

# Certification Standards for Wilderness First Responder Courses

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## Introduction

The Wilderness Medicine Education Collaborative ([WMEC](#)) was formed in 2010 to provide a forum for discussing trends and issues in wilderness medicine and to develop consensus-driven scope of practice documents and de facto standards for Wilderness First Aid (WFA), Wilderness Advanced First Aid (WAFA), and Wilderness First Responder (WFR) certifications. In 2022, the WMEC expanded its work to include related white papers and position statements. Our mission is to elevate wilderness medicine education and set standards for common field certifications. Collectively, the WMEC schools have over two hundred years of experience teaching wilderness medicine and have trained over 750,000 students in the past four decades.

The Wilderness First Responder (WFR) training and certification is the industry standard for professional guides and outdoor leaders; it is also recommended for all recreationalists engaged in high-risk activities or remote multi-day trips where communication and outside assistance is questionable. WFR graduates often care for patients in remote locations, in challenging weather, and with limited equipment. In some cases, graduates lack the technological equipment to be able to communicate with more advanced providers or rescue personnel and often care for patients for prolonged periods due to delayed medical or rescue support. As a result, WFR graduates may need to make independent decisions regarding the need for and urgency of evacuation and required additional resources. These requirements generally differ from the scope of first responders in a front-country environment.

First aid requirements in a remote setting often differ from the scope of first aiders in a front-country environment. Over time, course content has evolved based on the growing body of medical literature on first aid and wilderness medicine and our experience as practitioners and educators of wilderness medicine. This process has led to a consensus about content and scope of practice (SOP) for wilderness medicine certification within the recreational and professional outdoor industry. For more information about certification, licensure, curriculum, scope of practice, and accreditation and why the WMEC documents provide practical standards for industry-wide medical certifications, view this [document](#).

This document and its companion documents—Certification Standards for Wilderness First Aid Courses and Certification Standards for Wilderness Advanced First Aid Courses—are intended to set clear standards for wilderness medicine certifications for the outdoor industry. We recommend the recreational public, outdoor program administrators, and other consumers of wilderness medicine courses refer to these documents and recommendations when choosing an appropriate course and credential level for themselves, their program, or their service. Users are encouraged to compare the standards documents to an individual provider's course curriculum to ensure their course meets the minimum standards. Because the needs of students and organizations vary by location, population, and experience, some educational institutions may choose to exceed these standards. While schools that teach wilderness medicine are not legally bound to conform to these standards, they have a professional obligation to consider them. Failing to follow an industry standard may dilute the quality and value of the WFA certification and compromise the care of wilderness participants.

While the educational approach to meeting the standards is left to the discretion of the course provider, we recommend that instructors who teach wilderness medicine are skilled educators and medical providers who utilize hands-on practice, case studies, and realistic simulations as the prominent delivery style for their courses. We recommend that a minimum of 50% of the in-person course time is dedicated to practical hands-on learning. Because of the amount of knowledge presented in a relatively short period of time during a course and the necessity to perform well in a field situation, we encourage each wilderness medicine school to provide their students with reference material or a field manual that outlines the signs, symptoms, and treatment of the problems presented during their course. We also recommend that wilderness medicine schools have a process for instructor training and ongoing assessment.

This document is not a curriculum. Detailed information on the topics, including signs and symptoms, can be found in the first aid and wilderness medicine literature. Throughout the document we use specific examples of problems commonly encountered but it is not intended to be an exhaustive list. It is assumed that instructors will use examples most relevant to the needs of their student population.

Neither the WMEC nor the approving parties are legally responsible for a loss arising from the use or misuse of this document by a WFR provider. Outdoor programs may benefit from working with a medical advisor to identify any predisposing terrain, environmental, and clinical conditions that may contribute to program-related accidents, injuries, and illnesses and suggest risk management strategies designed to prevent them. For more information on medical advisors, standing orders, and protocols view this [document](#).

### **Focus and Content Overview**

The WMEC recommends a minimum of 70 hours of in-person class time is required to cover the WFR core topics and skills in a standard course and 45 hours of in-person class time for a hybrid course. Elective *topics* may be added to a hybrid course without additional in-person time; however, additional *skills* require additional training and practice, and therefore increased in-person time beyond the minimum requirement. We do not recommend WFR or WFR recertification courses that are taught entirely online (e.g. synchronous, asynchronous, or a combination of each). WFR graduates must be certified in adult and child CPR and AED use based on the American Heart Association (AHA) or International Liaison Committee on Resuscitation (ILCOR) guidelines and their skills practiced and verified through in-person training. The WMEC believes that the in-person hours of the WFR course are an essential element of each training. For more information about in-person versus online only, view this [document](#).

The scope of practice for a WFR is to prevent and identify traumatic injuries, environmental illnesses and injuries, medical problems, initiate reasonable and prudent field management, and identify signs and symptoms necessitating evacuation for potentially life-threatening problems.

WFR skills and topics are subdivided into core and elective skills and topics. Core skills and topics define the scope of practice of a WFR, while elective skills and topics are supplementary and designed to meet the needs of a specific audience.

WFR certification standards focus on the following proficiencies:

- Rescuer and patient safety and protection, a physical exam to identify apparent injuries or abnormalities, assessing signs, symptoms, and vital sign patterns, and obtaining a relevant patient history.
- Prevent medical problems anticipated by the activity and environment.
- Recognize environmental conditions that may lead to problems and take steps to mitigate the environmental challenge.

- Stabilize emergencies, initiation of specific and appropriate medical treatments (e.g., splints, wound care, spine injury management, managing environmental threats, etc.), and assisting patients with their medications.
- Make informed decisions regarding the need and urgency of an evacuation.

### **Treatment & Evacuation**

We recommend treatment guidelines and evacuation parameters based on injuries and illness. Responders/rescuers must conduct a risk/benefit analysis carefully weighing the risks to all parties involved in the treatment and evacuation of the patient(s)—patients, rescuers, EMS, SAR, institutional or organizational capabilities, etc. Due to the dynamic nature of the wilderness environment and the unique variables of each situation, some treatments may not be available and a prompt evacuation may not be a viable option. In the standards documents, we provide a generic recommendation to assess the need and urgency of the evacuation. In general, we recommend an urgent evacuation for all potentially life-threatening problems. However, we understand that in some cases, the associated risk may be too high to attempt an evacuation, or an evacuation is not possible.

### **Student Evaluation**

To receive certification, students must demonstrate mastery of core topics and practical skills via written exam, in-person practical-skill testing, and simulations.

WFR certifications must be renewed every two to three years depending on the provider via an in-person or hybrid renewal/recertification course containing a minimum of 16 in-person hours focusing on practical skills, case studies, and simulations.

Wilderness medicine schools, employers, and students share the responsibility for knowledge acquisition and skill retention. Practical skills are perishable if not practiced regularly. We recommend employers update and review critical wilderness medicine information and current practices related to their trips with staff before each season. We recommend that graduates actively maintain their skills through study, case study review, and simulation practice. We also suggest both employers and graduates carefully assess each trip's hazards and take steps to mitigate them before starting a trip or expedition.

# Content Hyperlinks

## Core Topics

### Medical Legal

### Patient Assessment

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### Traumatic Problems

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### Environmental Medicine

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### Medical Problems

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### Medical Problems con.

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## Elective Topics

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[Behavioral/Mental Health Emergencies](#)  
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## **Core Skills**

### **Core Basic Life Support Skills**

- [Manually open airway and suction](#)
- [Perform rescue breathing](#)
- [Assess pulse at carotid artery](#)
- [Perform CPR](#)
- [Adult & child AED use](#)
- [Apply direct pressure](#)
- [Apply pressure bandage](#)
- [Maintain body temperature](#)
- [Understand commercial tourniquet use](#)
- [Wound packing for hemorrhage control](#)
- [Understand spinal cord protection](#)

### **Core Secondary Survey Skills**

- [Count pulse rate \(HR\) at radial artery](#)
- [Count respirations \(RR\) & note quality](#)
- [Assess skin condition](#)
- [Assess mental status/LOR](#)
- [Take SAMPLE history](#)
- [Complete head-to-toe physical exam](#)
- [Complete patient SOAP notes](#)

### **Core Spine Management Skills**

- [Know how to conduct a FSA](#)
- [Know how to move spine-injured patients](#)
- [Know how to protect spine-injured patients](#)
- [Know how to package spine-injured patients](#)

### **Core Musculoskeletal Treatment Skills**

- [Reduce shoulder, patella, & digit dislocations](#)
- [Splint long bone and joint injuries](#)
- [Improvise a pelvic binder](#)

### **Core Hypothermia Treatment Skills**

- [Improvise a hypothermia wrap](#)

### **Core Anaphylaxis Treatment Skills**

- [Use an epinephrine auto-injector](#)

## **Elective Skills**

### **Elective Basic Life Support Skills**

- [Deliver medical oxygen](#)
- [Perform infant CPR & AED](#)
- [Airway management devices](#)

### **Elective Secondary Survey Skills**

- [Measure Blood Pressure \(BP\)](#)
- [Measure pulse oximetry](#)
- [Assess lung sounds with a stethoscope](#)

### **Elective Spine Management Skills**

- [Improvise litters or stretchers](#)

### **Elective Musculoskeletal Treatment Skills**

- [Apply commercial femur traction splints](#)
- [Reduce jaw dislocations](#)

### **Elective Anaphylaxis Treatment Skills**

- [Inject medication using a syringe](#)

### **Core Plan/Evacuation skills**

- [Basic improvised carries](#)

# Detailed Core Topics & Skills

## Medical-Legal

### Medical-Legal

- Understand the following legal concepts as they apply to wilderness medicine:
- Duty to Act and Good Samaritan Laws.
- Scope of practice.
- Consent and confidentiality.
- Understand the function of:
  - Certification.
  - Licensure.
  - Guidelines.
  - Standing orders.
  - Protocols.
  - Authorization (from a Medical Advisor).

## Patient Assessment

### Scene Survey

- Evaluate the scene and assess for safety and causes, including the need for personal protection equipment (PPE).
- Identify the obvious mechanism(s) of injury (MOI). Protect the patient's spinal cord if a traumatic MOI is present.
- Identify environmental and scene threats.
- Quickly evaluate resources.
- Consider the number of patients, the number of rescuers and their training, first aid/medical equipment, etc.

### Primary Survey

- Stabilize life threats.
- Assist and support patients with their personal medications for life-threatening conditions such as epinephrine, short-acting bronchodilator, nitroglycerine, glucagon, naloxone, etc.
- Understand basic triage system with a Mass Casualty Incident (MCI).
- Assess the need and urgency of an evacuation and consider calling for medical or evacuation assistance before continuing with the Secondary Survey. Recognize when to call for an emergency evacuation for a life threat that requires additional resources and/or advanced life support (ALS).

### *Respiratory System*

#### Assess:

- Patient's ability to breathe on their own.
- Quality of ventilation.
- Airway for foreign bodies or fluids.

#### Treatment:

- Manually open, maintain and protect the airway with standard BLS techniques and the recovery position.
- Clear airway. Suction.
- Provide rescue breaths.
- Monitor and maintain airway control and breathing for people with an impaired Level of Responsiveness (LOR).

### *Circulatory System*

#### Assess:

- Presence of patient's pulse at carotid artery.
- For life threatening bleeding/wounds.
- Likelihood of shock.

#### Treatment:

- Perform CPR when indicated.
- Understand start/stop considerations for CPR in the remote context.
- Control bleeding with well-aimed direct pressure, wound packing, pressure bandage, or commercial tourniquet.

### *Nervous System*

#### Assess:

- Level of Responsiveness (LOR). Know the common causes and signs and symptoms for traumatic, environmental, and medical mechanisms

#### Treatment:

- If LOR is depressed, attempt to identify and treat the underlying cause. Consider low blood sugar, low sodium, altitude, heat and cold illnesses, low oxygen levels, toxins, infection, etc.
- Provide ventilation ± medical oxygen for hypoxic patients.

### *Core Basic Life Support skills:*

- Practice and confirm practical skills via realistic simulations for adults and children:
  - Manually open airway and suction.
  - Perform rescue breathing.
  - Assess pulse at carotid artery.
  - Perform cardiopulmonary resuscitation (CPR).
  - Use AED.
  - Apply direct pressure.
  - Apply pressure bandage.
  - Maintain body temperature.
  - Understand commercial tourniquet use ± conversion.
  - Wound packing for hemorrhage control for junctional and extremities wounds
  - Understand and consider spinal cord protection.

*Elective Basic Life Support skills:*

- Deliver medical oxygen via cannula or mask.
- Use airway management devices e.g. OPA, NPA, and Bag Valve Mask (BVM).
- Perform infant CPR and AED

**Secondary Survey**

- Perform a physical exam to identify obvious injuries or abnormalities.
- Measure and monitor vital signs: Level of Responsiveness (LOR), Heart Rate (HR), Respiratory Rate (RR), and Skin (circulation/color, temperature, wet/dry).
- Obtain a patient history.

*Core secondary survey skills:*

Practice and confirm practical skills via realistic simulations

- Count pulse rate (HR) at radial artery
- Count respirations (RR) and note quality
- Assess skin condition.
- Assess mental status/LOR
- Take SAMPLE history
- Complete Head-to-toe physical exam.
- Complete multiple patient SOAP notes on case-study or simulated patients

*Elective secondary survey skills:*

- Blood Pressure (BP) with a sphygmomanometer with or without a stethoscope
- Measure pulse oximetry
- Assessing lung sounds with a stethoscope.

**Plan**

- Document scene, primary, secondary survey findings, and patient information in a SOAP note.
- Develop a current and anticipated problem list.
- Develop and prioritize a treatment plan.
- Assess the need and urgency of evacuation.
- Deliver a concise, complete, and clear verbal patient report to an outside agency if requesting assistance / additional resources.
- Monitor a patient for changes over time.
- Continually reevaluate treatment and evacuation plans.

*Core Plan & Evacuation skills:*

- Basic improvised carries



## Core Traumatic Problems

### Traumatic Brain Injury

- Assessment:
  - Recognize the signs and symptoms of a minor traumatic brain injury (mTBI).
  - Recognize the signs and symptoms of increasing intracranial pressure.
- Treatment:
  - Protect the airway.
  - Protect from environmental extremes.
  - Monitor for changes in mental status, decreased LOR and vomiting.
  - Assess the need and urgency of evacuation.

### Hypovolemic Shock

- Assessment:
  - Evaluate for hypovolemic shock due to internal or external bleeding.
  - Recognize signs, symptoms, and vital sign patterns of hypovolemic shock and differentiate them from an acute stress reaction.
- Treatment:
  - Identify and manage the cause of hypovolemia
  - Keep the patient warm and protect from adverse environmental conditions
  - Provide oral fluids to maintain urine output for patients with normal mental status.
  - Stabilize injuries.
  - Minimize physical exertion.
  - Assess the need and urgency of evacuation.

### Chest Trauma

- Assessment:
  - Evaluate and recognize the signs and symptoms of respiratory distress and respiratory failure due to chest trauma and subsequent lung injury.
  - Differentiate between open and closed chest injuries
  - Assess for flail chest/paradoxical chest rise
- Treatment:
  - Maintain a position that supports breathing.
  - Maintain a patent airway and support ventilation.
  - Stabilize/support injuries to the chest wall.
  - Seal an open chest wound; use a vented chest seal if feasible. Monitor.
  - Assess the need and urgency of evacuation.

## Spine Injury

- Assessment:
  - Recognize a high-risk mechanism of injury for spinal cord damage.
  - Assess for potential spine injury via acceptable Focused Spine Assessment (FSA): Canadian C-spine Rule, modified NEXUS criteria, or Wilderness Medical Society FSA.
  - Consider neurogenic/vascular shock.
  - If you cannot rule out a spine injury, evaluate for vascular shock due to high (C-1 through C-4) spinal cord injury.
- Treatment:
  - Protect the airway.
  - Protect the spinal cord.
  - Use rolls, lifts, and extrication as needed to facilitate patient examination and protection.
  - Protect from adverse environmental conditions. Keep the patient warm.
  - Consider self-evacuation for ambulatory patients who fail the FSA due to low-risk column injuries.
  - Stabilize/protect and evacuate non-ambulatory patients who fail the FSA on a commercial litter, vacuum splint, or stretcher.
  - Assess the need and urgency of evacuation.

### *Core spine management skills:*

- Know how to conduct a FSA and evaluate the type of evacuation needed.
- Know how to lift and move spine-injured patients.
- Know how to protect spine-injured patients and keep them warm.
- Know how to package spine-injured patients in (a) commercial litter(s). Examples include wire basket litter (Stokes), SKED, vacuum splint, fiberglass or plastic litters (Thompson, etc.).

### *Elective spine management skills:*

- Improvise litters or stretchers using ropes, backboards, tarps, poles, etc.

## Soft Tissue Injury

### Wounds

- Assessment:
  - Recognize life-threatening bleeding.
  - Assess and communicate the need for post-exposure prophylaxis (PEP) for animal bites.
  - With an animal bite, assess and document the need for rabies prophylaxis.
  - Distinguish simple versus high-risk wounds.
- Treatment:
  - Control bleeding with direct pressure, pressure/clot enhancing bandage, or commercial tourniquet. Consider conversion.
  - Clean wounds by removing debris and pressure irrigation/debridement.
  - Dress and bandage wounds. For large wounds, deep puncture wounds, consider wet-to-dry dressings. Dress abdominal eviscerations with moist gauze and keep the patient warm.
  - Manage blisters, splinters, and fish hook injuries.
  - Remove impaled objects unless met with increased bleeding, pain, or resistance. Do not remove objects impaled in the globe of the eye, neck, or torso.
  - Manage amputations (control bleeding, wrap amputated part in moist gauze, place in a plastic bag, and keep cool while protecting from drying and freezing).
  - Assess the need and urgency of evacuation.

### Infections

- Assessment:
  - Recognize signs and symptoms of local versus systemic infection.
- Treatment:
  - Hot compresses (avoid scalding the patient) promote drainage, and monitor.
  - Assess the need and urgency of evacuation. Begin an urgent evacuation for patients with signs and symptoms of a systemic infection.
- Prevention:
  - Understand prevention: drug-resistant infections and bloodborne pathogen awareness. Wound cleaning is preemptive

### Burns

- Assessment:
  - Recognise the common causes of wilderness burns—hot water burns, grease burns, etc.—and take steps to mitigate them.
  - Assess depth: superficial, partial, or full thickness.
  - Approximate percent of body surface area involved.
  - Identify high-risk anatomical areas (e.g., airway, face, hands, feet, and genitals).
- Treatment:
  - Cool burns and protect with a clean, non-adherent bandage.
  - Understand that most burns are evacuated due to patient comfort, inability to travel or participate, or lack of appropriate dressing.
  - Assess the need and urgency of evacuation.

## Musculoskeletal Injury

- Assessment:
  - Recognize signs and symptoms of musculoskeletal injury.
  - Differentiate between stable and unstable extremity injuries.
  - Recognize signs and symptoms of high-risk problems associated with musculoskeletal injuries (e.g., fractures of the femur or pelvis, open fractures, compartment syndrome, joint infections, and persistent ischemia).
- Treatment:
  - Treat stable extremity injuries with supportive and anti-inflammatory treatment.
  - Treat unstable and angulated long-bone extremity injuries with gentle traction into anatomical position.
  - Reposition unstable joint extremity injuries toward mid-range anatomical position if there is impaired circulation, sensation, and motor skills (CSM) or if splinting in position is impossible.
  - Splint unstable extremity injuries. Splints should provide adequate stabilization, be comfortable during extended evacuations, and allow for ongoing assessment of CSM.
  - Irrigate the wound and clean bone ends before applying traction to and splinting an open fracture.
  - Consider reducing simple dislocations from indirect mechanisms of anterior shoulder, patella, digit.
  - Assess the need and urgency of evacuation.

### *Core musculoskeletal injury treatment skills:*

- Practice and demonstrate dislocated anterior shoulder, patella, and digit reduction techniques
- Understand the principles and practice improvised long bone and joint splints.
- Apply circumferential pelvic wrap (pelvic binder) for suspected pelvic fractures.

### *Elective musculoskeletal injury treatment skills:*

- Apply commercial traction splints for femur fractures.
- Reduce jaw dislocations.

## Core Environmental Medicine

### Contact Allergic Reactions (Poison Ivy, Oak, Sumac, etc.)

- Recognize signs and symptoms of contact allergic dermatitis.
- Treatment:
  - Wash affected area with soap and cool water to remove oily plant resin (urushiol)
  - Manage itching with cool compresses and topical corticosteroids.
  - Monitor for anaphylaxis.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider patient history and individual management plan.

### Sunburn

- Assessment:
  - Recognize signs and symptoms of a sunburn (superficial to partial).
- Treatment:
  - Consider the application of over-the-counter (OTC) medications or aloe.
  - Maintain hydration.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Understand the role of ultraviolet barriers; sunscreen and clothing.

### Snow Blindness (photokeratitis)

- Assessment:
  - Recognize the signs and symptoms of photokeratitis.
- Treatment:
  - Remove from sunlight until signs and symptoms resolve.
  - Use cool compresses to mitigate pain.
  - Improvise slit sunglasses if goggles or sunglasses are unavailable.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Wear goggles or dark glasses with side protection to minimize ultraviolet (UV) exposure in bright sun, and on snow or water (due to reflection).

### Dehydration

- Assessment:
  - Recognize common causes and spectrum of signs and symptoms for mild to severe dehydration.
- Treatment:
  - Provide oral fluids and electrolytes to satisfy thirst. Know how to improvise an effective oral electrolyte solution.
  - Identify and treat the underlying cause.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider fitness for the activity, hydration status, environmental temperatures, exertion levels, altitude, etc.

## Heat Exhaustion

- Assessment:
  - Recognize signs and symptoms of heat exhaustion.
- Treatment:
  - Stop activity, remove insulative clothing, and find a cooler area.
  - Provide oral fluids to satisfy thirst.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider fitness, environmental temperatures, exertion levels, work/ rest ratios, hydration status, underlying medical conditions, physical conditioning, and predisposing medications (e.g., prescriptions, OTC, herbs, and dietary supplements)

## Heat Stroke

- Assessment:
  - Recognize signs and symptoms of heat stroke.
- Treatment:
  - Aggressive, immediate core cooling as per available resources: Consider cool/cold water immersion, misting, fanning, shade, etc.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider environmental temperatures, exertion levels, hydration status, underlying medical conditions, physical conditioning, and predisposing medications (e.g., prescriptions, OTC, herbs, dietary supplements/ stimulants).

## Exercise Associated Hyponatremia

- Assessment:
  - Recognize the spectrum of signs and symptoms for mild to severe exercise associated (exertional) hyponatremia
- Treatment:
  - Provide sodium and initiate fluid restriction.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider hydration status and amount of water consumed relative to sodium consumption.

## Rhabdomyolysis

- Assessment:
  - Recognize causes, signs, and symptoms of Rhabdomyolysis.
- Treatment:
  - Administer fluids (with electrolytes).
  - Assess the need and urgency of evacuation.
- Prevention:
  - Consider hydration status, environmental temperatures, exertion levels, and physical conditioning.

## Hypothermia

- Assessment:
  - Recognize the spectrum of signs and symptoms for mild to severe hypothermia.
- Treatment:
  - Mild Hypothermia:
    - Give oral fluids and calories and protect from the environment. Consider a hypothermia wrap.
  - Moderate Hypothermia:
    - Handle gently and place supine in hypothermia wrap ± added heat.
  - Severe Hypothermia:
    - Handle gently and place supine in hypothermia wrap with added heat.
    - Assess the need and urgency of evacuation.
    - Perform rescue breathing or CPR when indicated.
- Prevention:
  - Identify and manage predisposing environmental and clinical conditions to prevent hypothermia. Consider environmental temperatures, wind, rain or snow, exertion levels (exhaustion), hydration status, available calories, shelter, and clothing.
  - *Core hypothermia treatment skills:*
- Practice and demonstrate how to build and move a patient into a hypothermia wrap.

## Frostbite

- Assessment:
  - Recognize signs and symptoms of superficial to full thickness frostbite.
- Treatment:
  - Assess pros and cons of field thawing versus evacuation on frozen limb(s); manage for the best patient and group care:
    - Ideally, field thaw superficial frostbite in a warm water bath. Practically, this may need to be skin-to-skin.
    - Avoid refreezing affected areas.
    - Assess the need and urgency of evacuation.
    - Consider evacuating a patient with frozen extremities if evacuation time is 24 hours or less, when navigating technical terrain, or when resources are unavailable to properly thaw in the field.
- Prevention:
  - Recognize predisposing environmental and clinical conditions. Consider environmental temperatures, wind, snow, rain, exertion levels (exhaustion), hydration status, available calories, shelter, and clothing choice and fit (avoid local constriction).

## Non-Freezing Cold Injuries

- Assessment:
  - Recognize signs and symptoms of nonfreezing cold injuries immersion foot, Raynaud's disease, and chilblains
  - Treatment immersion foot:
    - Passively rewarm the afflicted area (pat or air dry); the use of external heat sources to rewarm are contraindicated.
    - Elevate to reduce pain and swelling.
    - Understand that patients with swollen feet should not walk. If walking is unavoidable, protect feet and wear non-constricting footwear.
  - Treatment Raynaud's disease and chilblains foot:
    - Gently rewarm the afflicted area.
    - Avoid continued exposure.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Recognize predisposing environmental and clinical conditions; avoidance equals prevention. For immersion, consider immersion time in cold water, sweat, and clothing choice.

## Drowning

- Assessment:
  - Recognize the spectrum of signs and symptoms for fatal and non-fatal drowning.
- Treatment:
  - When indicated, removal from the water should include practical respiratory support and spinal protection. When possible, maintain potentially severely hypothermic patients in a horizontal position during removal from the cold water as well as immediately after extrication from the water.
  - Provide rescue breathing or CPR as needed; if present, breathe through any foam issuing from the patient's mouth or nose.
  - Treat for hypothermia as necessary.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Know the factors that contribute to drowning. For example, alcohol, not wearing a personal floatation device, cold water, group think, altered mental status (due to trauma, substances that alter mental status, medical problem, etc.), lack of skill, etc.
  - Recognize and manage high-risk environmental conditions designed to prevent extended immersion and submersion times.

## Lightning

- Assessment:
  - Know the common mechanisms of lightning injury and common presentation of injury (cardiovascular, neurological, burns, and potential for traumatic injuries).
- Treatment:
  - Prioritize treating apneic and pulseless patients.
  - Perform rescue breathing or CPR when indicated.
  - Triage and treat any traumatic injuries.
- Prevention:
  - Recognize high-risk locations and weather conditions to minimize the risk of lightning strikes.



## Altitude-Related Problems

- Assessment:
  - Recognize signs and symptoms of Acute Mountain Sickness (AMS).
  - Recognize signs and symptoms of High Altitude Cerebral Edema (HACE) and High Altitude Pulmonary Edema (HAPE).
  - Recognize patients who need to stop ascent and acclimatize or descend/evacuate.
- Treatment.
  - Stop ascent if symptomatic.
  - Descend if no improvement.
  - Descend immediately in presence of shortness of breath (HAPE) and ataxia and/or mental status changes (HACE).
  - Consider prescription medications.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and mitigation/prevention strategies. Consider preventative medications, acclimatization, and rate of ascent.
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## Arthropod Bites & Stings (insects, arachnids e.g., scorpions, spiders)

- Assessment:
  - Recognize the signs and symptoms of common arthropod bites and stings.
- Treatment:
  - Clean bites. Monitor for infection and necrosis.
  - Monitor for respiratory distress or failure and provide rescue breathing as needed.
  - Remove embedded ticks.
  - Assess the need and urgency of evacuation. If signs and symptoms of a tick-borne illness appear, evacuate.
- Prevention:
  - Understand the role and importance of avoidance, clothing, netting, repellents, and insecticides in the prevention of disease transmission.

## Snakebites

- Assessment:
  - Recognize the signs and symptoms of cytotoxic, hemotoxic, and neurotoxic envenomations.
- Treatment:
  - Evacuate all suspected venomous snake bites.
  - Follow locally medically endorsed treatment practices for regional snakes.
- Prevention:
  - Identify common human behaviors that are factors in snakebite incidents.
  - Research snake behavior and habitat before entering venomous snake territory.

## Core Medical Problems

The scope of practice for a WFR graduate includes the prevention and initiation of reasonable and prudent field treatment for minor medical problems and the rapid recognition of signs and symptoms requiring evacuation for potentially life-threatening ones.

### Cardiac Emergencies

- Assessment:
  - Recognize signs and symptoms of a cardiac emergency.
- Treatment:
  - Stop activity. Keep the patient calm and in a position of comfort, typically sitting or semi-reclining.
  - For chest pain/pressure: administer low-dose aspirin or one regular aspirin dissolved in water and assist with their personal medications (e.g. prescribed nitroglycerine).
  - Perform CPR when indicated.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider patient history—including prescription medications—risk factors, and physical demands of the activity

### Cerebral Vascular Accident (Stroke)

- Assessment:
  - Recognize signs and symptoms of a cerebral vascular accident (CVA) and be familiar with methods (e.g., FAST assessment) to assess a patient exhibiting these signs and symptoms.
- Treatment:
  - Keep the patient calm and offer reassurance.
  - Determine when the patient was last seen as “normal.”
  - Perform rescue breathing or CPR when indicated.
  - Aspirin is contraindicated.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider patient history—including prescription medications—and physical demands of the activity.

### Seizures

- Assessment:
  - Recognize the signs and symptoms of partial and generalized seizures.
- Treatment:
  - During a seizure: Protect the patient from injury but do not restrain or put anything in the patient’s mouth.
  - Post-seizure: Keep the patient calm and provide reassurance. Protect and manage the airway and provide rescue breathing when needed.
  - Assess and treat any traumatic injuries incurred during the seizure.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider patient history, including seizures, past traumatic brain injuries, and prescription medications.

## Hypoglycemia/Hyperglycemia

- Assessment:
  - Recognize signs and symptoms of hypoglycemia and hyperglycemia in people with diabetes.
  - Recognize the possibility of non-life threatening hypoglycemia in people who do not have diabetes.
- Treatment for hypoglycemia:
  - Administer oral glucose tabs/sugar (honey, maple syrup, hard candy, juice) to all awake patients. Keep hydrated.
  - Consider administering glucagon (IM or nasal spray) in unresponsive patients. If unavailable, rub oral glucose/sugar paste—honey and maple syrup work—on the oral mucosa of all voice-responsive, pain-responsive, and unresponsive patients while they are lying on their side to protect their airway.
  - Administering insulin to patients with an altered mental status or are voice-responsive, pain-responsive, and unresponsive patients is contraindicated.
  - If intervention is successful, give a complex carbohydrate and protein meal.
  - Assess the need and urgency of evacuation.
- Treatment for hyperglycemia:
  - Keep the patient hydrated and assess the need and urgency of evacuation.
- Prevention:
  - Awareness of potential impact on blood sugar management on a course/trip when there is a change in food, activity, and routine.
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider patient history, including prescription medications, and individual diabetes management plan.
  - Awareness that acute onset of illness (e.g., influenza, COVID-19) may affect glucose levels in persons with diabetes.

## Toxic Reactions

- Assessment:
  - Recognize the signs and symptoms of toxic reactions and poisons commonly encountered in a wilderness environment.
  - Understand general principles of ingested, inhaled, and absorbed poison management.
- Treatment:
  - If possible, consult with a local poison control center (PCC) with the type of toxin/chemical, how much, when (time), where, and the patient's weight.
  - Treat for anaphylaxis if present.
  - Perform rescue breathing or CPR when indicated.
  - Ingested Poisons:
    - Supportive care and evacuation.
  - Inhaled Poisons:(commonly carbon monoxide , occasionally other gasses e.g., volcanic fumes, smoke, carbon dioxide, etc.)
    - Scene safety. Remove from exposure.
    - Administer O<sub>2</sub>, if indicated and available.
  - Absorbed Poisons:
    - Remove contaminated clothing.
    - Flush the area with water and wash with soap.
  - Injected Poisons: Recreational and prescription medications
    - Supportive care and evacuation.
    - See section on [Arthropods Bites & Stings](#)
  - Suspected opioid overdose:



## Asthma

- Assessment:
  - Recognize signs and symptoms of mild to moderate asthma flare-ups and severe reactions.
- Treatment:
  - Identify and remove triggers when possible.
  - Assist patient into a position of comfort that supports breathing. Mild to moderate flare-ups:
    - Stop activity, rest, and calm the patient.
    - Assist the patient with their personal medications (prescribed short-acting bronchodilator)
  - Severe reactions:
    - Administer epinephrine. Once normal breathing has been restored, assist with short-acting bronchodilators.
    - Consider corticosteroids.
    - Provide respiratory support—rescue breathing, oxygen, or nebulized medication if available—when breathing becomes inadequate.
    - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider patient history, including prescription medications, and individual asthma management plan.
  - Be familiar with the common triggers (cold, exercise, allergy, and stress) and emergency medications (short acting bronchodilators, epinephrine).

## Respiratory Infections

- Assessment:
  - Recognize signs and symptoms of upper and lower respiratory infections.
    - Sinus infection: runny nose, sinus congestion, colored discharge, ± headache, sinus pain
    - Throat infection: sore throat, dry cough, ± fever, swollen lymph glands
    - Lower airway infection: fever, cough, chest tightness, and shortness of breath
- Treatment:
  - Rest.
  - Focus on adequate hydration.
  - Treat symptomatically:
    - Sinus infection: Consider salt water flush, a local or systemic OTC decongestant; do not use antihistamines.
    - Throat infection: Consider salt water gargle, OTC cough suppressant or cough drops, consider zinc lozenges, and evacuate if strep is suspected.
    - Lower airway infection: consider using a OTC expectorant during the day and a OTC cough suppressant before bed, steam inhalation may ease episodes of respiratory distress
    - Quarantine as needed
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider camp hygiene, hand washing, mask use, and isolation of participants with potential airborne diseases (COVID, SARS, etc.).

## Flu-like Illness

- Assessment:
  - Recognize signs and symptoms of flu-like illness (nausea/vomiting, diarrhea, fever, cough, upper respiratory involvement)
- Treatment:
  - Rest.
  - Focus on adequate hydration. Treat symptomatically using OTC medications.
  - Quarantine as needed
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider camp hygiene, hand washing, mask use, and isolation of participants with potential airborne diseases (COVID, SARS, etc.).

## Genitourinary Issues

- Assessment:
  - Recognize signs and symptoms of vaginal yeast infections, urinary tract infections (UTI), testicular pain (e.g., torsion and epididymitis), atypical vaginal bleeding (i.e. miscarriage or menorrhagia), ectopic pregnancy.
- Treatment:
  - Treat vaginal yeast infections (Candidiasis) symptomatically with OTC medications. Consider prescription medications.
  - Treat UTIs with hydration and improved hygiene. Consider prescription medications.
  - In the event of testicular torsion, have the patient attempt a field correction by unweighting the scrotum.
  - Treat suspected epididymis with OTC medications and ice to control pain, definitive treatment typically requires antibiotics.
  - For atypical vaginal bleeding, provide supportive care and fluids, evacuate as needed.
  - For ectopic pregnancy, see abdominal pain and acute abdomen.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider medical history, prescription medications, hydration status, and hygiene.

## Abdominal Pain (including Gastrointestinal Illnesses)

- Assessment:
  - Recognize the signs and symptoms of abdominal pain commonly encountered during wilderness travel: bloating, gas, constipation, diarrhea, and nausea/vomiting.
  - Recognize signs and symptoms of an acute abdomen that require an urgent evacuation: rigid abdominal muscles, guarding, rebound pain, and generalized abdominal pain that becomes specific.
- Treatment:
  - Rest. Position of comfort.
  - Consider treating symptomatically with OTC medication. Focus on adequate hydration and adjust diet as needed.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Prevention focuses on diet, camp hygiene, hand washing, food choice and preparation, and water disinfection.

## Eye Problems

- Assessment:
  - Recognize signs and symptoms of small foreign bodies (dirt, insects) in the eye and infection.
- Treatment:
  - Gently irrigate to remove small foreign bodies or pus from a bacterial infection. Do not remove impaled objects from the globe of the eye.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider hygiene, contact lenses and solution, and back-up glasses.

## Ear Problems

- Assessment:
  - Recognize the signs and symptoms of objects in the ear, swimmer's ear, ear infections, and punctured or ruptured eardrum.
- Treatment:
  - Administer definitive care in the field or evacuate.
    - Insect (or loose objects) in ear: Gently flush with warm water.
    - Treat swimmer's ear with 1:1 vinegar and alcohol.
    - Evacuate suspected middle and inner ear infections.
    - Ruptured eardrum: Evacuate. Do not flush with water.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider the patient's history of ear infections, swimming, and water activities.

## Nosebleeds (epistaxis)

- Assessment:
  - Recognize signs and symptoms of an anterior nosebleed.
- Treatment:
  - Gently blow nose, firmly pinch bridge of nose and lean forward. Consider packing the nose with gauze.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider the patient's history, cold, dry air, and high altitude.

## Dental Emergencies

- Assessment:
  - Recognize signs and symptoms of lost crown/fillings, broken teeth, avulsed teeth, and dental infections.
  - If facial trauma is present, assess for a traumatic brain injury.
- Treatment:
  - Cover lost fillings and repair broken crowns with dental cement.
  - Attempt to preserve avulsed teeth if the evacuation is less than one hour.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions and prevention strategies. Consider facial trauma, poor hygiene, dental history, and lack of pre-trip screening.

## **Motion Sickness**

- Assessment:
  - Recognize the causes and signs and symptoms of motion sickness.
- Treatment:
  - If possible, remove the underlying cause.
  - Consider OTC and prescription antiemetic medications.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider fresh air, focusing on the horizon, OTC or prescription medications, and acupressure points.

## **Elective Topics**

Electives are skills and knowledge within the WFR scope of practice that can be included or excluded at the discretion of the course provider to meet the specific needs of the student and the context in which they will use their WFR training. Elective skills and topics require additional course time.

## **SCUBA Diving Injuries**

- Assessment:
  - Know the physiology of Self-Contained Underwater Breathing Apparatus (SCUBA) and breathing gas under pressure.
  - Know the basic pathophysiology and signs and symptoms of pulmonary overpressure problems and decompression sickness.
- Treatment:
  - Stabilization of critical system problems.
  - Provide supplemental high-flow oxygen when available.
  - Contact Divers Alert Network or other professional support and begin an urgent evacuation for decompression and medical assistance.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider diver history and experience, depth of dive, number of dives in 24 hours, and gas mixture.

## **Psychological First Aid**

- Recognize signs of stress in participants and colleagues.
- Understand the Stress Continuum Model and how it can be applied to participants during a wilderness trip and members of a rescue or medical team, and to organizations.

## **Behavioral Health/Mental Health Emergencies**

- Recognize when a patient is in crisis.
- Assess relevant personal history.
- Assess for risk of harm to self or others.
- Provide support and implement appropriate interventions.
- Consult with a mental health professional as needed/able.
- Assess the need and urgency of evacuation.



## Marine Toxins/Envenomations

- Assessment:
  - Recognize signs and symptoms of nematocyst stings, venomous spines, bites, and stings.
- Treatment:
  - Treat Nematocysts—jellyfish, siphonophores, corals, anemones—by removing tentacles followed by an acetic acid wash (if unfamiliar with species, test first) and subsequent submersion in hot water (113° F/45° C) for 45 minutes.
  - Treat venomous marine spine injuries with hot water soak until pain is relieved or 30-90 minutes; follow with standard wound care.
  - Monitor for respiratory distress or failure and provide rescue breathing as needed.
  - Monitor for anaphylaxis; treat as necessary.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Identify predisposing environmental and clinical conditions. Consider inquiring about local knowledge, wearing stinger suits to protect from nematocysts, Research behavior patterns and habitat before entering their territory; prevention equals avoidance.

## SAR Fundamentals

- Understand fundamental concepts of search and rescue, Incident Command System (ICS), and evacuation plans.

## Emergency Childbirth

- Assessment:
  - Recognise the signs and symptoms of a high-risk pregnancy that warrant an urgent evacuation (persistent pelvic pain or bleeding, persistent headache, vaginal bleeding, hypertension, fever, shock, trauma, seizures).
  - Familiarity with the stages of labor. Transport/evacuate in stage 1 if possible.
- Treatment:
  - Identify BSI and field equipment suitable for delivery.
  - Assist with the delivery.
  - Recognize and treat common problems during delivery (Altered mental status or seizures, prolonged labor without delivery, heavy bleeding before or after delivery, limb or breech presentation, cord prolapse).
  - Recognize and treat common problems for newborns (obstructed airway, inadequate respirations, low pulse rate, hypothermia).
  - Perform rescue breaths and CPR when indicated.
  - Deliver and protect the placenta.
  - Assess the need and urgency of evacuation.
- Prevention:
  - Pregnant women should avoid recreating in remote regions in the third trimester of pregnancy.

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