

Multi-Layer Compression Wraps Inservice

Use: Primarily the single and multi-layer compression wraps are used for the treatment and management of venous leg ulcers and associated conditions such as lymphedema. A few other conditions that can be treated with compression wraps are ulceration with edema, superficial thrombophlebitis and traumatic wounds with localized edema. With a build up of fluid, pressure in the extremity may raise causing pain. Fluid build up also prevents blood from circulating to skin surfaces and may delay healing if a wound is present. Some examples of compression wraps are ProFore®, Una Boots®, Comprilan®, DeWrap®, Dyna-Flex® Jobst® to name a few.

The short stretch bandage is a wrap used in the treatment of lymphadema. The term “short stretch” is used because of its rating on elasticity. These short stretch bandages are rated at approximately 70%, which means they can stretch up to 70% beyond their actual non extended length. This stretch enables the wrap to provide consistent continual compression on the lymphedema limb. The wraps work in conjunction with the muscles to prevent additional swelling and to assist in lymph flow. Ace wraps in contrast are very elastic, able to stretch to several times their original length. As a result, they are not able to provide the needed compression rating on the limb. Ace wraps are considered long stretch bandages. Long stretch bandages are typically used for the support and relief of sprains, contusions and dislocations. This type of bandage is not routinely used in the treatment of lymphedema.

The short stretch bandage typically consists of 1-4 layers which provides a compression of around 35-40mmHg at the ankle graduating to about 17mmHg at the knee. This inservice will refer to Profore as an example of a multi layer compression wrap for demonstration purposes.

Benefits:

- Provides graduated compression.
- May provide sustain compression, even up to 7 days after proper application and maintenance.
- May have sufficient absorption abilities to manage exudate for up to a full 7 days without the need for re-application.
- Patients who are not compliant with compression stockings may benefit from a multi-layer compression wrap.
- Weekly dressing changes can reduce the nursing time used for treating venous leg ulcers and improve cost effectiveness.
- Inelastic and short stretch bandages have advantages over elastic garments because they force a higher working pressure and greater muscle pump efficiency.

Contraindications of multi-layer compression therapy:

- Diabetic patients with advanced small vessel disease.
- Ankle/Brachial Pressure Index (ABPI) of < 0.8.
- Patients who develop pain, pale, cool or numb extremities distal to the dressing.

- Caution should be used in patients with diabetes mellitus and peripheral neuropathy.
- No pulse = No wrap

4 Layers of the Multi-Layer Compression Wrap:

#1- Absorbent Bandage-provides a layer of padding that protects areas that are high risk for pressure, especially the foot and ankle. This padding layer should be visible at the toes and top of the bandage.

#2- Light Conformable/Crepe Bandage- This layer adds extra absorbency and smooths down the first layer prior to applying the 2 outer compression bandages.

#3- Light Compression Elastic Bandage- When using a correct figure eight technique in applying this bandage and 50% overlap, the sub-bandage pressure can be 17mmHg.

#4- Flexible Elastic Cohesive Bandage- This layer provides the higher level of compression , 23mmHg, when applied correctly and when used with the 3rd layer contributes to the approximate total 40mmHg pressure. The 4th layer also helps to hold the other layers in place. This layer should not come into direct contact with skin as it may contribute to an allergic reaction.



General guides for applying a 4 layer compression wrap:

- Verify order and explain procedure to patient
- Hand Hygiene/Infection Control throughout procedure
- Assess and clean patient skin to be wrapped, document assessment
- Apply appropriate compression wrap system

- **Layer 1-** With foot flexed, apply this layer as smoothly and evenly as possible without stretching. Starting at the base of the toes, give the bandage anchorage around the foot with 2 turns. Work up the leg, behind the Achilles tendon ensuring the heel is completely covered. Apply the padding layer in a spiral technique ensuring a 50% overlap. Work up the leg and finish just below the knee. Cut away any excess. Use any remaining padding to protect any bony prominence or to aid in absorbing a heavily exudating wound.
- **Layer 2-** Start at the base of the toes and anchor the bandage with 2 turns. Bring the bandage under the arch of the foot and the bottom of the heel to ensure this is secure while maintaining neutral tension. Move up the front of the foot and start working up the leg using a spiral technique, ensuring 50% overlap. Finish by leaving a straight edge to the 1st layer and cut away any excess. Use adhesive tape to secure as needed.
- **Layer 3-** Anchor this layer with 2 turns around the foot, then pass behind the Achilles tendon and pull lightly on the heel. Take the bandage across the front of the foot at an angle of 45 degrees with 50% extension. Pass the bandage horizontally across the Achilles tendon then move downward to the front of the ankle, at 45 degrees, using a figure eight technique. Continue upward with a figure 8 technique. Finish in the same place as the 2nd level. Cut away any excess and secure with tape as needed.
- **Layer 4-** Anchor the 4th layer with 2 turns around the foot. Wrap around the Achilles tendon and cover the heel with the bandage with 50% extension. Bring the bandage under the arch of the foot and work upward across the foot. Work up the leg, using a spiral technique with 50% overlap. Cut the bandage ensuring this is not stretched on the last 15cm and secure by pressing lightly.
- Assess skin proximal and distal to wrap.

There are different types of compression wraps, Profore, Dynaflex, Una Boot, Dewrap, etc. Following is a sample diagram of wrapping a leg using a Profore 4 layer wrap.

The following is a link to the Profore Wrap© video: <http://global.smith-nephew.com/master/29412.htm> . Copy and paste in your browser to view this video. Below is a diagram demonstrating the wrapping process.

Instructions for use PROFORE[®] 18-25 cm

- ▶ Measure the circumference of the ankle to ensure you choose the right kit.
- ▶ It is important that you bandage the leg with the foot flexed.



PROFORE WCL
Sterile wound contact layer



Remove the wound contact layer from the packet and apply directly to the wound.



PROFORE #1
A padding bandage which absorbs exudate and protects protruding bones



Flexing the foot in a neutral position, apply the padding bandage evenly and firmly. Start at the base of the foot and pull the edges around the foot and ankle.



Work up the leg and onto the foot in a complete circumferential bandage.



Apply the padding over the heel and onto the foot, ensuring a 5cm overlap. Work up the leg and then just below the knee. Avoid fabric wrinkles and cut any excess bandage.



Use the padding bandage to protect the bone protruding from the wound and to absorb exudate. It is important that the padding is applied in a firm, even layer.



PROFORE #2
A light conformable bandage



Start at the base of the foot and give the bandage 2 turns.



Bring the bandage under the foot and the heel to ensure it is tight.



Work to the front of the foot and onto the leg using a spiral technique, ensuring a 40% overlap.



Form the leg into a straight line to the knee. Do not use any excess bandage. Do not use the bandage if necessary.



PROFORE #3
A light compression bandage



Across the bandage with 2 turns around the foot, then pass behind the ankle, tension and pull tight on the heel.



Then, take the bandage across the front of the foot at an angle of 45° with 50% overlap. With the bandage horizontally across the ankle, tension from above downward to the front of the foot at an angle of 45°, using a figure of eight technique.



Continue with this technique using the spiral technique for a 50% overlap.



Finish in the complete figure of eight, ensuring the bandage is tight and secure.



PROFORE #4
A flexible cohesive bandage which applies pressure and maintains the other layers in place for a full week.



Over the bandage with 2 turns around the foot.



Work around the ankle, tension and cover the heel with the bandage with 50% overlap. Bring the bandage under the heel and work up across the foot.



Work up the leg up to the knee, tensioning using a spiral technique with a 50% overlap.



Cut the bandage ensuring that it is not stretched on the cut to prevent tissue reapplying tightly.