**Clinical Practice Reference # CP 13.4.13.1**

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<th>Advanced Wound Care: Compression Bandaging</th>
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**General Information:** Named after German dermatologist Paul Gerson Unna, it consists of a paste bandage containing zinc oxide ointment, 3 to 4 inches wide and 10 yards long and wrapped in a spiral, and covered by a spiral wrapped kling gauze bandage. It is used for the treatment of venous stasis ulcers and other venous insufficiencies of the leg. It can also be used as a supportive bandage for sprains and strains of the foot, ankle and lower leg. The product may also contain calamine, acacia, glycerin, castor oil and white petrolatum.

**Mechanism of Action**

It is considered a rigid or inelastic system. The paste bandage hardens over 24 hours to the consistency of cardboard, and provides hemodynamic support, protecting the skin and potentiatting the calf muscle pump action when the individual ambulates. This improves the blood flow particularly on the deep veins and reduces edema. As the edema reduces, the wraps must be replaced to fit the smaller leg size.

**Indications**

Provides a support system that can be utilized upon admission in the absence of signs of severe ischemia, when ABIs cannot be obtained due to edema or calcified vessels (see Contraindications).

- Refer to vascular surgeon particularly if there is continuing rest pain. Mixed arterial and venous ulcer with arterial insufficiency: low compression¹ for ABI: 0.5-0.8² (moderate ischemia) Ankle Sprain with venous insufficiency or atrophy
- Localized atopic dermatitis or venous dermatitis
- Can be used for mobile or immobile patients, but works best if patient is able to ambulate some of the time.

**Precautions**

- Acute skin infections

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History of congestive heart failure
Atrophy of muscles
History of dermatitis- many patients are sensitive to some of the constituents of paste bandages, such as parabens preservatives, so it is advisable to patch test the patient with a small strip of bandage over at least 48 hours.
Even if no sensitivity is noted with a patch test, an individual may go on to develop sensitivities on the involved limb, and any increase in dermatitis should result in the paste wrap being discontinued.

Contra-indications:
If any of the following signs and symptoms are present, do not implement Unna’s Boot without a doctor’s order and a vascular assessment such as ABI’s or segmental compression studies

- Pain in legs and feet when laying in bed with legs elevated and relieved by putting leg over the side of the bed or getting up and walking around
- Cold legs or feet
- Symptoms of intermittent claudication (characterized by muscle pain or cramping in the legs triggered by a certain amount of activity, such as walking, but disappears after a few minutes of rest. The location of the pain depends on the location of the clogged or narrowed artery. Calf pain is most common.)
- Diabetic microangiopathy (Damage to small blood vessels and capillary circulation causing retinopathy, nephropathy, neuropathy, diabetic foot disease)
- Dependent rubour/ pallor with elevation
- Loss of feeling or protective sensation so that the individual could not detect discomfort if the wrap were too tight.

Advantages
- Comfortable and soothes skin
- Protects skin from scratching

Disadvantages
- Sticky sensation in warm weather
- Contact Dermatitis may occur in some patients
- Less effective for non-ambulatory patients
- Pressure decreases with reduced edema (reapply)
- Cannot absorb large amounts of drainage and exudate may “strike-through” requiring changing.
- It does not provide compression during periods of inactivity.

Technique
Clean the patient’s skin thoroughly by washing with tap water (not saline or sterile water) using a mild soap (Dove for sensitive skin) and rinse well. Pat to dry with a clean towel (not 4x4”s).
Cleanse the wound as per P&P CP 11.8 Wound Cleansing Techniques.
Add moisturizer to normal skin or topical corticosteroid if ordered for dermatitis. Have patient flex the knee and dorsiflex (toes to nose) the foot to prevent pressure over the tibialis anterior tendon.
Apply Unna’s boot using a spiral layered application without any tension, smoothing the wrap with your hands using the following method:
Start at the base of the toes (metatarsophalangeal joints). Wrap upward in a spiral manner, overlapping about 50% of the previous layer, without pressure, stopping at the lateral side of the leg with each turn, and fold back on itself (see ----- in diagram), avoiding any circumferential wrap that would cause constriction and potential pressure necrosis. This also allows for expansion if edema should increase.
You must also allow for spread of the metatarsal bones and heel pad during gait. Continue the spiral, over the heel and upward to the tibial tubercle, being sure not to compress the peroneal nerve, which is just below the head of the fibula.
Each turn must be done at an angle to avoid compromising the circulation.

If desired, 6-8 layers of paste wrap can be fanfolded back and forth just over the ulcer to create a semi-occlusive dressing.
If bony prominences along anterior foot and leg are evident, use folded gauze to cushion these areas. Finish below tibial tubercle of knee, about 1 inch below the knee. If constriction develops as the dressing hardens, make a 2-inch slit in it below the knee.
Place gauze on the outer side of the paste wrap over the ulcer area to absorb exudate and prevent strike-thought (Strike-through is defined as the point at which absorbed fluid reaches the outer surface or edge of a dressing)³
Wrap the Unna's boot with gauze kling-style or Easifix⁴ conforming bandage applied in a figure-8 pattern.
The Unna's Boot should be changed every 3-4 days initially, and then q.7days

**Patient Teaching**
Keep the Unna boot dry.
If the bandage falls down or causes discomfort, call the nurse to have it changed.
If the drainage becomes visible on the outside of the bandage before the next scheduled visit, call the nurse.


⁴ Adapted from CarePartners ET NOW P&P © 2005 CP 13.4.13.1 Simple Unna’s Paste Boot
If you experience increased pain when you go to bed at night and elevate your legs, have someone remove the bandage or call the on-call nurse to come and do this. Increased pain with the bandage is not expected and should not be ignored. Do not take a tub bath or shower when wearing an Unna boot unless the boot is covered with a large plastic bag and the patient is not at risk of slipping. In some cases, sponge bathing may be the only option. You should be able to wear a sock or stocking over an Unna boot as well as their regular shoes. If your foot is swollen, a wider shoe or slipper may be needed for the first few days, but then once the edema starts to decrease, your shoes or slippers should fit better. Your toes should not turn blue. If they do, remove the wrap immediately and call the nurse. The colour should return to normal within a short time (less than one hour).

*Easifix* (BSN) is a highly conformable, lightweight retention bandage that offers high stretch and limited regain properties, avoiding the risk of limb constriction.

**References**

1. Keith Harding, Head Wound Healing Research Unit, Professor of Rehabilitation (Wound Healing) Cardiff University Department of Wound Healing School of Medicine Upper Ground Floor, Room 18 Heath Park Cardiff, Wales UK CF14 4XN. Email communication Dec 12, 2007.

**Other References**