

PART I

Emergency First Aid Kits

for Arborists and Loggers

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Arborists and loggers work in some of the world's most dangerous environments. Trimmers, chippers and chainsaws are all waiting to bite. Then there's all the climbing, balancing and dangerous terrain to deal with. Collectively, these factors contribute to thousands of serious injuries and fatalities every year, and things are often made worse by the remoteness of the jobsite. When you're ten, twenty, thirty or more miles from civilization you can easily find yourself in a situation where you're going to have to deal with a life threatening emergency on your own. When no help is available, would you know what to do? Do you have the proper equipment? Minor scrapes and splinters are one thing, but what would you do if your chainsaw kicked back and sliced through an artery in your leg? You've got about 2 minutes before you pass out from loss of blood. Would you

lie there and bleed to death or would you save your life? This may sound a little dramatic but the fact is people die from injuries like this all the time. The Injuries & Fatalities section on ArboristSite.com is full of stories where this exact scenario happened.

Ultimately, the best thing would be to not have accidents happen at all. Better safety awareness and improvements in personal protective equipment (PPE) have significantly reduced the number of workplace injuries, but even in the best of circumstances accidents are still going to happen. Sometimes an accident may not even be the root cause of an emergency. Heat strokes are life threatening, as are heart attacks. Whatever the emergency, three things need to happen extremely fast. First, you need to assess the emergency and develop a plan of action. Then you have to take action to stabilize the patient, even if it's you. Finally, you need to either get help or get to help.

Even if the situation isn't particularly life threatening proper first aid can go a long way toward alleviating pain and minimizing damage.

There are eight major categories of emergencies that you could face on a jobsite or out in the wilderness. They are:

- Temperature: Heatstroke\Hypothermia\Frostbite
- Deep Cuts\Punctures causing significant blood loss or internal injury
- Burns: 2nd and 3rd degree
- Broken Bones\Sprains
- Cardiac\Diabetes\Seizures
- Shock
- Poisons: Bugs\Snakes\Plants
- Eye Injuries

Of the eight categories listed, six of them can easily result in a fatality. Sometimes there isn't anything that can be done, but when there is, you're going to need to know what to do and have the right supplies on hand to deal with it.

ASSESS THE EMERGENCY

There is a lot more to assessing an emergency than just identifying what happened. You need to develop a plan of action and implement it without hesitation. Seconds count. Proper education is the key to success and without a doubt, the best place to go for that is The Red Cross. They have a host of courses and certifications for first aid and CPR. They even have a course for Wilderness First Aid that not only covers first aid basics but also includes advanced training for issues that can happen in the forests and back country. Working in the wilderness adds an extra element of risk because professional help isn't right around the corner. You might be on your own or reliant on a coworker, but there's one thing for sure, a paramedic isn't going to be the one to save you. Ask yourself this, if you cut halfway through your leg, how much better off would you be if you or your coworker knew how to stop the bleeding? That little bit of education can mean the difference between life and death. The sad thing is, arborists and loggers die all the time because people either didn't know what to do or didn't have the equipment onsite to properly deal with the emergency.

Trauma doctors often refer to the first hour of a medical emergency as the Golden Hour. The greatest chance for success in saving someone's life or mitigating damage happens in that first hour. Being out in the middle of nowhere compounds the problem because paramedics aren't three minutes away and the extra time it takes to transport someone to the Emergency Room doesn't stop the timer. It's critical that the patient is stabilized and transported as quickly as possible. Knowing how to deal with an emergency is the key to success. When someone cuts their leg with a chainsaw or gets seriously burned, or breaks a bone in a fall, there's no time to panic. The instant something happens, the clock is ticking. You're in the golden hour.



To find your local Red Cross chapter you can call **1-800-REDCROSS (1-800-733-2767)**, or visit their website at www.redcross.org. They are more than happy to train individuals as well as companies. If you're working for a company you should get together with management and ask them to sponsor the training for you and your coworkers. There is actually an OSHA regulation, 1910.266(i)(7)(i) and (ii) for logging operations that requires all employees, including supervisors, be trained in first aid and CPR. In some circumstances the Red Cross can come to your company or jobsite and do the training there. Many of the Red Cross courses are also available online. Information about online courses

can be found at this website <https://www.redcrossonlinetraining.org/Distance/Default.aspx?chid=692>. One thing you can be absolutely certain of, you will never regret taking the course. It's something you can take with you for the rest of your life. For your own benefit or the benefit of the people you work with, please take a first aid course.

FIRST AID KITS AND EMERGENCY SUPPLIES

The choices for first aid kits are literally infinite. Most are packed with a few band aids, a pair of tweezers and a few packets of aspirin, but a \$10 first aid kit from the local drugstore isn't going to be much use when a serious injury happens. The truth is, you need the band aids and tweezers to be OSHA compliant, but there is so much more that you should have on hand for the real emergencies. A first aid kit that can tackle the issues faced by arborists and loggers will need to be equipped with some rather specialized supplies. Ice packs, a clotting agent, burn dressings and a splint are all non typical items you should have on the jobsite.

Logistics is another factor to consider. Your first aid kit may not be readily available at the exact location of a serious emergency. It could be as little as 100 yards away, but if you can't get to it, it isn't going to do you much good. So how do you have a first aid kit that's equipped to handle all of the problems you could face, and have it be portable enough to carry around? The answer is you can't, it isn't really practical. There is a workable solution though. Have two first aid kits. A master kit that is well stocked with all of the supplies needed to handle the full spectrum of problems you could face on a jobsite and a personal kit carried on your belt that is stocked with the supplies necessary to address major emergencies such as a deep cut or burn. If the master kit is too far away or you simply aren't able to get to it, there needs to be a plan in place to survive the first few minutes. A personal first aid kit can do that.

So what special supplies should be included in the typical Arborist and Loggers First Aid Kit?

HEATSTROKE/HYPOTHERMIA/ FROSTBITE

According to Capt. Spencer Williams, an EMT with the Reno, NV Fire Department and a former logger, heat stroke is one of the most frequent life threatening emergencies they see in the field. Heatstroke can be deceptively deadly because it can still be killing you even though some of the symptoms appear to have subsided. Again, education is the lifesaver here. The ability to recognize heatstroke symptoms and start first aid as quickly as possible is critical. It makes sense to include a couple of instant cold compresses in your master first aid kit. Basically, the way these work is you squeeze the pouch to combine a couple of chemicals and the reaction causes the pouch to get



very cold. For heatstroke you apply the pouch to the places on the body where the major arteries are close to the skin, such as the side of the neck, under the armpits, in the groin area. The cold compresses chill the blood which then travels to the other organs helping them to cool down. Instant cold compresses are inexpensive. You can find them at any drugstore or sporting goods store for under \$5 for a twin pack. They're also great for sprains or swelling. Hypothermia is another killer in the colder climes. Add a couple of HeatWrap pads to your master kit. These are simple to use. You simply open the package and they get hot. Apply these to the same places you as the cold compress, lower neck, armpits and groin. They stay warm for hours. There's no reason not to have a few of those on hand. Frostbite is best left up to the pro's. You need to get the frostbitten parts out of the freezing temperatures, but you have to be careful about warming up the person too fast or you could cause even more damage. The best thing to do for frostbite is to wrap the affected area with gauze and get the person to the emergency room as fast as possible.

DEEP CUTS AND PUNCTURES

The tools and machinery used by arborists and loggers can cause some of the most horrific injuries imaginable. All it takes is a split second for a chainsaw to cut a leg or arm nearly in half. Chainsaws are designed to grab and dig. To make things worse they don't cut flesh, they mangle it. The fact is, there are hundreds of ways for an arborist or logger to get a deep cut or puncture. You can lose a finger or hand, or an arm or leg in an instant. When one of these injuries happens, seconds count. Again, education is the key to survival. You or your co-workers must be able to assess the problem and take immediate action. The number one consideration is to get the bleeding under control. The first thing to do is apply pressure and elevate



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the wound as quickly as possible. This is exactly the situation where your personal first aid kit can save your life. It should have the supplies necessary to stop an arterial bleed. Sterile gauze can be used to pack the wound if you can get it into the wound quickly enough. There are also specialized compression bandages that are designed to apply pressure directly over a wound to arrest the bleeding. One type of bandage is distributed by PerSys Medical, Houston, TX, www.PS-Med.com. This inexpensive bandage is used by military forces all over the world. It is light, compact and fits easily into the personal first aid kit. You can view a demonstration here: www.ps-med.com/VIDEOS/Bandage-Demonstration.mpg.



One of the most effective methods of stopping major bleeding comes from Sam Medical Products, Tualatin, OR, www.SamMedical.com. They are the US distributor for a product called Celox. Celox is a hemostatic agent made from Chitosan granules, a compound derived from shrimp shells. Despite being made of shrimp shells, Celox is hypo-allergenic and there are no cases on record of allergic reaction by seafood allergy sufferers. When applied directly to a cut or wound, a blood clot will begin to form within 30 seconds. Celox is packaged four different ways. There is a powdered form that can be poured directly into a wound. This can be extremely effective as the granules can be spread over the entire wound completely stopping all bleeding. You will still need to cover the wound and apply pressure for 5 minutes, but that is the same for all Celox products. Celox-D comes in an airtight pouch with 3 bags containing the Celox granules. The bags dissolve on contact with blood, releasing the compound. Celox-D has the advantage of being able to apply to a wound without falling out or blowing away. Celox-Gauze is a 3inx10ft roll of fabric impregnated with Celox granules. The material is easily placed in a wound and will even tear easily by hand if necessary. Celox-A is basically a large syringe type

device filled with Celox that is used for deep puncture wounds. Celox-A is probably not needed in an arborist's or logger's first aid kit as small, deep punctures are relatively rare and any of the other Celox products can be used. Given the effectiveness of Celox and that it doesn't require any special training to use it is probably the most important item you should stock in both the master and personal kits.

If there is any drawback to Celox it's that it can be a little pricey. Regular Celox powder comes in 15g and 35g packages that cost around \$15 and \$24 respectively. Celox-D is packaged with three 17g bags in one pouch. Of the three, Celox-D is versatile and compact, making it ideal for the personal first aid kit, but you will still need to carry gauze and some kind of wrap. Celox-D costs around \$50. Celox Gauze is probably the easiest to use of the three. Open the package, unroll what you need, pack it into the wound and cover with a wrap. It sells for about \$40. Even though Celox costs more than cotton gauze or a pressure dressing, the price has to be weighed against its effectiveness. Hemorrhaging is the second leading cause of mortality among non-military inflicted trauma, accounting for 39% of deaths. Skimping on \$40 or \$50 at the risk of bleeding to death is a pretty bad decision. You should have Celox in both your master kit and your personal kit.

Another option to keep from bleeding to death is a tourniquet, but it should probably be the choice of last resort. Over the years, tourniquets seem to fall in and out of favor. Faced with the choice of bleeding to death or surviving, you're the only one who can make the decision whether or not to use one; however, all other options, such as Celox, should be employed first. But, it's still reasonable to have one in your personal first aid kit, just in case.

In the case of a puncture, the primary thing to remember is Whatever went in, don't pull it out, no matter where it's stuck!!! According to Captain Williams there's usually a lot of damage done when something is going in. There's a high likelihood of causing as much, if not more damage, if you try to pull it out. Removal is always done at the hospital. Even if you fall and run a tree branch completely through your torso, cut the branch off, wrap the wound and get to the hospital. Also, when you pull the object out you're going to start bleeding badly. You don't want that. It's best to remove these things on the operating table. When The Crocodile Hunter, Steve Irwin, was impaled through the heart by a stingray, doctors all over the world said he had a fair chance of surviving had he not pulled the barb out. He bled out and died within seconds after its removal

BURNS, 2ND AND 3RD DEGREE

Serious burns are going to happen on a jobsite. Hopefully they won't be too serious, but with all the hot mufflers, gas and oil around you need to be prepared to treat a 2nd or 3rd degree burn. Burns have more than one deadly aspect to them. If

someone's on fire you need to put out the fire as quickly as possible, but there's more to consider after that. Just because the fire is out doesn't mean that residual heat isn't still causing damage. It's important to get the burned area cooled down as quickly as possible. However, if someone's burned over a large part of the body, throwing an ice chest full of freezing water on them could put them into shock, which can be deadly as well. The skin plays a major role in maintaining proper body temperature. When large areas of skin are burned or missing, body temperature can lower rapidly, causing hypothermia. This can happen even if the outside temperature is moderate. Many burn victims survive the burn event itself only to die in the hospital a few days later from infection. Our skin is the body's front line barrier to infection. When a burned area is exposed to the air it becomes a magnet for bacteria. It is critical to cover the wound with a sterile dressing as quickly as possible. Applying an oil or petroleum based ointment is not advisable until the burned area is fully cooled, because it can trap the heat inside the wound, according to Judy Domanski, spokeswoman for Water-Jel Technologies, a Carlstadt, NJ based manufacturer of sterile burn dressings, blankets and ointments. Once again, education is the key. Take the Red Cross first aid course!

Water-Jel dressings are a must for both the master and personal first aid kits. They come in a variety of sizes from 2in x 6in to 8in x 20in. They are also available in blankets for use on large burn areas, ranging in size from 3ft x 2½ft all the way up to 6ft x 8ft for complete covering of an adult. It makes sense to put a small dressing in the personal kit and keep one or two larger ones in the master kit. The advantage to Water-Jel dressings is that they draw the heat out of the wound without cooling the body. This stops the damage from progressing deeper. Because they contain a small amount of Tea Tree Oil they also provide an excellent barrier against infection.

"Small burns (e.g., a burn to the hand) can be covered initially with gauze and saline. Wet, cool dressings feel better, and there is very little likelihood of developing hypothermia from a burn to an isolated area. However, for transport purposes, the general rule is that once the burning process is stopped, serious or "bad burns" should be covered loosely with dry dressings", according to an article by Scott DeBoer, Craig Felty and Michael Seaver,



published in the February, 2004 issue of EMS Magazine. "This can be accomplished by simply putting clean, dry sheets (sterile if available, but not mandatory) under and over the patient, with a blanket on top to prevent heat loss (even in summer). The rationale for "dry dressings" is that they cover the burn but do not add to potentially life-threatening hypothermia. As a rule, burn centers teach "dry dressings for everyone." The exception to the loose, dry dressing rule is availability of a product like WATER-JEL from WATER-JEL TECHNOLOGIES in Carlstadt, NJ. Especially applicable for EMS, this product makes the patient feel better (like a wet dressing would) but doesn't cause hypothermia. Industrial EMS providers have been using this product for several years, and more recently, the U.S. military and the countries of England, Ireland and Germany have begun to use this product almost exclusively for prehospital burn dressings. WATER-JEL Gelatinous Dressings are composed of sterile water and tea-tree oil. The dressing pulls heat away from the burn into the dressing (helping to prevent further burn injury) without adding to the potential for hypothermia, as with wet saline dressings. Once the patient is in the burn center, the prehospital dressings are easily removed) they don't stick to the burn) and debridements begun after rinsing away any residual WATER-JEL with Saline. As with other issues in EMS burn care, the type of burn dressing used should be guided by local protocols and burn center guidelines.

An additional benefit of this type of dressing, especially for BLS providers who cannot administer IV morphine, is the pain relief that is frequently associated with its use. In a prehospital burn patient study, more than 70% of patients indicated a significant reduction in pain, while 7% verbalized "total pain relief" solely with application of the burn dressing. For ALS providers who may administer morphine or similar analgesics, studies have shown that after WATER-JEL Dressing, less intravenous medication needs to be administered. In addition to the analgesic effects of the dressing, the other active ingredient is tea-tree oil, which is a naturally occurring antibacterial from Australia that can help prevent further infection."

A water based gel product is also available from Water-Jel for small burns and blisters. The gel based product contains 2% lidocaine, which helps for pain relief. It comes in a 2oz or 4oz squeeze bottle or in single dose packages. A few packages should be part of the personal kit as well since they are very small. Water-Jel is available through most medical supply companies. You can find a listing of major US and Canadian Water-Jel distributors on their website at www.water-jel.com/WhereToBuy.cfm.

As with any serious injury, it is critical to get to the emergency room as quickly as possible after a major burn. When it comes to burns it is important to note that there can be very serious underlying problems that may not be obvious. The best chance for survival

is at a hospital.

For minor burns, such as the kind that causes small blisters, Sam Medical makes a product called Blist-O-Ban, which is applied over an existing blister to prevent further damage from friction and rubbing, or to an area that is prone to blistering such as the kind you get on your feet from wearing new boots. Blist-O-Ban comes in several sizes and is basically applied just like a band aid. It's probably worthwhile to have a Blist-O-Ban variety pack in the master kit and a couple of them in your personal kit. Small blisters are rarely life threatening but they can certainly be painful and cause production to suffer.



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