When and How to Give First Aid

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1. Identify Injury
2. Assess Signs and Symptoms
3. Administer First Aid

The first steps in administering first aid are to correctly identify an injury, assess signs and symptoms, and provide assistance. Depending on the severity of the injury, an intervention can mean obtaining emergency medical assistance; or in less serious cases, providing direct treatment. To properly administer first aid, training should be obtained at courses offered by community organizations, such as the Red Cross, YMCA or programs sponsored by local hospitals. Being prepared also requires having a first aid kit available.[1]

An important part of the assessment process is to evaluate the injury. An inaccurate assessment may cause the victim's condition to worsen when first aid is administered. Therefore, when in doubt, the extent of an injury should be determined by an emergency care specialist. This article will discuss injuries that in most instances can be safely treated without medical attention.

Treatment of Abrasions and Lacerations

The severity of an abrasion (scrape) or laceration (cut or tear) can range from a simple scraped knee to a more serious type of injury, resulting from cut glass, for example. Care for these types of injuries ranges from controlling light/moderate drainage from the wound site to treating moderate/heavy drainage (See FIGURE 1).

The injury should be cleaned initially, as soon as possible, preferably with hydrogen peroxide 3%. Hydrogen peroxide is inexpensive, convenient, and is tolerated well in pediatric patients when diluted with water to make a one-half concentration of 1.5%. If hydrogen peroxide is not available, soap and water is adequate.[2]

Figure 1 Abrasions (scrapes) and/or lacerations (cuts and tears)	
Light/Moderate Drainage	**Moderate/Heavy Drainage**
Clean	**Clean**
Soap and Water Hydrogen Peroxide	Soap and Water Hydrogen Peroxide
Prevent Infection	**Prevent Infection**
Antibiotic Ointment	Antibiotic Ointment
Primary Dressing	**Primary Dressing**
Band-Aid Gauze Non-stick Pads Release Telfa Topper	Gauze Non-stick Pads Release Telfa Topper
Tape	**Secondary Dressing**
Adhesive Cloth Paper	ABD Pads Combine Dressing Kling Surgi-Pads
	Tape
	Adhesive Cloth ACE

An antibiotic ointment or spray is usually indicated to prevent infection. An ointment that contains bacitracin and/or polymyxin B sulfate (Bacitracin, Polysporin) is the best choice. Triple antibiotic ointments are popular but contain neomycin sulfate, which can cause a hypersensitivity reaction. The reaction can manifest itself as a wound that fails to heal, a wound that is red in appearance with swelling, or one that becomes dry and scaling with itching. Many of the combination antibiotic ointments also contain pramoxine or lidocaine, anesthetics that can be useful in decreasing pain.

Dressings can range from a simple bandage or gauze to a host of other commercially available products such as nonstick pads, Telfa or Topper pads. A primary dressing, applied directly to the wound site, is used to protect the injured area, as well as to absorb any light to moderate drainage the wound may produce. Dressings need to be changed every 24 hours or when the bandage or gauze becomes saturated or wet.

Several different types of tape can be used to secure a primary dressing. Adhesive and cloth tapes are the strongest and paper tapes are recommended for sensitive areas such as injuries on the face. When taping an injury, the picture frame technique should be used, securing either two or four sides of the injury.

Abrasions or lacerations that produce a moderate to heavy amount of drainage are initially cared for in the same way as minor injuries. If the injury is more severe, however, a secondary dressing may be needed. A secondary dressing is applied on top of the primary dressing and provides additional protection and compression to stop bleeding or absorb the extra amount of exudate.

Secondary dressings are generically known as abdominal pads or combine dressings. Commercially, they are available as Surgi-Pads for flat areas and Kling for hard to bandage areas. In most cases, a strong tape is required to hold the dressing in place on all four sides. An elasticized bandage such as the ACE bandage can be used additionally to wrap both the primary and secondary dressings.[3]

Bleeding: A step-wise approach is needed to stop bleeding. The first step is to apply direct pressure to the injured area. Pressure may be needed for a period of up to 15 minutes. If the wound is producing copious blood, additional compresses can be added on top of the existing compress. There is no need to remove the old compress until bleeding has stopped. The injured area should also be elevated above the level of the heart to control bleeding.[1,4] After the bleeding has stopped, the injury must be observed to determine if suturing is needed. Stitches are usually indicated if the wound is on the face, if the cut will not stay shut or can be pulled apart, or is "jagged looking. In all cases, stitches, if necessary, must be obtained within 24 hours after injury (FIGURE 2).

Figure 2 Bleeding
Apply direct pressure (up to 15 min)
Add new compress to existing
Elevate injury above heart
Determine if sutures are needed
Clean
Soap and Water Hydrogen Peroxide
Prevent Infection
Antibiotic Ointment
Closures
Butterfly Proxy Strip Steri-Strip
Dressings
Primary Dressing
Band-Aid Gauze

Non-stick Pads Release Telfa Topper
Secondary Dressing
ABD Pads Combine Dressing Kling Surgi-Pads
Tape
Adhesive Cloth Paper

If the injury can be attended to without emergency care, the wound should be cleaned and an antibiotic ointment used to prevent infection.

Closures: In many cases, if the injury such as a laceration or incision can be self-treated, a closure type of bandage is indicated. Products available include both Butterfly, Proxy strips or Steri strips. The closure products hold the injury together to permit faster healing. In some instances a closure is used with sutures to reinforce the wound. A homemade butterfly bandage can be assembled using adhesive tape. If closure products are not indicated, then the proper dressing and tape should be used for self-care injury.

Fractures

Any type of fracture is a medical emergency. There are two types of fracture: closed and open. In a closed fracture the bone remains under the skin; in an open fracture the bone protrudes through the skin. If the fracture is closed, several measures can be taken at the scene of injury or enroute to a care center. Initially, ice should be applied to the injured area as soon as possible. An ice pack or bag of frozen vegetables should be placed over clothing or wrapped in a towel to prevent direct contact with the injured area. Care should be taken to immobilize the injury and, if possible, to splint the area before the patient is transferred to a care facility[1,5] (FIGURE 3).

Figure 3 Broken Bone (Closed Fracture)
Emergency Referral
Ice
Immobilize
Splint
Transfer to care facility

Burns

The extent of a burn injury ranges from first degree to fourth degree. A first-degree burn is the least serious; an example is severe sunburn. Minor burns such as a first-degree burn or a minor second- degree burn can be treated without complications in most instances. A burn should be cleaned only if the skin has been broken. If the skin remains intact it does not need to be disinfected (FIGURE 4).

Figure 4 Burns (minor)
1st Degree or Mild 2nd Degree
Clean if skin is broken
Soap and Water Hydrogen Peroxide
Pain
Immerse in cold water
Ice
Cover with sterile dressing
Anesthetic Spray
Benzocaine
Lidocaine
Antihistamine (topical)
Diphenhydramine
Counterirritant
Camphor
Menthol

Pain remains the most problematic symptom of a burn. The burn should be immersed in either standing or running cold water as soon as possible for 10 minutes. Cold water numbs pain receptors, decreases erythema and edema by producing vasoconstriction, and decreases damage to the tissue by counteracting heat retained by injured skin. After the burn has been immersed in water for the designated period, ice (or a bag of frozen vegetables) can be applied to the burn to relieve pain. The ice should be placed over the clothes or wrapped in a towel to prevent direct contact with the injured area.[1,7]

Covering the burn with a sterile dressing or a protectant is another method of providing relief from pain. A nonstick dressing should be selected. Protectants such as petrolatum, zinc oxide or calamine can also be used but only if the skin is intact.

Anesthetic agents are also used for the relief of pain. An aerosolized product, such as benzocaine or lidocaine, is usually recommended to treat pain associated with a burn. Benzocaine can produce a rash in sensitive individuals or if the person is allergic to such agents as sulfonamides, dyes, PABA or thiazide diuretics. The advantage of benzocaine is that it does not produce systemic toxicity if used in excessive amounts. Lidocaine is safe in sensitive individuals but will produce systemic toxicity if used in excess. Symptoms of lidocaine toxicity include nervousness and stimulation or depression. Pramoxine is a safe anesthetic agent that is commonly found in combination products that are formulated as a cream or lotion. Special consideration is needed when using an anesthetic product, as it provides relief for only about 30 minutes. Since the usual recommended dose is to apply the product 3 times daily, a gap in pain relief results.[8,9]

A topical antihistamine such as diphenhydramine is commonly found in some combination products to relieve sunburn pain. Diphenhydramine has weak anesthetic properties when applied to intact skin.

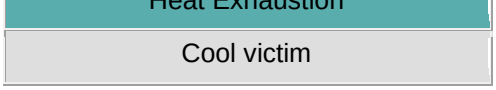
Because of their cooling effects, counterirritants such as camphor and menthol are also useful for treating sunburn pain.

Heat Injuries

Hot and humid summer days evoke the highest incidence of heat injuries. Both heat exhaustion and heat stroke most often occur during physical activity. Heat-related injuries are most common in children, the elderly or in overweight individuals. Certain medications, such as tricyclic antidepressants and the antipsychotic drugs, may increase the risk of heat illness.[12] The best way to prevent illness is to drink an adequate amount of water. Checking the color of urine is one way to monitor hydration. A sign of good hydration is urine that appears light in color, also known as dilute urine.

Signs and symptoms of heat exhaustion include complaints of headache, extreme thirst, tiredness and weakness. Profuse sweating occurs, although the skin remains wet but cool; pupils are dilated. The patient should be cooled down immediately, and must be moved into shade or a cool room (figure 5). Wrapping the patient with wet towels or sheets, drenching with a hose or submerging in cool water aids in the cooling down process. Fluids such as water or an electrolyte solution should be given.[10] It is best to have the patient sip small amounts of fluid rather than frequent large quantities. A good rule of thumb is to give the patient a cup of fluid every 15 minutes. The patient must also be monitored for signs of shock and for any rise in temperature. Temperature should be checked every 30 minutes and should not rise above 100°F. Signs of shock include blue lips or fingernails and a decrease in alertness.

Figure 5
Heat Injury



Elevate feet
Saturate (cool water)
Fluids (cool)
Rest
Heat Stroke
Medical emergency
Cool victim
Elevate feet
Saturate (cool water)
Transfer to care facility

The feet should also be elevated off the ground to permit circulation to the brain. Until emergency medical personnel arrive, the patient should be monitored for signs of shock and unconsciousness as described above.

Heat stroke is a medical emergency and must be handled quickly in order to prevent brain damage or death due to increased body temperature. The signs and symptoms of heat stroke include dry, hot, red skin, as body temperature rises above 102°F.9 The patient has a rapid but weak pulse, small pupils and rapid but shallow breathing. Other symptoms include dizziness, headache, weakness and nausea. As in heat exhaustion, the patient should be cooled down immediately, using the process described above for heat exhaustion. The feet should be kept elevated to permit circulation to the brain. Until emergency medical personnel arrive, the individual should be monitored for signs of shock and loss of consciousness, including blue lips or fingernails and a decrease in alertness.

Insect Bites

Insect bites are commonly treated with first aid measures unless the person has had an allergic reaction (Figure 6). An allergic reaction is considered a medical emergency and will usually develop within minutes of the bite if the patient is allergic. Symptoms include extreme swelling at the bite area, watery eyes, a runny nose, labored breathing and paleness.[10] If the individual has a history of allergy, he/she should carry subcutaneous epinephrine to treat the reaction until treatment can be provided at a care center. Although not as effective as epinephrine, diphenhydramine syrup (12.5 mg/5 cc) can be given at a dose of 5 cc for every 20 pounds of body weight.

Figure 6 Insect Bites
Allergic Reaction

Medical Emergency
Diphenhydramine (po)
Epinephrine (subcutaneous)
Pain
Ice
Poultice
Baking soda
Nicotine
Anesthetic spray/lotion
Benzocaine
Lidocaine
Pramoxine
Itching
Antihistamine (topical)
Diphenhydramine
Oatmeal bath
Hydrocortisone (topical)
Anesthetic spray/lotion
Benzocaine
Lidocaine
Pramoxine
Counterirritant
Camphor
Menthol
Astringent
Calamine

In most instances, insect bites can be safely treated without medical intervention.[12] The bee is the only insect that stings and leaves the stinger behind. The stinger should be removed gently with a fingernail or with the edge of a credit card. Because an insect bite produces discomfort and pain, ice should be applied to the bite as soon as possible for pain relief. If the incident occurs in a remote area where drug therapy is not readily available, there are still several options. A poultice of baking soda can be made and applied to the injured area. A local anesthetic spray or lotion is

also beneficial. Pramoxine is another popular anesthetic agent usually found in combination with calamine.

Itching can be intense and is controlled by one or several measures. Topical antihistamines such as diphenhydramine have a local anesthetic effect. Soaking in a colloidal oatmeal bath is also effective to control itching (pruritus), especially for children. Topical hydrocortisone products also help. Topical anesthetic agents used for pain can also be used to stop itching.[12] Many combination products contain the counterirritants menthol and camphor. These agents produce a cooling effect, which may provide temporary relief. Calamine is used to control itching. Calamine (zinc oxide/ferrous oxide) is a protectant and mild astringent that can also stop oozing, reduce inflammation and promote healing of the dermis.

Muscle Strain

Treatment of a muscle injury is associated with the acronym R.I.C.E: Rest, Ice, Compression, and Elevation (figure 7). Ice should be applied to the injured area as soon as possible. Ice pack therapy, applying an ice pack in 20-minute increments 3 times per day for a period of 12 hours, should continue until the swelling has subsided.[13,14] Compression of the injury is accomplished with an elastic support or by an elasticized bandage such as the ACE bandage. This type of bandage supports the injured area and prevents blood from pooling and causing additional swelling. However, controversy exists as to when an elasticized bandage should be applied. A good rule of thumb is to apply the bandage after any intense swelling has subsided. The feet should be elevated above the level of the heart to decrease swelling as well as to relieve pain.

Figure 7 Muscle Strain (Sports Injury)
Immediate
R.I.C.E.*
NSAIDs
Aspirin
Ibuprofen
Ketoprofen
Naproxen
After 24 hrs.
Heat
Counterirritants
Camphor
Menthol
Topical Analgesic

Trolamine/salicylate
NSAIDs
Aspirin
Ibuprofen
Ketoprofen
Naproxen
Follow-Up Care/ Medical Referral if:
Swelling/pain persist
Movement is painful after 3-4 days
Routine activity is painful after 7-10 days
* *Rest / Ice / Compression / Elevation*

One of the most effective means of relieving musculoskeletal pain and inflammation, if appropriate, is with the oral nonsteroidal anti-inflammatory agents (NSAIDs). The analgesic dose of ibuprofen is 200 mg every 4 hours for adults and 7.5 mg/kg every 6 hours for children <24 pounds. The analgesic dose of ibuprofen is one half of the anti-inflammatory dose with a ceiling of 3200 mg/day15 for adults and 40 mg/kg/day for children. Anti-inflammatory doses should be used initially for the first two to three days. The analgesic dose follows the anti-inflammatory dose and should be used for an additional 3 days.

As a general rule, heat treatment should be reserved for at least 24 hours after an injury, except if swelling is present. If swelling remains, heat is contraindicated, in most cases. If heat is indicated it should be applied for 20 minute intervals every 2 hours.

External analgesics are usually used for minor muscle injuries. The external analgesics are divided into two categories: counterirritants and topical analgesics. Counterirritants are topical agents that when applied, induce sensations such as warmth, cooling or tingling. The counterirritants also produce a mild local reaction that may produce erythema. Common counterirritants include methyl salicylate, camphor and menthol. Topical analgesics alleviate pain by inhibiting prostaglandins.

Nosebleed

When providing first aid for a nosebleed, first determine whether the patient is receiving anticoagulant therapy, aspirin therapy or if a history of hypertension exists. If the answer to any of these inquiries is yes, then medical referral is needed (figure 8).

Figure 8

Nosebleed
Pinch nose and lean patient forward (5-10 minutes)
Bleeding persists
Pack nostrils with gauze (not cotton)
Do not blow nose
Medical History
Anticoagulants
Medical Referral
Aspirin
Medical Referral
Hypertension
Medical Referral

Children usually are the victims of nosebleeds and become anxious at the sight of blood. First aid care includes pinching the nose and leaning the individual forward. The nose should remain closed for a period of 5 minutes. If bleeding persists after this period, the nostrils should then be packed with gauze or a tampon; cotton should not be used. The patient should refrain from nose blowing, since this action will cause bleeding.[16]

Summary

When advice on first aid is needed, every moment counts. If properly trained in first aid, the pharmacist has the advantage of being available to offer assistance in patient assessment, treatment and care. If referral is warranted, the pharmacist can advise what steps to take before medical help is available.

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