

Subject: Feet Care: Blister Prevention and Treatment

Catchy Title:

Presenters Name:

When to teach this topic: To be taught preventatively before boots go on and then early during the first day of hiking. If no one develops blisters then you have done a good job and should teach treatment of blisters during an open time on trail or in camp.

Who is this for (level of experience and age of participants): For those interested in the outdoors from 6th grade on.

Resources:

- [Backpackers Field Manual](#)
- [Wilderness Basics](#)
- Internet Sources
- Expeditionary books

Materials needed:

Outcomes: Things for you to know and teach so that all participants will be able to know and do each following bullet by the end of this lesson.

- Leaders will understand how to prevent blisters through proper use of socks, lacing, breaking in boots, and pre-taping.
- Leaders will understand when and how to stop the group for a boot adjustments before any blisters develop.
- Leaders will understand the treatment of significant blister by cutting off the tissue, disinfecting and covering.
- Leaders will understand the limited use of mole skin for treating blisters that are already formed.
- Leaders will know to check-in with group for "hot spots" frequently and how to make it ok to stop for treatment if necessary without singling out or embarrassing individuals.

Introduction/Hook: If you are going to take a horse to water...make sure it's thirsty. Make sure you are doing this at a time when the participants need this information and are ready to hear it (are people warm, hydrated and well fed?).

Very short activity/introduction:

Procedures & Activities: Steps, e.g. models, structured practice, guided practice, independent work. Include time allotments for all steps in each section. Usually 5-10 minutes per section. Timing is very important.

Explain & Demonstrate:

Step 1 __ minutes

Step 2 __ minutes

Step 3 __ minutes

Step 4 __ minutes

Practice (individually if appropriate):

How to Assess each individuals skills:

Closure/Evaluation: How will you close the lesson? How will the students remember what they learned today? Homework? Summary? Quiz? When? Usually allow at least 5 to as much as 10 minutes for this section.

Evaluation: Analyze the strengths and weakness of the lesson as it actually happened. Include things to avoid next time you teach the lesson, and what went particularly well. How was the timing of the lesson?

Treatment Lay the victim on her affected side (this helps limit the amount of air escaping from the lung into the pleural space). Keep in mind that an open or closed pneumothorax is often caused by a large force that might also cause spinal injury. If spinal injury is suspected, do not place the patient on her side. Monitor the vital signs. Assist respiration with positive pressure ventilation, if necessary. Prepare to evacuate your patient.

IMPALED OBJECT IN THE CHEST

If an object is impaled deep enough in the chest, the object may cause a sucking chest wound or pneumothorax or may damage other internal organs.

Treatment Don't remove an impaled object in the chest unless you need to do so to evacuate the patient (see Impaled Objects, page 279). The object may be serving as a cork, preventing major bleeding. Stabilize the impaled object and send for help. Monitor the vitals. Treat for shock and give PROP (see page 239). Prepare to evacuate your patient.

SOFT-TISSUE INJURIES

Soft-tissue injuries encompass any injuries to the soft tissues of the body—skin, muscles, internal organs, and so on. The primary treatment for soft-tissue injuries is to stop bleeding and properly clean and bandage the wound to minimize infection. Any more serious complications from the injuries will need to be treated by advanced medical care.

LACERATIONS

Lacerations and other wounds may be treated in the wilderness or may need advanced medical care.

Treatment Stop the bleeding (see Bleeding, page 241). Properly clean and dress the wound. Keep the dressings clean and dry. Change them every 24 hours as needed. Monitor for infection. Be prepared to evacuate your patient under the following circumstances:

- If there is a large initial blood loss.
- If there is any sign of major infection.
- If there appears to be a need for stitches—a gaping cut over ½ inch long (1.2 centimeters). Stitches should be applied within 8 to 12 hours, otherwise the physician is likely to leave the wound open.

- If there is a laceration to the face, hands, or over a joint.
- If there is any injury to a blood vessel, ligament, or tendon.

BLISTERS

Blisters are actually highly localized second-degree burns caused by the heat of friction. They are usually found on the feet and may be the most common cause of evacuation on trips. If people pay attention to their feet and take proper precautions, most blisters can be avoided, or at least caught and treated before they become serious enough to impact your trip.

Prevention Make sure everyone's boots fit properly and are broken in *before* the trip starts. Wear more than one pair of socks; the best combination is a thin polypropylene liner sock with wool or synthetic outer socks. Wearing two pairs of socks keeps the friction between the socks and not against the skin. Polypropylene also helps transfer moisture away from the feet. To keep your feet dry, change liner socks as necessary, or use foot powder. Keep socks from bunching up—heeled socks are better than tube socks for this reason. Keep boots laced up snugly, especially on hills to keep the foot from sliding forward into the front of the boot.

Get into a routine of checking for "hot spots"—the first sign of blisters—and make sure people know that anyone can get blisters. If you know you are susceptible to blisters in a certain spot, put moleskin or tape over that area *before* you start hiking. Tincture of Benzoin can be used both to help tape stick to feet (apply before your feet start to sweat) and to toughen up the skin (which may help prevent blisters).

Treatment for Hot Spots Before a blister forms, there will be a hot spot—a small reddened area that is essentially a first-degree burn. The hot spot should be covered with a thin layer, such as Spenco Adhesive Kit, moleskin, or tape. Keep an eye on the area to make sure a real blister doesn't form. Tincture of Benzoin may be helpful to apply to the skin to keep the tape attached.

SOCKS OF THE TRAIL

Round Your Corners If you place a rectangular piece of tape or moleskin on your skin, it will tend to peel up at the sharp corners. Round off the corners with scissors before you put it on and it will stay in place better.

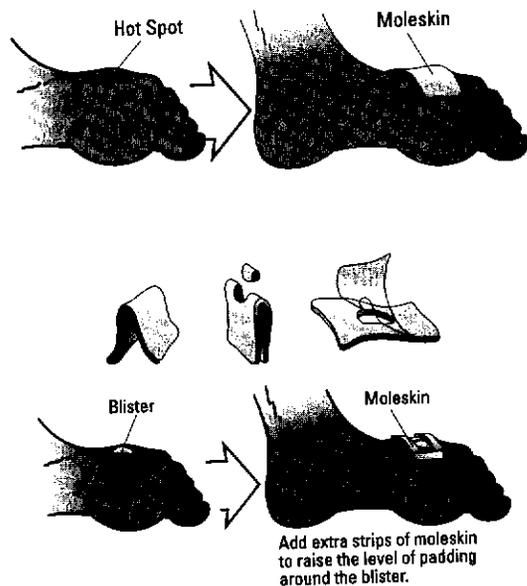
Treatment for Blisters If the friction on a hot spot continues, eventually the top layer of skin becomes separated from the layers below. The space between the layers fills with fluid. This fluid is sterile, and so as long as the

blister remains intact, you have a closed wound that does not have any risk of infection. Once the blister has popped, you have an open wound, prone to infection.

The blister may be filled with fluid or it may have popped on its own. Since a popped blister is more prone to infection, you should *not* pop a blister unless the person cannot walk with the blister or walking would pop it anyway. If you must pop a blister, sterilize a needle in a flame or with alcohol and lance the blister on the edge nearest the ground, so it will drain easily. Try to have the patient do this herself. Drain the fluid and then treat it as any other open wound. Use universal precautions since blood may be present (see Universal Precautions for Working with Blood and Body Fluids, page 244).

To protect the blister area, build up a donut of padding around it out of moleskin or molefoam. Use as many layers as you need to keep pressure off the blister. If the blister is popped, place antibiotic ointment inside the donut hole and tape over the top of the donut. Blisters may need to be redressed on a daily basis. Be careful of infection. Blisters usually do not require evacuation unless infection sets in or the person no longer feels comfortable walking.

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THERMAL BURNS

Burns are always a possibility when stoves and fires are used, so special precautions should be taken when working around them. Burns are categorized based on the depth of the tissue damaged (first, second, and third degree) and the percentage of the body burned. (See also Eye Injuries, page 281.)

Principles in Treating Burns

- Put out the fire. Drop and roll in a blanket, if possible.
- Monitor the airway and breathing. Be very suspicious of burns to the face and neck, including soot in the mouth and nose and singed nasal hair. Burned airway tissues will swell and may block the airway. Burns to the lungs (inhaled hot gases) can cause swelling and fluid buildup in the lung tissue, which can lead to respiratory failure. Treat with PROP (see page 239) and prepare for immediate evacuation.
- Apply cold to reduce tissue damage using ice, cold water, or Cold Pack. Do *not* place ice directly onto the burn site. Wrap it in a cloth; otherwise you may actually freeze the tissue, causing further damage.
- Do not apply ointments to a burn; they can trap heat in the skin, causing additional damage.
- Treat for shock and monitor the patient's vitals.
- Gauge the depth of the burn (first, second, or third degree) and percentage of the body area that has been burned.

FIRST-DEGREE BURNS (SUPERFICIAL BURNS)

Only the top layers of skin are affected. Tissue is red and painful (nerve sensation is intact). Sunburn is a typical first-degree burn.

Treatment Local application of cold.

SECOND-DEGREE BURNS (PARTIAL-THICKNESS BURNS)

Deeper layers of tissue are damaged. Tissue is red and very painful (nerve sensation is intact). Blisters may form.

Treatment Local application of cold. If blisters are present, they should be left intact. Gently clean the area and apply a sterile dressing. Nonstick pads such as Tefla are best for this, covered with roller gauze. Do *not* place antibiotic or other ointments on the nonstick pad.

General Wound Tx

- Begin the cleansing process after bleeding has stopped. **DO NOT** clean a wound that is associated with severe life threatening bleeding.
- Clean all wounds within two hours of the incident.
- Cover wound with a dry dressing and bandage. Monitor, reclean, & rebandage when both the dressing and bandage become wet.

Friction Blister Prevention

- Wear well-fitted and appropriate footwear.
- Keep feet clean, cool, & dry.
- Use a blister (liner) sock & a heavier pair for cushioning. Keep them clean.
- Wear gaiters to keep dirt out of socks & boots.
- Tx "hot spots" before they become a blister. Clean, dry, & cover affected area with cloth or duct tape and/or add a ShearBan™ patch to footwear or socks. (ShearBan™ is a teflon coated material that reduces the shear forces that cause friction blisters). Painting skin with Tincture of Benzoin prior to taping may increase adhesion. **CAUTION: Benzoin may cause skin irritation.**

Partial Thickness Wound Tx**Friction Blister Tx**

- If possible, leave closed and wear footwear that does not irritate the blister until it is reabsorbed (3-10 days).
- To complete a day hike: drain blister by nicking with a clean knife blade or scalpel; leave skin cover intact. Pad with "donuts" of mole skin or mole foam to relieve pressure. Add a ShearBan™ patch to footwear or socks.
- To continue a multiple day hike: Remove skin over blister. Cover the exposed blister with Second Skin™ or a petroleum based ointment & gauze. Secure in place with porous cloth tape. Add a ShearBan™ patch to footwear or socks. Consider using Tincture of Benzoin prior to taping.

General Tx

- Wash both the wound and the surrounding skin with soap and clean water. Remove all foreign debris by gentle scrubbing and/or by careful picking with a tweezers. Vigorous scrubbing may cause minor bleeding and should be avoided. Open closed blisters and remove dead skin prior to cleansing. Pat or air dry.
- Keep moist. Use white/light petroleum jelly, silver sulfadiazine (Rx), Second Skin™, or cover with a micro thin dressing. Reclean bid. **CAUTION: In rare cases silver sulfadiazine may cause an allergic reaction.**

BLISTER PREVENTION AND CARE

Prevention

Eliminate as many contributing factors as possible:

- Make sure that shoes fit properly. A shoe that is too tight causes pressure sores; one that is too loose leads to friction blisters.
- Break in new boots gradually before your trip.
- Wear a thin liner sock under a heavier one. Friction will occur between the socks, instead of between the boot and the foot.
- Avoid prolonged wetness. It breaks down the skin, predisposing it to blisters. Dry feet regularly and use foot powder.
- Apply moleskin to sensitive areas where blisters commonly occur before hiking.

Hot Spots

Hot spots are sore, red areas of irritation which, if allowed to progress, develop into blisters.

Treatment of hot spots

- 1) Take a rectangular piece of moleskin (soft cotton flannel with adhesive on the back) or molefoam, which is thicker and somewhat more protective than moleskin, and cut an oval-shaped hole in the middle (like a doughnut) the size of the hot spot (Fig 57).
- 2) Center this over the hot spot and secure it in place, making sure that the sticky surface is not on irritated skin. This will act as a buffer against further rubbing (Fig. 58).
- 3) Reinforce the moleskin with tape or a piece of nonwoven adhesive knit dressing.

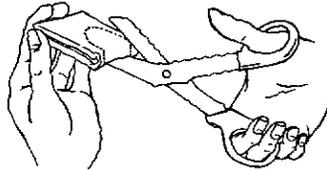


Fig. 57 - Preparing molefoam



Fig. 58 - Covering a hot spot

'WEISS ADVISE'

(IMPROVISED TECHNIQUE)

Moleskin substitute

If moleskin or molefoam is not available, place a piece of tape over the hot spot (duct tape works well). Molefoam can be improvised from a piece of padding from a backpack shoulder strap or hip belt, while a piece of material from the cuff of a sweat shirt, or flannel shirt can be used as moleskin.

Blisters

Treatment of small, intact blisters

- 1) If the blister is small and still intact, do not puncture or drain it.
- 2) Place a piece of moleskin or molefoam with a doughnut style hole cut out slightly larger than the blister over the site. It should be thick enough to keep the shoe from rubbing against the blister. This may require several layers. Secure this with tape.

Treatment of large or ruptured blisters

- 1) If the bubble is intact, puncture it with a clean needle or safety pin at its base, and massage out the fluid. The fluid contains inflammatory juices that can delay healing.
- 2) Trim away any loose skin from the bubble with scissors.
- 3) Clean the area with an antiseptic towelette or soap and water.
- 4) Apply antibiotic ointment, or aloe vera gel, and cover with a nonadherent dressing or a gauze pad. Spenco 2nd Skin®, PolyMedica's Spyroflex®, Compeed hydrocolloid dressing® and Elasto-Gel® from Southwest Technologies are all excellent, but more expensive blister dressings.
- 5) Place a piece of molefoam, with a hole cut out of it slightly larger than the blister, around the site. Secure everything with tape or a piece of nonwoven adhesive knit dressing. Change the dressing daily or every other day. Benzoin ap-