Developed by the British Columbia Provincial Nursing Skin and Wound Committee in collaboration with the Wound Clinicians from:

Title	**Procedure: Duke Boot Compression Therapy (with self-adherent wrap)**
Practice level	• A Physician/NP order or clinical direction from a Wound Clinician is required to apply a Duke Boot wrap. The compression wrap method (fan-fold or spiral) is to be stated in the order/clinical direction. • Only those nurses who have successfully completed additional education for compression therapy may apply compression wraps. • Follow agency/Health Authority compression therapy policies/practice standard. • Refer to the Guideline: Application of Compression Therapy for Venous Insufficiency & Mixed Venous/Arterial Insufficiency for further information related to indications, precautions and contraindications.

Background	• 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 (Coban Self-Adherent) is known as a ' Duke Boot'; note that for this procedure:
	  ○ Coban Self-Adherent wrap is used (not the Coban2 or Coban2 Lite compression wraps) and
	  ○ cast padding may be used over the Viscopaste layer to pad of bony prominences and/or to absorb of small amounts of exudates.
	• 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.

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 persons with diabetes with advanced small vessel disease)
	  ○ With extreme caution and in consultation with 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 the wrap and notify the Physician/NP/Wound Clinician 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 Physician/NP/ Wound Clinician.
	• If using a silver wound product, 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.
	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.

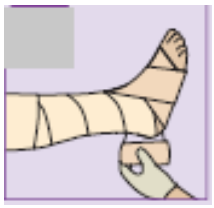
Definitions	**Inelastic compression wrap** – A wrap made of non-stretch material such as a zinc paste impregnated gauze wrap or a short stretch wrap.
Related Documents	Guideline: Application of Compression Therapy Learning Module: Application of Compression Therapy Procedure: Ankle Brachial Index for Adults using Hand Held Doppler Procedure: Ankle Brachial Index for Adults using Automatic ABI System

Equipment and Supplies

- Viscopaste Bandage 7.5 cm x 6m
- Cast padding, if using
- Coban Self-Adherent wrap 10cm x 4.5m
- 2 pairs of clean gloves
- All necessary dressing supplies if needed
- Measuring tape

Procedure Link to Procedure Video

Steps	Key Points
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, this gives a base-line measurement of the client's edema; with subsequent wrappings, this 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.
To Apply	
Apply 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 overlap of 50%, loosely wrap the paste bandage around the foot, heel and ankle; ensure that all areas are covered. • Starting above the ankle, using no tension and overlapping by 50%, with each turn up the leg, fold the bandage back upon itself just off centre of the anterior (front) aspect of the leg. • Repeat this 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 any 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 that 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.	Viscopaste has no elasticity so the fan-folded pleats allow the wrap to expand slightly in the present of increasing edema
Second Layer (if needed) • Wrap the foot/leg with cast padding in a loose spiral; secure with tape.	To prevent undue pressure over bony prominence or for absorption of small amount of exudate.

Third Layer: • Change gloves. • Apply Coban 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 Coban Self-Adherent wrap Note: use only Coban Self-Adherent wrap, not Coban2 or Coban2 Lite compression wraps  To ensure the Coban wrap 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 prior to re-application of wrap.	
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; and/or Measurable improvement in the ankle and calf measurement 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 Creation/Review

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 and Wound Committee and has undergone provincial stakeholder review.

Created By	British Columbia Provincial Nursing Skin and Wound Committee in collaboration with the Wound Care Clinicians from across all Health Authorities
Publication Date	October 2016
Revision Date(s)	
Review Date (s)	October 2019