

When Improvised Care Is Name of the Game

A stethoscope and a tuning fork do nicely for diagnosing long bone fractures without x-rays.

BY SUSAN LONDON

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LAS VEGAS – Improvised medical care can be lifesaving in settings where the closest medical facility may be hours or even days away, Dr. Eric A. Weiss told attendees of the meeting.

With just some basic medical supplies, the usual backcountry gear, and a few key additional items – safety pins and duct tape – physicians can often devise temporary, makeshift treatments for commonly occurring conditions, such as lacerations and fractures, he said.

Airway Opener

In unconscious patients, safety pins can be used to keep the airway open by pinning the tongue to the lower lip, according to Dr. Weiss of the departments of surgery and emergency medicine, and director of the Wilderness Medicine Fellowship at Stanford (Calif.) University.

This technique can be especially useful in cases of trauma, given the need to avoid neck hyperextension, and it also keeps the physician's hands free when they would otherwise be tied up performing a jaw thrust.

"This works very effectively – minimal bleeding, opens the airway," he said.

"I know what you are thinking: This sounds kind of harsh. It's really not. If you are putting a safety pin through somebody's tongue, they are obviously unconscious [and] unresponsive."

Barrier for Rescue Breathing

When performing rescue breathing in a noninstitutional location, physicians may not have conventional barrier devices to reduce their risk of contracting infection from the patient.

In this case, Dr. Weiss recommended making a slit in the middle finger of an examination glove, placing the glove fingers in the patient's mouth, and stretching the rest of the glove over the mouth and nose.

"Now you can blow air right through there and very effectively ventilate. As air goes in, it comes out this slit. To allow for exhalation, just remove the nasal part, allowing the victim to exhale, and then put it back for ventilation once again," he explained.

"Any back pressure, like vomiting, will cause that slit to collapse and you don't get slimed," he added.

Surgical Airway

To create a surgical airway (cricothyroidotomy) without the usual instruments, physicians can use a knife or other sharp object to make a vertical incision in the skin over the cricothyroid membrane.

"Horizontal incisions are fine," Dr.

Weiss said. "But I like vertical ones because sometimes you are a little bit off target and once you get through the skin, you can stick your gloved finger in there and you will find it a little bit easier [to get oriented], and you may have to move north or south."

A variety of items can be inserted through the cricothyroid membrane and into the trachea to permit ventilation: a hollow pen tube, the cut barrel of a 3-cc syringe, or the spike that comes with standard macro IV tubing, after the drip chamber has been cut in half.

If the spike is used, "you don't even have to make an incision through the skin: This spike is so sharp, you just plunge that right into the cricothyroid membrane," he said. "You have the fastest cricothyroidotomy the world has ever seen."

An added, serendipitous benefit is that the chamber end of the spike "fits beautifully right onto an Ambu bag," he noted.

Pleural Decompression

In the patient with a tension pneumothorax, most physicians are familiar with the practice of inserting a needle into the pleural space to achieve pleural decompression.

But Dr. Weiss additionally recommended putting the needle through a cut finger of an examination glove to create a one-way Heimlich valve.

"When the person takes a big breath in, the negative pressure causes the glove to collapse," he explained. "But when he exhales out, it allows air to escape."

Posterior Nasal Packing

Persistent posterior nasal bleeding, as might occur in facial trauma, can be stopped with a Foley catheter, according to Dr. Weiss.

The catheter is advanced through the nose until it can be seen in the back of the throat. "Blow up the balloon with 30 cc of air," he advised.

"Most people use air because there is theoretical concern that if you put water in there, which works a little better actually, if it ruptures there could be aspiration."

The catheter should then be withdrawn until the balloon is seated in the posterior nasopharynx, where resistance can be felt. The exiting part of the catheter is then taped to the nose with duct tape.

Fracture Diagnostic

As a stand-in for x-rays, a stethoscope and tuning fork can be used to diagnose fractures in long bones, such as the tibia. The principle at work here is that intact bone is a good transmitter of vibratory sound.

"Take your tuning fork and bang it and put it on the proximal tibia. Take your stethoscope and listen over the medial malleolus, the distal tibia. Then compare it to the other side," instructed Dr. Weiss.

"Even if there is a nondisplaced linear fracture through that bone, that sound will be dampened significantly so that you will be able to tell the difference," he said. "It works with a 99% sensitivity when tested in 100 patients."

Pelvic Binder

Although not much can be done for pelvic fractures in remote settings, the pelvis can be bound to reduce bleeding.

"You can use a Therm-a-Rest pad and wrap it around the pelvis and inflate it,"

be used. For scalp lacerations, hair tying also works well.

For the hair-tying technique, a piece of dental floss or suture is oriented lengthwise along the laceration. "Take some hair on either side of the wound, twirl it in your fingers, and cross it over. Then use the dental floss or the suture to tie your square knot" around the crossed hair, he explained.

In particular, this technique "works great in children who have good heads of



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Alternatively, an article of clothing or a sheet can be wrapped around the pelvis, centering it over the greater trochanters of the femurs.

"Then take some tent poles or something, and tie it in there, then just kind of like a windlass, like you would turn a tourniquet, you wrap it until the patient feels some pressure," he said.

Shoulder Immobilizer

In a pinch, an injured shoulder can be immobilized with just a few safety pins and the clothing a patient is wearing, according to Dr. Weiss.

"If you have a long-sleeve shirt, you can just safety pin the sleeve to [the shirt] itself," he explained. "If you have a short-sleeve shirt, just take the shirt, fold it up, [and] make a little pouch with two safety pins."

Wound Irrigator

In remote settings, a plastic sandwich bag can be filled with irrigation fluid, sealed, and squeezed hard to create adequate pressure for effective wound irrigation. "You don't need sterile normal saline," Dr. Weiss added.

"If you are still using sterile normal saline, you need to go back to the literature because there are quite a few articles... showing that tap water works just as well" in terms of infection rates, because it is usually chlorinated.

Wound Closer

Although sutures or staples are ideal for closing wounds, glue or Dermabond can

hair," he noted. "There is no fuss or muss. They don't have to come back and have sutures removed or staples taken out. There is no pain."

Topical Antibiotic

After a wound has been closed, physicians can apply honey, which Dr. Weiss referred to as "nature's Neosporin."

Roughly 20 randomized, controlled trials have compared the substance with commercial topical antimicrobial agents and have generally found honey to be superior, he noted.

"When applied topically, honey reduces infection and promotes wound healing. It's safe, and it's effective," he commented.

"It even has some antimicrobial properties that are due to its hypertonicity, its pH, and some inhibins that it has." ■



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