limb damage, contra indicating the use of anti-embolic stockings.

Relative contraindications

- Arterial disease
- Gangrenous conditions including peripheral vascular disease.
- ABPI (ankle brachial pressure index) less than 0.8. or falsely elevated e.g. due to diabetes
- Absent foot pulses
- History of intermittent claudication
- Femuro-popliteal bypass grafts
- Peripheral neuropathy
- Pulmonary oedema
- Lymphoedema

Cautions

Caution should be taken and medical advice sought if the woman has any of the following:

- Calf circumference exceeding 56cm
- Extreme leg deformity
- Fragile / paper thin skin
- Pressure ulcer to the lower limb
- Dermatitis
- Recent skin graft to the lower limb
- Lower limb oedema
- Diabetes

Assessment / sizing

All women must be assessed prior to the application of the stockings to identify the presence of any contraindications to the application of stockings. The assessment shall include:

- Skin integrity / condition – record erythema, fragile / paper thin skin, any breaks in the skin including grade of any pressure injuries.
- Neurovascular status – colour, warmth, sensation, movement, pulses (including capillary refill test – the nail bed should return to a normal pink colour within two seconds).
- Medical history
- Pain

If, on assessment, contraindications and / or cautions are present, do not apply the stockings and seek further advice.

Procedure

1. Explain the assessment and management required prior to the application of the stockings, to promote compliance with the treatment.
2. Explain the possible signs and symptoms of a deep vein thrombosis which may include abnormal swelling, colour changes and / or warmth of an affected limb, localised tenderness and pain, dilation of the veins and pyrexia.
3. If the woman refuses to wear the stockings, her understanding of the possible consequences of this shall be clearly documented in the medical record and the medical officer informed of her decision.
4. Measure the leg as indicated by the stocking manufacturer, e.g. leg length, thigh and calf circumference. 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 are chosen that are too small, and the therapeutic benefit is lost if the stockings are too large.

As the position of the woman and the time of day may have an effect on the shape and size of the leg, where possible the measurement should be taken in the early morning and the woman should be standing, or if sitting the feet and knees should be at 90 degrees.

5. Stocking size should be selected according to the manufacturers size chart.

Application

1. Position the hand into the heel pocket of the stocking.
Turn the stocking inside out.
Position the stocking over the foot and heel ensuring the heel is in the pocket
2. Pull the stocking up over the ankle and leg.
3. Stockings should be kept wrinkle free, as this can cause uneven pressure on the limb and may lead to tissue damage.
4. Stockings should not be rolled down as this can cause a tourniquet effect on the femoral circulation, which can result in a localised DVT. Use non-slip socks when mobilising rather than rolling up (from the toes).
5. Monitor for the early signs of tissue damage, on return from theatre and once per shift. To maintain hygiene needs, stockings must be removed at least once daily for a period of no more than thirty minutes. After the initial application of stockings the limbs should be checked after 30 minutes. Do a

capillary refill test to check circulation. If blanching does not occur in less than 2 seconds, the stockings should be removed, medical staff informed and the leg measurements and stocking size re-checked. Stockings should also be removed if the woman complains of pain or leg cramps and the medical staff informed.

6. The legs will be prone to dryness while wearing the stockings. The use of emollients to moisturise and maintain skin integrity of excessively dry skin is recommended. Do not use oil based creams or products.
7. Legs should be re-measured if the condition of the leg changes or at least every 3 days to detect any change in limb size.
8. To ensure therapeutic effect, stockings should be hand washed or machine washed in low temperatures every 3 days or when soiled. Do not dry over a direct heat source.
9. Document on the WA Hospital Medication Chart (HMC).

Discharge planning

- Prior to discharge a decision must be made as to whether the woman requires stockings and if so, for how long.
- The woman or carer must understand:
 - Their VTE risk and consequences of VTE, the importance of VTE prevention and its possible side-effects
 - correct fit & wearing of CGS
 - importance of regular skin hygiene
 - signs of skin damage that would indicate discontinuation of the stockings
 - planned duration of treatment
 - signs and symptoms of VTE and related complications
 - where to seek help/advice

References

1. The Australian and New Zealand Working Party on the [Management and Prevention of Venous Thromboembolism](#). **Best Practice Guidelines for Australia and New Zealand**. 4th edition. 2010.
2. Royal College of Obstetricians and Gynaecologists. [Thromboembolism during pregnancy and the puerperium, Reducing the Risk \(Green Top 37a\)](#). 2015.
3. National Institute of Clinical Excellence (NICE). [Clinical Guideline 92 Venous thromboembolism- reducing the risk for patients in hospital](#). 2015.

Related legislation, policies and standards


- Australian Commission on Safety and Quality in Health Care: [Clinical Care Standards: Venous Thromboembolism Prevention Clinical Care Standard](#) (Oct 2018) (external site, PDF, 4MB)

Related WNHS policies, procedures and guidelines

KEMH Clinical Guidelines: Obstetrics & Gynaecology:

- [Venous Thrombosis and Embolism: Prophylaxis with Proven Thrombophilia](#)
- [Venous Thrombosis and Embolism: Prophylaxis Prior to Thrombolytic Event](#)
- [Venous Thrombosis and Embolism: Thrombosis in Pregnancy](#)
- [VTE: Heparin Therapy \(Intravenous\)](#)
- [VTE: Prophylaxis Gynaecology Risk Assessment](#)
- [VTE: Warfarin: Pre & Post Operative Management for Patients on Therapeutic Warfarin](#)

Useful resources (including related forms)

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