

Lifesaving Education: May is Stop the Bleed Awareness Month Part 2

25 May 2024, Dietrich Easter, www.medicalgearoutfitters.com

Part 2 will concentrate on the practical skills and equipment you need to treat bleeding patients in the field. This article is long, but it's far from comprehensive. Use this as a steppingstone to a deeper understanding. Get the proper training and be a lifesaver.

Don't Forget the Fundamentals

A bleeding emergency has the potential to be dramatic. Because of the spectacular nature, it's easy to forget the fundamentals of treating a patient. Don't forget your ABC's. The patient may appear bloody and the obvious thing to do is immediately search for an injury or wound. Don't make that mistake. Always start at the beginning of an assessment. Ensure an open airway and that your patient is breathing. Only after you've established that can you assess for other injuries. A rapid head-to-toe assessment ensures that obvious injuries don't obscure more dangerous, hidden ones.

An example might be a mass casualty event at a concert where a patient has a shrapnel wound to the arm. While he may be bloody and his arm clearly wounded, it's easy to miss the small, nearly bloodless chest wound on his opposite side. The tiny hole in his chest may appear less threatening since it's not bleeding. But internally the chest wound is probably sucking air into the chest cavity. In a short time, the patient will have difficulty breathing. Eventually, internal pressure will build to the point that the patient won't be able to breathe in. At that point, only a trained paramedic can help him with advanced techniques. A quick application of an occlusive dressing would have prevented the sucking chest wound from escalating. Then you could address any bleeding.

There is only one exception to this principle: a catastrophic arterial bleed. In that case, a tourniquet or hemostatic dressing should be applied immediately. Assign someone else to assist you with pressure and follow that with a head-to-toe assessment.

What is an occlusive dressing? What is a hemostatic dressing? When and why would you use them? How do you know when to treat bleeding before treating other wounds? These judgment calls can be difficult to make under pressure.

That's why we always recommend training. With more training, you'll be better equipped to deal with these high-pressure scenarios. Quick thinking comes with confidence, repetition, and muscle memory. Stop the Bleed provides free training online. There's also a wealth of knowledge on our blog. Take advantage of all this free training and prepare yourself in case you're called on to save a life. You never know when you'll be the first responder, but you can take steps to be prepared.

Types of Dressings

Different situations call for specific dressings.

An *occlusive dressing* is a special dressing used for sucking chest wounds. It's a gauze bandage impregnated with petrolatum and various oils. They can also be made of plastic, with a one-way rubber valve that allows air and blood to escape. They occlude, or prevent, air from entering the chest cavity, which leads to a tension pneumothorax.

That's a fancy way of saying that air fills the cavity to the point the lungs compress. They're unable to expand and the patient can't breathe. A patient will complain of difficulty breathing and may have tracheal deviation. His windpipe may be pushed to one side. That's a sign of a pneumothorax or hemothorax and your patient needs professional treatment immediately.

Pressure dressings are used for many kinds of bleeding. The same concept of pressing a bandage on a cut finger applies to major bleeding, too. The pressure slows the bleeding and allows it to clot more easily. An Israeli dressing is a brilliant pressure dressing.

To apply an Israeli dressing wrap it once around a wounded limb and thread the cloth through the plastic keeper on top of the pad. Reverse the direction of your wrap to turn the keeper into a bulky pressure device. After a couple of wraps, you can pull the dressing very tight, compressing the keeper. Continue to wrap then hook the end clips around the cloth wrapping to secure it. This dressing will hold tight enough to stop serious bleeding. It was designed for war and is a standard issue item for US service members. Take caution before cinching this dressing down. The plastic keeper can break if too much pressure is applied too early. Thread the dressing and wrap twice in the opposite direction before applying serious pressure.

The Israeli dressing can also double as a tourniquet if another one isn't available. The components are plastic, though...be careful not to break it.

A *tourniquet* is used to completely cut off blood flow to an extremity. A band is placed around the arm or leg and a lever is twisted to increase pressure until the bleeding stops. Tourniquets are a last-ditch effort. Once applied they should rarely be removed except by professionals. We outline the circumstances where you might remove one here. Generally, though, a tourniquet is a permanent solution. If it's left on for more than a couple of hours the limb will most likely need removal. Use caution when applying tourniquets. If they're used unnecessarily then the consequences can be dire. With that said, if life is in question and bleeding can't be stopped THEN apply the tourniquet. Don't hesitate. It's a hard judgment call between life and limb.

Hemostatic bandages are for catastrophic bleeding in inaccessible areas. The neck, armpits and groin all have major arterial structures. These areas are notoriously difficult to treat because they can't be wrapped with a pressure dressing or tourniquet.

Hemostatic bandages use clotting agents or superabsorbent structures to seal a wound. Here's a full explanation of how they work. The key to hemostatic dressings is extended pressure. Apply three full minutes of direct pressure. Otherwise, hemostatics are no more effective than gauze. When applied properly, situations like the infamous Black Hawk Down scene can be avoided. That Ranger had a femoral bleed, and no matter how hard he tried, the medic couldn't stop the bleeding. The severed artery retracted into the wounded man's pelvis and couldn't be clipped. Hemostatics were developed for just that purpose.

How to Stop Bleeding to an Extremity

Assess the scene. If the patient is breathing, begin a head-to-toe assessment. Be careful not to hyper-focus on obvious injuries. Bleeding can look worse than it is, and you could miss more dangerous injuries.

If you find bleeding to be the most pressing issue, then apply direct pressure with a gloved hand directly on the wound. The intuitive design of our FAT-Pack makes one-handed operation easy. If possible,

instruct an assistant to apply direct pressure while you expose the wound. Cut off clothing with trauma shears so that the entire area is visible.

Place an Israeli dressing or gauze over the wound and reapply pressure. How much gauze you use will depend on how deep a wound is. Don't be afraid to put an entire roll of gauze inside a deep or gaping wound. Pack as much material inside the wound as you need to, because you're going to wrap it and use the bulk to apply pressure.

Wrap an Israeli dressing once and thread the cloth through the plastic keeper. Reverse direction and continue wrapping. Be careful not to pull too tight until you've made two wraps in the opposite direction. The plastic keeper acts as a lever and puts pressure on the wound, but it's plastic and can break if pulled too tightly, too soon. After two wraps you can pull the dressing as tight as possible. Once applied, repeat your head-to-toe assessment to ensure you didn't miss something.

If a patient has multiple injuries, you can improvise with cling wrap or triangular bandages. Pack the injury with gauze then wrap the triangular bandage around the arm or leg. Tie the knot directly over the wound so the knot adds bulk and applies pressure. Tie as tight as you can. There is no need to fear a hand-tied knot cutting off circulation. You won't create a tourniquet using this method.

Apply a Tourniquet

If direct pressure and a pressure dressing can't stop the bleeding, apply a tourniquet. We provide a Combat Application Tourniquet with our medical kits. This type uses a velcro strap wrapped tight around the upper part of a limb. Apply the strap and twist the lever until the blood stops coming out of the wound. Secure the lever by placing it in the built-in cradle and wrapping it with the lever strap. Call 911 immediately. If a doctor can remove a tourniquet within a couple of hours the limb might be saved.

Another common tourniquet uses a ratchet strap mechanism to cut off blood supply.

If more than one tourniquet is necessary, use a triangular bandage. Wrap the bandage at the upper part of the extremity and tie a single overhand knot. Place a stick or other lever on top of the knot and tie a square knot over the lever. Twist the lever until the bleeding stops and use the excess tail of the triangular bandage to secure it. Wrap the excess tail in a figure 8 pattern around the lever and tie the lever down tight. You're using a lot of force to do this. Your lever must be strong and your knots well-tied and tight. This is something you need to practice a few times.

You can use any tough, non-stretch fabric or a belt as a tourniquet. Ensure that your material is at least an inch or so wide. The amount of pressure you're applying can do soft tissue damage. Make sure your material has enough surface area to avoid more injury.

Hemostatic Dressings

A tourniquet can't be applied to wounds in the neck, the armpit, or the groin. A tourniquet around the neck will, in fact, deliver very poor results. Vital arteries are located deep in the body to protect them. For a catastrophic bleed here, a particular bandage has been created. It uses special material to allow clotting of even arterial blood flow deep inside a wound.

To apply a hemostatic bandage place it in the injury and apply direct pressure for three minutes. Use your fingers to stuff the bandage in over the artery. Apply pressure and simultaneously add bulk to apply more pressure. Continue to apply pressure by hand until the bleeding stops. Wrapping will be cumbersome and awkward.

You can't apply enough pressure here to staunch a massive artery. You must hold pressure manually until the bleeding is completely stopped. At that point, you can attempt to wrap the injury. But moving this patient is dangerous as the wound can easily reopen. Use caution when you're wrapping up these injuries or waiting for help to arrive.

With neck wounds, it's important to consider windpipe, nerve, or spinal cord damage. The sheer force of a bullet or shrapnel can damage the windpipe or the spine, even if there is no contact. Take the proper spinal precautions with all neck injuries.

Another special case is a penetrating wound to the chest cavity. A sucking chest wound is life-threatening. Air enters the wound but can't escape, causing excess pressure in the chest cavity. This is called a tension pneumothorax. An occlusive dressing allows blood and air to exit without allowing it to enter.

Occlusive dressings are available, but to improvise one you need a plastic sheet and tape. Cut the thin plastic into a square a few inches larger than the wound. Tape all four sides but leave one downward facing corner untaped to allow air to escape. The untaped corner will act as a one-way valve. Blood can seep out, but air can't enter the wound.

A hemothorax is similar, but it's caused by blood entering the chest cavity. A chest tube is applied in surgery to relieve the pressure. For ANY penetrating chest injury, you need to call emergency services as soon as possible. The visible damage may appear unimpressive. Internal damage to the chest may be catastrophic. In all cases, call 911 immediately.

One last consideration is that for bullet wounds there will probably be a larger, more nasty exit wound somewhere. Bullets do strange things and can tumble as they pass through the inside of a body. The exit wound may be in an entirely different location than expected. Smaller bullets, such as the NATO 5.56, may ricochet off multiple bony structures and exit far away from an entrance wound, wreaking internal havoc as they go. Always expect more damage than what you see. Expect internal damage and call 911 immediately.

Treating Shock

Once a patient loses enough blood the result is shock. A patient will appear pale, clammy, and sweaty. They may complain of feeling cold or of an impending sense of doom. Shaking often accompanies shock. What is happening in the body is an extreme loss of blood volume, hence a loss of blood pressure. The body's response is to redirect blood into the brain and the core of the body. That allows blood to flow to vital organs at the expense of the extremities.

To treat shock, first stop the bleeding. Loosen tight clothing and footwear. If possible, keep the patient warm with a blanket. Lift the patient's legs above the level of the heart so gravity can assist with keeping blood in the core. Direct someone to hold the patient's legs, if necessary. Talk to the patient in a calm and confident voice and try to keep them as alert as possible. Try to keep them conscious.

Once blood pressure drops to a certain point the only response is to infuse fluids into the patient's veins. If you're trained to do so, that's the next step. Most likely if you're reading this post, you are not trained to the level of an IV infusion. Always call for emergency assistance as soon as possible. Help can be on the way while you stop the bleeding and do the initial steps to treat for shock.

Bystanders

If possible, you need to find someone to help you. Trauma response is demanding and may require that more than one step be performed at a time. Often bystanders will be in a different state of shock: one of emotional upset or flat-out stupefaction. If you need assistance the easiest way to get it is not to ask, but to point to a specific person and speak directly to them. Tell them in a stern, but polite voice, what you want them to do.

For example, look at a person directly in the eyes. Point at them in a way that isn't threatening. That way there's no mistake about who you're speaking to. Tell them in a calm, but commanding voice what to do. "You, call 911." Look and calmly point to the next person. "You, lift his legs above the level of his heart." Sometimes a gentle command is the only way to get someone to respond. Trauma is dramatic. People who aren't accustomed to it may stop what they're doing and stare. A calm, but commanding presence may induce them into action and bring the best out of them.

Calm and Collected

The first pulse you check should be *your own*. That means you need to assess your own mental state. Are you calm enough to treat this patient?

Slow is smooth, smooth is fast. Fumbling for supplies at breakneck speed, dropping them on the ground, and making unnecessary movements are killers for speed. To be fast, be slow. Be deliberate in your actions and in your breathing. Economy of movement and clear thought are much faster than haste and mistakes. Calm reassurance can slow a patient's heart rate and respirations and make your job much easier. Being calm is a direct result of being confident. Being confident in a crisis is a result of training, practice, and forethought.

Get the free training available on our blog and at www.stopthebleed.org. Better yet, take in person classes and get the practical experience that trains your mind and muscles for the difficult job of emergency medical treatment.