Developed by the British Columbia Provincial Nursing Skin &Wound Committee in collaboration with the NSWOCs/WCs from:

First Nations Health Authority | fraserhealth | Interior Health | island health | northern health | Provincial Health Services Authority | vancouver CoastalHealth / Providence Health Care | Yukon

Duke Boot Compression Therapy (with self-adherent wrap): Procedure

HA Endorsement **BC & Yukon**	• Endorsement done: FNHA as reference, FHA, IHA, NHA & VCH/PHC. • Endorsement pending: ISLH, PHSA & Yukon; until endorsement has been granted by your health authority (HA) please follow your HA's current document.
Practice Level **BC & Yukon**	• A Physician/NP order or clinical direction from a Wound Clinician is required to apply a Duke Boot wrap. The compression wrap method (fanfold or spiral) is to be stated in the order/clinical direction. • Only nurses who have a competency in doing compression wraps can apply an Unna Boot wrap. • Nurses must follow Health Authority/agency compression therapy policies/practice standard. • Refer to the Guideline: Application of Compression Therapy for Venous Insufficiency & Mixed Venous/Arterial Insufficiency for information related to indications, precautions and contraindications for compression therapy.

Need to Know	• The compression 'boot' was developed by USA's Duke University and there are several variations of this procedure; this document outlines the procedure used within British Columbia.
	• The combination of 10% zinc oxide impregnated gauze wrap (Viscopaste) and a self-adherent wrap (Primed or Coban) is known as a 'Duke Boot'; note that for this procedure:
	  ○ Do not use compression wraps, (e.g., Coban2 or Coban2 Lite) for this procedure.
	  ○ Cast padding may be used over the Viscopaste layer to pad bony prominences and/or to absorb of small amounts of exudate.
	• The boot is classified as an inelastic-rigid compression therapy; the Viscopaste wrap forms a mold around the leg; with ambulation, the calf muscle must work against the mold and this work increases the venous return.
	• The boot provides moderate compression therapy (20-30 mmHg) when the client is ambulating.

Bookmarks	Equipment & Supplies Procedure Procedure Video Client Teaching Document Management

Indications / Precautions / Contraindications	**Indications:**
	• For clients with chronic eczema and dermatitis requiring moderate compression for the treatment of venous insufficiency and/or venous leg ulcers.
	Precautions:
	• Compression wraps may be used:
	  ○ With caution for clients whose ABI is between 0.5 to 0.89 as this value indicates severe to mild arterial insufficiency.
	  ○ With caution for clients whose ABI is 1.31 or greater as this value indicates calcified arteries (often seen in diabetics with advanced small vessel disease).
	  ○ With extreme caution and in consultation with a vascular surgeon for clients whose ABI is 0.49 or less as this value indicates very severe arterial compromise.
	• Protect very thin legs/bony prominences from pressure by adding additional padding.

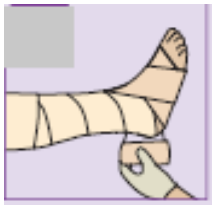
	• Promptly remove wrap and notify the MRP/NSWOC/WC if the client develop pain or a pale, cool or numb toes or foot, or signs and symptoms of heart failure. • Discontinue use if redness, itching or deterioration of the wound occurs; notify NSWOC/WC, or MRP. **Contraindications:** • Do not use for clients with known sensitivity or allergy to zinc or other ingredients in bandage. • Do not apply in the presence of uncontrolled heart failure. • Do not apply in the presence of untreated lower limb skin or wound infection.
Definitions	**Inelastic compression wrap** – A wrap made of non-stretch material such as a zinc paste impregnated gauze wrap, or a short-stretch wrap. **MRP**: Most Responsible Provider. **NSWOC**: Nurse Specialized in Wound, Ostomy, Continence. **WC:** Wound Clinician.
Related Documents	Guideline: Application of Compression Therapy Learning Module: Application of Compression Therapy Procedure: Ankle Brachial Index for Adults using Handheld Doppler Procedure: Ankle Brachial Index for Adults using Automatic ABPI System

Equipment and Supplies

- Viscopaste Bandage 7.5 cm x 6m –Cast padding, if using
- Cast padding, if using
- Self-Adherent wrap 10cm x 4.5m, (e.g., Primed)
- Stockinet cut to length of lower limb (if needed)
- 2 pair of clean gloves
- Dressing supplies, if needed
- Measuring tape

Procedure Link to Procedure Video

Steps	Key Points/Rationale
Apply/rewrap in the early morning or as soon as possible after the client is out of bed for the day.	Edema should be minimal in the morning if the client has had their legs elevated for the night.
Wash or shower leg(s) with warm water using a pH-balanced skin cleanser and dry well before wrapping.	To remove dead skin.
Measure the ankle circumference 10 cm from the bottom of the heel; measure the calf circumference 30 cm from the bottom of the heel.	With the first wrap, gives a base-line measurement of the client's edema; with subsequent wrappings, provides an assessment of the resolution of the edema.
If wound is present, provide wound care as per care plan and apply the appropriate cover dressing.	Viscopaste can be the primary dressing if the wound has a small amount of exudate. If using silver wound products e.g., Acticoat Flex3 or Acticoat Flex7, then use an interface, (e.g., gauze dressing), to prevent the paste's emulsifier from coming in contact with the silver dressing.
To Apply	
Don clean gloves. Support the foot off the floor and position the foot in dorsiflexion.	Dorsi-flexion ensures a good walking position once the wrap is on.
First Layer If using the Fanfold method: Start at the base of the toes, using no tension and an	Viscopaste has no elasticity, so the fan-folded pleats allow the wrap to expand slightly in the presence of increasing edema.

Steps	Key Points/Rationale
overlap of 50%, loosely wrap the paste bandage around the foot, heel, and ankle; ensure that all areas are covered. Start above the ankle, using no tension and an over-lap of 50%, with each turn up the leg, fold the bandage back upon itself just off-center of the anterior (front) aspect of the leg. Repeat process up the leg, when complete there will be a row of pleats running up the anterior aspect of the leg. Stop two finger-widths below the knee; cut off excess wrap and smooth the wrap to conform to the leg.	
If using the Spiral method: Start at the base of the toes, using no tension and an overlap of 50%, loosely wrap the paste bandage around the foot, heel, and ankle; ensure all areas are covered. Starting above the ankle, using no tension, and overlapping each turn up the leg by 50%, wrap the paste bandage up the leg using a spiral technique. Stop two finger-widths below the knee; cut off excess wrap and smooth the wrap to conform to the leg.	
Second Layer Wrap the foot and leg with cast padding in a loose spiral; ensure bony prominences are protected.	To prevent undue pressure over bony prominence or for absorption of small amount of exudate.
Third Layer: Change gloves. Apply self-adherent layer at half stretch and with a 50% overlap. Begin with a circular wrap at the base of the toes, starting 5th metatarsal head. Complete two to three figures-of-eight around the ankle to ensure the entire foot and heel are covered with at least two layers. Proceed up the leg using a 50% overlap and a 50% stretch of the compression wrap and stop two fingers-widths below the knee. Cut off excess material and press lightly on the entire surface of the compression wrap to secure.	Viscopaste residue on the gloves can interfere with adherence of the self-adherent wrap. Note: do not use compression wraps, (e.g., Coban2 or Coban2 Lite) for this procedure.  To ensure the self-adherent layer adhere to itself.
To Remove	
Unwrap the wrap or cut it off with scissors (away from the ulcer location, if applicable).	Lift bandage away from the skin while cutting to avoid cutting the skin.
Frequency of Wrap Change	
If ulcer present, then change wrap with each wound dressing change; if no ulcer present, then change wrap once a week unless there is slippage. Encourage client to shower legs before re-application of the wrap.	

Steps	Key Points/Rationale
Client Teaching	
Teach client to: • Assess for shortness of breath indicating heart failure • Monitor for wrap slippage. • Assess for pain, numbness, tingling, discolouration or swelling of the toes indicating circulatory problems. • Assess for itchiness due to sensitivity to zinc or other product ingredients. • Remove the wrap if any of the above occur and contact a health care provider immediately.	Heart failure may develop due to the shifting of fluid back up to the heart. If skin shows signs of sensitivity consult with physician/NP for patch testing. Wrap slippage can result in a tourniquet effect leading to increased pressure and possible tissue necrosis.
Expected Outcome	
Resolved eczema or dermatitis within 2 weeks. Measurable improvement in ankle and calf measurements within 1 week.	

Documentation

1. Document as per agency/Health Authority policy that the procedure was done.
2. Document as per agency/Health Authority policy that client teaching was done.

References

1. British Columbia Provincial Nursing Skin & Wound Committee (2016). *Guideline: Application of Compression Therapy to Manage Venous Insufficiency and Mixed Venous/Arterial Insufficiency.*
2. Smith & Nephew Viscopaste Product Information.

Document Management

This guideline is based on the best information available at the time it was published and relies on evidence and avoids opinion-based statements where possible. It was developed by the Provincial Nursing Skin & Wound Committee and has undergone provincial stakeholder review.

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