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Backcountry Health and Hygiene

Boo-Boos on the Trail

Treating cuts and scrapes that occur on the trail is sort of like delivering babies. Although obstetricians are loath to admit it, childbirth is 99.9% uncomplicated, needing little if any intervention. How else do you account for the fact that virtually all those news reports of deliveries by police officers, taxi drivers, newspaper carriers and the like end happily? Similarly, most skin injuries easily heal themselves. The problem is that in the very rare circumstance where something goes wrong, it can go very, very wrong very, very quickly. The occasional one can progress almost overnight to a severe, life-threatening infection.

The skin is the most important part of our body's immune system. The unbroken skin separates our vulnerable "insides" from an outside world teeming with nasty microorganisms. Any time the integrity of the skin is broken, it represents a breach in this protection. Thus, the first priority in treating any wound, from a severe knife injury to mere "rock rash," is prevention of infection.

Prevention of infection begins with soap and water cleansing. No need for anything high-tech here—just a vigorous soap and water cleansing and thorough rinsing. The idea is not to remove or kill bacteria, but rather to get rid of any debris in the wound that could provide organisms a foothold. Unless the water is grossly putrid (unlikely in the Adirondacks), it need not be treated by boiling or chemical means before use. If the injury is nothing more than an abrasion, such as a scraped knee, this is probably all the first aid that is needed.

With deeper lacerations, the potential for contamination and infection is increased. In addition to simple cleansing with soap and water, these may require pressure irrigation to remove foreign matter. In the field, this may be done with a plastic food bag in which a small hole is cut with a scissors. By filling the bag with water and squeezing, water under pressure can be directed into the laceration. The Wilderness Medical Society practice guidelines call for pre-treatment of water being used for pressure irrigation by boiling or chemical disinfection (i.e. iodine).

Following irrigation, current practice guidelines call for the application of an antibiotic ointment to the wound. Neomycin, available in the brand name formulation Neosporin®, as well as a variety of generic preparations, is suitable for this purpose. A sterile dressing is then applied, both to keep the ointment in contact with the wound and to protect it from further contamination.

Signs of infection

Wounds so treated should be inspected daily for evidence of infection. One of the first signs of this is redness surrounding the wound. Keep in mind that the healing process itself usually is associated with a small amount of redness; however, this is usually maximal by the second day. Continued spreading of the redness beyond the borders of the injury, especially if the red area is painful to touch, suggests infection. The development of pus is another worrisome sign. Some degree of clear yellow drainage is common in skin wounds; a thick, white drainage is likely to represent pus.

Wound infections may spread into the

lymph system. In this case, tender, swollen lumps (lymph glands) may be found near the wound. Typically, such swelling is found in the armpits with injuries to the upper extremities and in the groin for lower extremity injuries. These are sometimes accompanied by streaks of redness extending upward from the wound. Finally, the development of fever is a very worrisome sign, suggesting that a local wound infection may be spreading.

The presence of any of these indicators is reason enough to leave the backcountry for definitive medical evaluation. Infections with some skin bacteria may take a few days to become established, and then spread with terrifying rapidity. Thus, taking a "wait and see" approach when one is a day or two away from a trailhead is hazardous.

There are a few special considerations in handling wounds on the trail. Wild animal bites in the Adirondacks are most unusual and always merit immediate evaluation. In addition to the obvious consideration of rabies when a wild animal makes an unprovoked attack, such injuries often have a major underlying "crush" component, and may be worse than they appear at first glance.

Puncture wounds are another special concern. Because they have a tendency to close off and seal over, it is much more difficult to clean a puncture wound. In addition to the above care, placing a wick of sterile gauze or a small, sterilized rubber band into the puncture will help to keep it open. Puncture wounds of the foot, from stepping onto a sharp object such as a nail, are a particular infection risk. Interestingly, the risk is much higher if the puncture goes through the shoe (especially sneakers) than if it goes directly into the foot.

Crush injuries are somewhat unusual, but may result from entrapment from activities such as scrambling on talus slopes. These may have minimal outer evidence of injury while underlying tissues are horribly damaged. Severe pain to palpation of what seems superficially like a trivial wound merits its quick evaluation.

Professional help

There are several other reasons for which wounds should be evaluated by professionals immediately. Gross contamination that cannot be cleaned completely in the field should certainly be seen. Wounds in which there is a possibility of damage to underlying structures should also be evaluated promptly. The most common example of this is a knife wound to the hand, severing one of the tendons responsible for moving the fingers or thumbs.

It goes without saying that wounds associated with significant bleeding or with exposure of underlying bone need definitive care. Special consideration must be given to wounds with cosmetic implications, such as those on the face. While facial wounds may actually be less likely to become infected than those on other areas, they may also benefit from early examination and suturing to assure an acceptable cosmetic result.

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Questions often come up as to the necessity of tetanus boosters following wounds in the field. The entire matter of immunizations for backpackers is probably deserving of a whole column; I plan to do so soon. The best advice for now is that the time to consider tetanus immunization status is *before* a wound draws attention to the matter!

—Thomas R. Welch, M.D.

The author thanks Fred Ryckman, MD, associate professor of surgery at the University of Cincinnati College of Medicine, for helpful suggestions in the preparation of this column.