

NOLS WILDERNESS MEDICINE

Curriculum Updates for WFR Recertification Courses

September 2022

Medicine is dynamic. We stay abreast of changes in practices and knowledge, and regularly update our curriculum. These are summaries of recent updates. NOLS Wilderness Medicine Curriculum Updates and resources are available at: <https://www.nols.edu/en/wilderness-medicine/resources/>

How do we handle “controlling the spine” when we approach a patient?

Begin with a thorough scene size up. Can you tell what caused the incident? Are there signs of significant forces at work? How is your patient presenting?

If there are obvious signs of significant forces or If your patient does not appear awake:

Approach your patient and get permission to treat them. If they are standing or leaning against something, ask them to lie down on a pad. Provide manual protection, do your ABCs. At D, gather more information about the MOI to confirm or rule out its significance for spine injury:

- Trauma to the head associated with loss of responsiveness/altered mental status
- High velocity impact (e.g., car/ATV crash, climbing falls, high speed skier/biker crashes)
- Falls from greater than 3 feet (1 meter) landing on the head, or buttocks (axial load)
- Falls for a patient over 65 years of age

If the MOI is still of concern, maintain spinal protection and proceed with your assessment.

If you now determine that the MOI was insignificant for spine injury, release spinal protection and proceed with your assessment.

If there are no obvious signs of significant forces and your patient appears awake:

Approach your patient, get permission to treat them, encourage them to remain calm, and begin your ABCs. At D, gather more information about the MOI to confirm or rule out its significance:

- Trauma to the head associated with loss of responsiveness/altered mental status
- High velocity impact (e.g., car/ATV crash, climbing falls, high speed skier/biker crashes)
- Falls from greater than 3 feet (1 meter) landing on the head, or buttocks (axial load)
- Falls for a patient over 65 years of age

If you discover an MOI of concern, begin spinal protection, otherwise, continue your assessment.

The principle is that we want to allow our assessment to dictate our actions. When we discover a significant MOI for spine injury, we act accordingly. When we learn there isn't a significant MOI, we act accordingly. The available data informs us that incidental movement does not harm patients, and that people with spine injuries tend to protect themselves. Our addition of “hands-on” care does not need to be applied instantly - we can be systematic, calm and deliberate in our approach.

Circulation, Sensation, Motion

Over the past 5 years or so our CSM messaging has gotten a bit convoluted and unnecessarily specific. We're making things consistent with the following CSM checks:

Hands:

- Circulation: good radial pulses
- Sensation: identify finger being touched on each hand, no odd sensations
- Motion: wiggle fingers, grip strength equal bilaterally

Feet:

- Circulation: good pedal pulses or warm feet reported by pt
- Sensation: identify toe being touched on each foot, no odd sensations
- Motion: wiggle toes, push/pull equal bilaterally

Pulse Oximeters

We've seen some medical news that a pulse oximeter can sometimes give misleading readings in people with dark skin, especially at lower oxygen levels. We need to be aware of this and, as we should in all patients, pay attention to trends and other s/s of poor oxygenation, such as shortness of breath and mucous membrane color. This is also a simple opportunity to be alert to the presence of bias in medicine.

Resources for different skin colors

There are resources available to us with medical images for people of color. Where we have permission to use images we have been updating the cold injury, bites and stings and wound slide shows with POC images. Here are a couple of links to these resources:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2966382/>

and

<https://skinofcolorociety.org/dermatology-resources/education-videos/>

Conjunctiva for skin color checks

Checking the conjunctiva (looking under eyelids) is a reasonable alternative for assessing the skin when you may not want to pull down the mask to look at the mucous membranes of the mouth.

Narcan

The epidemic of opioid overdose should be familiar to all. Reports of incidents in wilderness are rare (but not zero). Narcan, like the AED, is also a valuable skill for us in our urban lives. Narcan, commonly administered via intranasal spray (2.0 - 4.0 mg per spray), is a narcotic antagonist which blocks narcotic effects by occupying, without activating, narcotic receptor sites. The duration of action is 30-90 minutes. It is used for the reversal of narcotic effects such as unresponsiveness/altered mental status, especially respiratory depression, due to known or suspected overdose of narcotic drugs.

All fifty states have passed laws to increase access to Narcan (naloxone) and to legally protect people such as first responders, family and friends, police officers and others who administer it. Narcan remains Rx in the USA, however, you can walk into most pharmacies and request Narcan without a prescription.

Drowning

Drowning is a hypoxic brain problem (requiring oxygenation starting on scene). The focus on treatment is to reverse hypoxia with ABC CPR (not CAB). Use rescue breathing and if available, oxygen. Remove water and vomit from the airway as needed (likely from the stomach). Expect it. Do not spend time removing white foam from the upper airway (likely from the lungs). Ventilate through the foam.

Consider protecting the spine only if there is a clear spine injury MOI. Treat for hypothermia. Monitor In a non-fatal drowning, onset of respiratory signs & symptoms is usually within six hours. Monitor for wet lung sounds, productive cough, rapid shallow ventilations, cyanosis, substernal burning, inability to take a deep breath, irregular and/or depressed heart rate, or decreased level of responsiveness

Rhabdomyolysis

Rhabdomyolysis (aka rhabdo) is a breakdown of muscles that dumps cellular contents into the blood and affects, among many organs, the kidneys. It's rare (or at least rarely reported from the wilderness) but people such as endurance athletes and wildland firefighters are more at risk). It has many causes, but for wilderness medicine the context is likely strenuous exercise in heat and with dehydration. It's hard to diagnose as it looks like heat illness, but dark brown urine and muscle soreness should make us suspicious. It's treated with hydration and evacuation.

Thrombolytics in Frostbite

Thrombolytics (clot dissolving medications) have a role in the treatment of severe frostbite in restoring circulation after the injury has been thawed. This hospital based treatment is time sensitive, the sooner it is started the better, so evacuation of thawed severe frostbite should be as soon as possible.

Albuterol for HAPE

We no longer suggest the use of albuterol in HAPE. For a number of years there was hope it would be a helpful medication but research has not supported its role in HAPE. It is not harmful, but it looks like it is unlikely to help.

Cooling in Heat Stroke

Cold water immersion is the gold standard treatment for heat stroke. How much should we worry about inducing hypothermia when we cool heat stroke patients with cold water immersion?

This is an example of benefit v risk. The benefit of rapidly cooling heat stroke is clear, it is life-saving. The risk of inducing severe hypothermia is low. To manage this risk many position papers recommend stopping cooling at 38C/100F, but they can measure temperature accurately. Guidance when we can't measure temperature is elusive. Cool first, worry about hypothermia later. There is some science (with the goal of cooling from 40°C/104°F to 38°C/100°F) that in 10°C/50°F water this takes about 15-20 minutes. Evaporative cooling (tepid water and fanning) takes at least twice as long.

Improvised Cervical Collars

The Journal of Wilderness and Environmental Medicine (WEMJ 2019; 30(4): 412e6) has a study on improvised cervical collars that was conducted by a group at the U of Utah that included NOLS Wilderness Medicine faculty, Laura Hudecek and Matt DeFrancesca. They used a model soft improvised c-collar of a rolled up fleece, similar to a common model we use in the classroom. They found there was no difference in stability when compared to a hard c-collar, and improved patient comfort.

Syncope/Fainting

Syncope (fainting) is a brief loss of postural tone followed by a spontaneous and complete recovery. It is often caused by a decreased blood flow to the brain, usually from low blood pressure. It may be due to severe pain, strong emotion, urination, defecation, vomiting, swallowing, or carotid sinus stimulation. Syncope may also be a sign of underlying disease, especially if symptoms do not resolve.

The patient may report prodromal symptoms such as dizziness, vision changes, warmth, light headedness. A fainting episode may be accompanied by twitching or seizure-like activity, which is not a seizure.

Treatment is to lay the patient flat, elevate the legs, make the patient comfortable (shade, out of the cold, etc.) and to complete a PAS. Assess for residual signs and symptoms.

Most syncope is benign and resolves promptly without further symptoms. Sometimes syncope suggests an underlying medical problem and in these cases this patient should be evacuated. We want to evac syncope that occurs during exertion; that occurs without the presence of prodromal symptoms such as dizziness, light-headedness, pallor, diaphoresis, vision changes; and where there are residual signs and symptoms. Rapidly evacuate all events of syncope that are accompanied by chest pain, headache, SOB, abdominal pain, known pregnancy, or with signs and symptoms of shock.

Pain Management

Pain management reduces both physical and psychological stress. It helps support as comfortable an evacuation as possible. Inadequate pain management may cause a significant stress response as well as an increase in the risk of developing posttraumatic stress disorder. Patients may also become increasingly sensitive to painful stimuli the longer pain remains uncontrolled, making their pain more difficult to control.

Our pain management principles for the lay provider in the wilderness

Comfort Care

Simple techniques, such as using the patient's name, attending to basic needs such as hygiene, warmth, food and hydration, allowing the patient to place themselves in a position of comfort, as well as keeping the patient informed and involved in their care

can be comforting, decrease anxiety and improve the patient's perception of pain.

Injury Management

Protection from further injury and providing stability in the form of taping, bracing, or splinting is an essential pain management tool.

Ice and elevation

Cooling the area with ice for 20-40 minutes may help manage pain; may continue ice every 2-4 hours or after use. Ice can decrease skin temperature to the point where nerve conduction is inhibited and pain decreases and can be an effective non-pharmacological pain intervention. Raising the injury above the patient's heart may reduce throbbing and allow for rest.

Medications (oral, non-opioid, non-prescription)

The combination of a non-steroidal anti-inflammatory (NSAID) medication with acetaminophen has been demonstrated in a number of studies to provide superior pain control to either drug alone or in combination with an oral narcotic. There are a number of sequences of acetaminophen and ibuprofen recommended in the medical literature. Our sequence is chosen because it is easy to remember and avoids exceeding the maximum daily dose: 1000mg acetaminophen every 8 hours administered with 800mg ibuprofen every 8 hours. This gives daily doses of 3000 mg and 2400 mg respectively. This is for short term use during evacuation. These medications are not benign. As always, review the 5 rights of medication use before suggesting a medication to a patient.