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# NWCG Standards for Wildland Fire First Aid

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*NWCG Standards for Wildland Fire First Aid* establishes minimum standards for first aid for wildland fire environments. Conventional first aid standards generally presume proximity to Emergency Medical Services and definitive care with minimal response times. As such, they do not address the unique nature of and austere environments in which wildland fire personnel frequently operate.

The objective of these minimum standards is to support first aid training appropriate for the remote working environment and first aid skills specific to the occupational and operational needs of wildland firefighters, including leadership and communication.

NWCG standards are interagency by design; however, the decision to adopt and utilize them is made independently by the individual member agencies and communicated through their respective directives systems. The intent of *NWCG Standards for Wildland Fire First Aid* is to address the gaps in traditional first aid courses and the wildland fire environment. *NWCG Standards for Wildland Fire First Aid* could be met through a variety of methods, including supplementing traditional first aid courses with existing resources or through development and utilization of wildland fire specific first aid training programs.

# Table of Contents

# Occupational Safety and Health Administration (OSHA) First Aid Requirements

## OSHA First Aid Definition

First aid means to provide medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a one-time, short-term treatment, and requires little technology or training to administer. First aid can include cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; draining blisters; removing debris from the eyes; and drinking fluids to relieve heat stress. See, https://www.osha.gov/medical-first-aid/recognition.

## 29 CFR 1910.151(b)

The first of three OSHA Code of Federal Regulations (CFR) first aid training requirements that apply to wildland fire operations is 29 CFR 1910.151(b), which states that employers are required by OSHA to have a person or persons adequately trained to render first aid for worksites that are not in near proximity to an infirmary, clinic, or hospital. The design of the first aid training for a particular workplace should reflect the known and anticipated risks of the specific work environment. Unique conditions at a specific worksite may necessitate the addition of customized elements to the first aid training program. OSHA's "Best Practices Guide, Fundamentals of a Workplace First Aid Program," OSHA 3317-06N 2006, while not a standard or regulation, is advisory in nature, informational in content, and is intended to assist employers in providing a safe and healthful workplace.

## 29 CFR 1910.266

The second OSHA requirement that requires training on specific first aid subjects is outlined in 29 CFR 1910.266 (Logging Operations). The regulation requires that minimum first aid and Cardiopulmonary Resuscitation (CPR) training include the following content:

- The definition of first aid.
- Legal issues of applying first aid (Good Samaritan Laws).
- Basic anatomy.
- Patient assessment and first aid for the following:
  - Respiratory arrest
  - Cardiac arrest
  - Hemorrhage
  - Lacerations/abrasions
  - Amputations
  - Musculoskeletal injuries
  - Shock
  - Eye injuries
  - Burns
  - Loss of consciousness
  - Extreme temperature exposure (hypothermia/hyperthermia)
  - Paralysis
  - Poisoning
  - Loss of mental functioning (psychosis/hallucinations, etc.)
  - Artificial ventilation

    - Drug overdose
- CPR.
- Application of dressings and slings.
- Treatment of strains, sprains, and fractures.
- Immobilization of injured persons.
- Handling and transporting injured persons.
- Treatment of bites, stings, or contact with poisonous plants or animals.

### 29 CFR 1910.1030

The third OSHA first aid training requirement is 29 CFR 1910.1030 (Bloodborne Pathogens). Any first aid program must have bloodborne pathogen training. This regulation requires the following:

- Know bloodborne pathogens risk management and mitigation concepts and how to use and improvise basic body-substance isolation (BSI) equipment.
- Skills:
    - Recognize the following necessities:
        - Risk potential of exposure from blood and or other bodily fluids.
        - Methods for mitigating exposures like BSI equipment.
    - Consider the following circumstances:
        - Improvising BSI equipment and intervention techniques to reduce bloodborne pathogen exposures (hands only CPR).
        - Requesting additional resources to mitigate exposure risk.
        - If exposure occurs ensuring immediate medical follow-up, documentation, and reporting.
    - Decide if bloodborne pathogens exposure is possible.
    - Initiate, delegate, or perform risk mitigations to limit exposure to bloodborne pathogens. Risk mitigation factors include the following equipment or techniques: BSI, PPE, and hand washing.

# Wildland Fire First Aid

Wildland fire first aid includes complementary duties of leadership and medical skills for common operational injury and illness, tailored to the unique nature and austere wildland fire occupational work environments not addressed in contemporary first aid training outlined by OSHA. This often consists of planning for emergencies, performing lifesaving treatment, and preparing for or transporting with emergency medical service (EMS) responders to the next appropriate level of care for the patient.

### Primary Users

All personnel who have earned and possess an Incident Qualification Card, or Red Card, should be trained in wildland fire first aid.

### Functional Roles

The priorities for persons trained in wildland fire first aid are to ensure scene safety, administer aid, communicate what is happening up the chain of command and transport the patient if necessary. These duties can require additional people and resources, depending on the severity of the injury and complexity of the situation.

The unique conditions specific to wildland fire necessitate two distinct functional roles: patient-care provider and on-scene Incident Commander (IC) of the Incident within an Incident (IWI). All wildland fire first aid trained personnel can perform in the roles of patient-care provider and/or an on-scene IC during an IWI. These two roles of patient-care provider and on-scene IC can be filled by one person if necessary. However, they should be separated as additional qualified personnel arrive.

### Patient-care Provider

The patient-care provider is the most medically qualified person on-scene and has the following essential duties to perform at the level of training they possess ensuring scene safety, administering aid and lifesaving interventions, making an initial determination of the patient's condition (e.g., red, yellow, green, or black), and communicating to the on-scene IC.

### On-scene IC of the Incident within an Incident

An IWI is an occurrence of a serious accident or other medical emergency during an incident. The on-scene IC is the person responsible for all aspects of an emergency response including developing incident objectives, managing incident operations, allocating resources, and accepting responsibility for all persons involved. The on-scene IC of an IWI has the essential duty to manage the IWI and communicate the medical incident report. IWI related duties should be commensurate with the scope of duties outlined in NWCG Incident Position Descriptions (IPD). For example, a Firefighter Type 2 (FFT2) should be familiar with the medical incident report and how to communicate important information on patient status, locations, and resource needs, but may not be qualified as an on-scene IC. Under certain circumstances it may be necessary for personnel with less qualification to initiate the IWI process until more qualified personnel arrive.

# Essential Duties of Wildland Fire First Aid

## Perform Lifesaving Interventions

Lifesaving interventions are basic first aid actions taken to stabilize those systems necessary to life and should not be delayed. These systems refer to the circulatory, respiratory, and nervous systems of the body. Lifesaving interventions should be performed while additional resources are obtained and/or transport to the next level of care occurs.

### Perform an Assessment

- Know basic body systems, processes, anatomy, and assessment techniques for circulatory, respiratory, and nervous systems.
- Skills:
  - Recognize the following conditions or circumstances:
    - Identify the signs of life and threats to life by assessing the patient's responsiveness to voice and touch, the patient's skin color and temperature, and the severity of bleeding and other perceivable injuries.
    - Identify and immediately act on the need for life-/limb-/vision-saving interventions.
  - Consider the following circumstances:
    - Environmental factors (cold, drowning, lightning).
    - Communicate with the on-scene IC on any additional resources needed.
  - Decide if the patient has any potentially life-threatening injuries or illness.
  - Initiate, delegate, or perform lifesaving interventions.

**Recognize Shock**

- Know common causes and interventions for shock.
- Skills:
  - Recognize the following conditions:
    - Signs of dehydration.
    - Life-threatening bleeding.
    - Altered mental status.
  - Consider environmental conditions, physical exertion, and work environment as factors for dehydration.
  - Decide on appropriate intervention.
  - Initiate appropriate intervention to control serious bleeding:
    - Tourniquet.
    - Well-placed direct pressure.
    - Pressure bandage.

**Recognize Respiratory Problems**

- Know common causes and interventions for respiratory distress/failure (asthma, allergic reaction/anaphylaxis, airway obstruction, and trauma).
- Skills:
  - Recognize respiratory distress/arrest.
  - Consider environmental conditions such as excessive smoke or heat.
  - Decide on an appropriate intervention.
  - Initiate appropriate intervention to include the following actions:
    - Maintain appropriate and comfortable positions.
    - Maintain the patient's airway and supporting ventilation.
    - Apply abdominal thrusts for choking.
    - Consider/request transport options.
    - Rescue breathing.

**Recognize Altered Mental Status**

- Know common causes and interventions for altered mental status:
  - Shock
  - Trauma
    - External or internal blood loss
    - Injury to brain
  - Medical
    - Extremes of temperature
    - Inadequate oxygen
    - Low blood sugar
    - Seizure
    - Stroke
    - Toxins
- Skills:
  - Recognize altered level of consciousness (e.g., loss of consciousness), altered mental status (e.g., confusion, disorientation, combativeness).
  - Consider if a spinal injury may have occurred.
  - Decide on the appropriate intervention.

- Initiate appropriate intervention:
  - Protect the airway.
  - Protect the spine.
  - Monitor the patient for changes in mental status.
  - Consider/request transport options.

## Identify the Severity of a Patient's Condition

The patient severity determination is dynamic as it reflects patient condition and should be reassessed often and communicated to the on-scene IC, as it drives the risk management process and the development of the patient transport plan.

Information on the patient's severity is gathered through an assessment of the patient's condition by examination, mechanism of injury (MOI) and overall situational awareness. MOI is the force, or forces, that caused the injury to the patient's body. Situational awareness is knowing what is going on around you. See *NWCG Incident Response Pocket Guide (IRPG),* PMS 461, https://www.nwcg.gov/publications/461, pages 114 and 118.

### Make a Patient Severity Determination

- Know basic patient severity concepts in terms of priority for treatment:
  - Green = Minor. Treatment can be delayed or provided in the field. Green represents minor injury or illness also known as "walking wounded." The patient can still be productive in a work environment and does not pose a threat to themselves or others. Little or no risk tolerance for transport and transport priority communicated through a "non-Emergency transport."
  - Yellow = Delayed. Treatment and transport can be delayed. Yellow represents moderately serious injury or illness. The patient is no longer productive in a work environment. The patient does not have life threating injuries or illness. In general, these patients can talk in full sentences, have no changes to their mental status and can communicate their injuries to the responders. These patients will require transport and further evaluation out of the field in a timely manner.
  - Red = Immediate. Serous life-threatening injury. Red represents life-, vision-, or limb-threatening injury or illness. Patients may have significant hemorrhage, changes in level of consciousness, chest pain, shortness of breath, abdominal pain, or other signs of significant injury or illness. These patients require immediate transport. Patients may not talk in full sentences, may be confused, and may have difficulty communicating to the care providers. Transport priority is communicated through a "Medical Emergency" and a request to clear any radio frequency for emergency traffic is appropriate.
  - Black = Deceased. Black represents patients with obvious signs of death such as decapitation, decomposition, burned beyond recognition, or with injuries that are obviously not compatible with life. Law enforcement should be requested, and transport of the body can be delayed.
- Skills:
  - Recognize patients with life-threatening conditions should be designated as red priority.
  - Consider patient severity is dynamic and reassess often. The on-scene IC manages the IWI and implements the patient transport plan with input from the patient-care provider.
  - Decide on patient severity using red, yellow, green, or black.
  - Initiate on-going communication with the on-scene IC about patient severity and any need for additional resources.

## Manage an IWI

The on-scene IC of an IWI puts into effect the patient transport plan with appropriate resources using risk management concepts. They communicate using an approved process and common terminology and works with EMS responders to deliver patients to definitive care. The decisions for the patient transport plan are made utilizing available job aids located in the Incident Action Plan (IAP) and the NWCG Incident Response Pocket Guide (IRPG) for patient assessment, patient severity, operational risk management process, aviation, and injury/fatality procedures and the Medical Incident Report (MIR) for communication.

### Perform as the On-Scene IC of the IWI

- The IWI IC role should only be assumed in accordance with Agency Administrator/Incident (as described in the IAP, local medical plan, IC, IRPG, etc.) direction and be commensurate with the scope of duties outlined in NWCG IPDs.
- Know basic Incident Command System (ICS) concepts, traditional IC roles and responsibilities, and tasks specific to an IWI.
- Skills:
  - Recognize the following necessities:
    - Declaring an IWI that is separate from the initial incident.
    - Assigning ICS roles appropriate for incident complexity.
    - Developing a patient transport plan that accounts for multiple scenarios involving resources and changing patient condition such as a Primary/Alternative/Contingency/Emergency (PACE) plan.
  - Consider the following circumstances:
    - On-scene IC roles and responsibilities during an IWI are consistent with skills already fundamental to firefighting such as communication, decision making, situational awareness, leadership, adaptability, flexibility, and assertiveness.
    - Naming the IWI so that it does not compromise Personally Identifiable Information (PII) such as the patient or crew members names.
    - Incident complexity by continually assessing the span of control and adjusting ICS structure and positions as needed.
    - Balancing high-risk transport options with the severity of the patient's condition and the time needed to deliver a patient to the next level of care.
    - Transfer of on-scene patient-care provider may occur as patient condition changes and/or more qualified medical personnel respond.
    - Documenting the exact location of injured personnel and any equipment.
  - Decide from the circumstances the following questions:
    - How can hazards to responders, patients, and initial incident be mitigated through the operational risk management process?
    - What to name the IWI?
    - What is the PACE patient transport plan to next level of care?
    - Are additional or more qualified personnel or resources needed to stabilize the patient's life-threatening conditions, implement the transport plan, or provide a higher level of medical care?
  - Initiate, delegate, or perform the following activities:
    - Manage the IWI by communicating through the chain of command using an approved job aid with standardized terminology.

**Patient Transport Decision Making by IWI IC**

- Know the operational risk management process in the context of patient transport.
  - IWI patients should be transported to definitive care using an appropriate method in a timely manner. Because of the complex, unique, and austere nature of the wildland fire environment, the on-scene IC should assess and reassess risk case-by-case to implement patient transport.
  - An appropriate transport method depends on multiple dynamic factors and should be determined through a continual evaluation of resources available, capability, reliability, environmental conditions, location of the patient, and the severity of the patient's condition. A direct correlation does not exist between an appropriate transport type and the severity of a patient's condition. In other words, severity level red does not necessarily mean transport by helicopter.
  - Timely is also subjective with multiple factors and risk tolerance based on patient severity and transport type. Patients identified with severity levels of yellow and green may have the luxury of time, whereas a patient with severity level red does not.
- Skills:
  - Recognize the following necessities:
    - The need for a case-by-case operational risk management process per the *NWCG Incident Response Pocket Guide (IRPG),* PMS 461*,* for patient transport. The risk management process has multiple dynamic factors and requires continual reassessment.
    - Patient severity can change; communication and coordination with the patient-care provider is essential for planning patient transport.
    - Identifying the transport priority in coordination with the patient-care provider.
  - Consider the following circumstances:
    - Environmental factors, both current and predicted (weather, time of day, fire activity, etc.)
    - The location and response time for professional responders.
    - Requesting multiple transport resources simultaneously for the same mission and staging additional resources.
    - Hazards and operational impact associated with transport options for responders, the initial incident personnel, other potential IWIs, the patient, and need to balance resources.
    - Transporting a patient always has some risk for responders. Risk tolerance for the transport of a black or green patient should be low.
  - Decide and order what you need and anticipate needing.
  - Initiate, delegate, or perform the operational risk management process. Communicate the plan through the chain of command using an approved job aid with standardized terminology.

**Communicate the Medical Incident Report (MIR) to Appropriate Contact**

- Know how to complete an MIR using critical information and how to deliver an MIR over the radio. The MIR is the current approved job aid for communicating standardized terminology for an IWI.

- Skills:
  - Recognize that the proper title of the approved communication tool is the MIR. The use of slang or alternate titles such as "Nine Line" or "Eight Line" should be discouraged to support approved terminology.
  - Determine appropriate contact (supervisor/dispatch) and radio frequencies for initial notification of a MIR and managing an IWI (command or tactical frequency) if not specifically addressed in the IAP medical plan. Factors to consider include large fire, initial attack, project work, and, or travel status when determining appropriate contact.
  - Decide patient transport priority, Non-emergency (green and yellow) or Medical Emergency (red).
  - Initiate MIR for IWI to supervisor/dispatch on appropriate frequency.

## Perform First Aid

The ability to perform basic treatments outlined in the 29 CFR 1910.266 (Logging Operations) and operational wildland fire first aid including the skills for identifying high-risk signs and symptoms.

### Operational Wildland Fire First Aid

The following are the known and anticipated injuries/illnesses of operational wildland fire first aid:

<u>Musculoskeletal injuries</u>

- Know basic musculoskeletal anatomy and be able to identify obvious injuries or abnormalities.
- Skills:
  - Recognize the following conditions:
    - Signs and symptoms of musculoskeletal injury (inability to use, angulated, feels unstable, persistent distal impairment of circulation/sensory/motor (CSM) function).
    - High-risk MOI and severity of trauma; for example, trauma resulting from high velocity impact such as in a motor vehicle accident (MVA), climbing falls, high speed falls from greater than 3 ft (1 meter), or landing on head or buttocks (axial loading).
    - Signs and symptoms of high-risk problems associated with musculoskeletal injuries such as fractures of the femur or pelvis, open fractures, persistently impaired CSM, dislocations, spine tenderness and pain, loss, or impaired motor or sensory function.
  - Consider the following options:
    - Splints that provide adequate stabilization, are comfortable for extended transport situations, and allow for on-going monitoring of CSM.
    - Stabilization of the spine with hands.
    - Rolls, lifts, and extrication as needed to facilitate patient examination and protection.
    - Preparing to assist higher level medical providers with stabilization/protection on a litter, vacuum splint, or backboard (or protected on the ground) for obvious or potential spine injuries.
  - Decide on need and urgency of evacuation. High-risk problems include:
    - Open fractures.
    - Volume shock (blood loss).
    - Altered CSM secondary to an injury.
    - Signs and symptoms of spine or spinal cord injury.
  - Initiate appropriate treatment (e.g., splinting).

Burns

- Know basic burn identification and treatment.
- Skills:
  - Recognize the following characteristics:
    - Superficial, partial, and full-thickness burns.
    - Approximate body surface area involved and location of burns.
    - Medical emergency.
    - Facial/airway burns.
    - Circumferential burns.
  - Consider the following conditions, circumstances, and options:
    - Patients with burns often need help maintaining appropriate body temperature.
    - Evaluate for other injuries that may not be acknowledged by the patient because of the distracting pain from the burn.
    - Burns beyond those that can be treated with first aid must be evaluated by a higher level of care.
  - Decide if evacuation is necessary, and if so, the level of urgency. Most burns are evacuated due to patient comfort or lack of dressing materials.
  - Initiate appropriate treatment such as the following:
    - Immediate cooling (stop the burning).
    - Protect with dry clean, non-adherent dressing that is loosely applied.

Other skin injuries

- Know basic identification of high-risk soft tissue injuries (wounds) and infection.
- Skills:
  - Recognize the following characteristics:
    - Low-risk vs high-risk wounds.
    - Signs and symptoms of local versus systemic infection.
  - Consider the following options:
    - Cleaning low-risk wounds by removing debris, scrubbing, and irrigating (potable water under light pressure).
    - Managing blisters (prevention, hygiene, and treatment).
  - Decide if evacuation is necessary, and if so, the level of urgency. Factors affecting the urgency of evacuation include the following high-risk wounds:
    - Grossly contaminated (e.g., wounds made by a chainsaw, road rash).
    - Crush injuries.
    - Open joint spaces.
    - Animal bites.
  - Initiate appropriate treatment:
    - Clean, dress, and bandage wounds.

Medical

- Know signs and symptoms of high-risk medical emergencies and initiate reasonable and prudent field management, including evacuation for potentially life/vision-threatening problems.
- Skills:
  - Recognize the following circumstances and conditions:
    - The role of camp hygiene (hand washing, kitchen sanitation, food preparation, and water disinfection).

        - Cold and flu-like illness.
        - Abdominal pain.
        - Hypoglycemia (low blood sugar) and hyperglycemia (high blood sugar).
    - Consider the following circumstances:
        - Productivity of the patient in the work environment.
        - If the patient poses a risk to self or others.
    - Decide if evacuation is necessary, and if so, the level of urgency. Factors affecting the urgency of evacuation include the following high-risk symptoms:
        - Chest pain (profuse sweating, nausea, combined with jaw/neck/arm pain, pain radiating into the back).
        - Vomiting and diarrhea (blood, fever, abdominal tenderness, dehydration).
        - Persistent high fever (altered mental state, headache).
        - Respiratory distress, (wheezing, fever, coughing up colored phlegm, chest pain, coughing up blood).
        - Abdominal pain (persistent local tenderness, fever, persistent vomiting, any noticeable blood in stool, urine, or vomit).
        - Altered mental status.
    - Initiate appropriate treatment:
        - Isolate patients with flu-like symptoms to minimize exposure.
        - Consider and request transport options.
        - Transport the patient to definitive care.

<u>Bites, stings, or contact with poisonous plants or animals</u>

- Know general principles of toxins, poisoning and envenomation (injected, ingested, inhaled, and absorbed).
- Skills:
    - Recognize the following circumstances:
        - Injected toxins by snakes, bees, and arthropods (e.g., insects, arachnids, scorpions, and spiders).
        - Poisonous plant reactions (poison ivy, oak, sumac).
    - Consider the following actions and conditions:
        - Scene safety (abnormal colored smoke, bees,).
        - Role of clothing, netting, repellents, and insecticides.
        - Human behaviors that are factors in snakebite incidents.
    - Decide if evacuation is necessary, and if so, the level of urgency. Factors affecting the urgency of evacuation include the following high-risk symptoms:
        - Altered level of consciousness (LOC).
        - Respiratory distress.
        - Signs and symptoms of envenomation.
        - Anaphylaxis (allergic reaction).
    - Initiate appropriate treatment.
        - Injected poisons:
            - Immobilize the limb and avoid unproven or discredited treatments that may cause harm (ice, incision and suction, electricity, tourniquets, compression, etc.).
            - Monitor for signs and symptoms of envenomation.
        - Ingested poisons:
            - Consider/request transport options.
        - Inhaled poisons (commonly carbon monoxide (CO); occasionally other gases in smoke):

        - Remove from exposure, support respirations, and position of comfort.
        - Consider/request transport options.
    - Absorbed poisons:
        - Remove contaminated clothing.
        - Flush area with water and wash with soap.
        - Consider/request transport options.

Anaphylaxis

- Know signs and symptoms of local, mild allergic, and high-risk systemic anaphylactic reactions.
- Skills:
    - Recognize signs and symptoms of anaphylaxis.
    - Consider the following circumstances:
        - If patient has personal epinephrine auto injector and/or diphenhydramine (Benadryl).
        - Potential of a biphasic reaction (i.e., a recurrence of anaphylaxis after appropriate treatment).
        - Patients with no history can develop anaphylaxis.
    - Decide if evacuation is necessary, and if so, the level of urgency. Factors affecting the urgency of evacuation include the following high-risk circumstances or problems:
        - Anyone who receives epinephrine needs to be evacuated to higher level care.
        - Airway involvement.
        - Respiratory distress or arrest.
        - Swelling of the face, mouth, or tongue.
        - Hives over large percentage of the patient's body.
    - Initiate appropriate treatment:
        - Apply cool compresses to local reactions.
        - Consider/request transport options.

Rhabdomyolysis

- Know causes, risk factors, signs, and symptoms of rhabdomyolysis which can be a life/limb-threatening condition caused by the breakdown of muscle tissue.
- Skills:
    - Recognize signs and symptoms of rhabdomyolysis:
        - Pain out of proportion.
        - Secondary to exertion or crush injuries.
        - Dark urine.
        - Loss of function/strength.
    - Consider relationship with compartment syndrome and the importance seeking higher level of care when the possibility of rhabdomyolysis exists.
    - Decide if evacuation is necessary, and if so, the level of urgency. Factors affecting the urgency of evacuation include any rhabdomyolysis signs or symptoms. Rhabdomyolysis may be a life/limb-threatening emergency.
    - The diagnosis of rhabdomyolysis cannot be excluded without laboratory blood work.
    - Initiate oral hydration treatment of water and electrolytes.
        - Consider/request transport options.

Hyperthermia (elevated body temperature)

- Know signs and symptoms of heat stroke, heat exhaustion, and dehydration.
- Skills:
  - Recognize the following circumstances or conditions:
    - The correlation between heat exhaustion and proper nutrition (e.g., hydration, and food).
    - Heat stroke as a brain injury caused by temperature independent of hydration.
    - Altered LOC as a critical sign or symptom of heat stroke.
  - Consider the following conditions, strategies, or circumstances:
    - Predisposing environmental conditions and prevention strategies.
    - Recovering fully from dehydration, heat stress, and injury can take several days.
    - Evacuation if unable to manage fluid intake or output or if the patient's condition does not improve.
  - Decide on the need and urgency for evacuation. A high-risk factor is altered mental status.
  - Initiate appropriate treatments:
    - For heat exhaustion/dehydration treat the patient with oral fluids and electrolytes, rest, and cooling.
    - For heat stroke, initiate aggressive, immediate cooling of the patient.
    - Consider/request transport options.

Hypothermia (low body temperature)

- Know the signs and symptoms of hypothermia and local cold injury.
- Skills:
  - Recognize the following conditions:
    - Mild and severe hypothermia.
    - Frostbite and non-freezing cold injury.
  - Consider predisposing environmental conditions and prevention strategies.
  - Decide on the need and urgency for evacuation.
    - High-risk factors include the following problems:
      - Inability to stabilize the patient's body temperature.
      - The patient exhibits signs of altered mental status.
  - Initiate appropriate treatment for the symptoms and conditions:
    - For mild hypothermia, provide the patient oral fluids and calories, warm them, protect the patient from the environment, and evacuate the patient if the patient isn't showing signs of improvement.
    - For severe hypothermia, protect the patient's body from heat loss, handle the patient gently, and consider/request transport options.
    - For a local cold injury that hasn't frozen, warm the area of injury only if the risk of freezing is minimal. If a local cold injury is frozen, do not use radiant heat or massage. Warm the area of injury only if the risk of refreezing is absent.
    - Consider/request transport options.

Altitude sickness

- Know signs and symptoms of altitude-related, high-risk problems.
- Skills:
  - Recognize patients who need to stop ascent and acclimatize or descend and evacuate.
  - Consider the following conditions:
    - Predisposing environmental conditions and prevention strategies.

        - Logistics for resources and the time required for assisting personnel to acclimate to the altitude.
    - Decide on the need and urgency for evacuation.
        - High-risk factors include:
        - A patient experiencing shortness of breath at rest after mild exertion.
        - A patient demonstrating changes of mental status.
    - Initiate appropriate treatment based on the situation:
        - Stop ascent if the patient is symptomatic.
        - Descend immediately if the patient experiences shortness of breath and/or mental status changes.

Lightning

- Know common mechanisms of lightning injury and common presentation of lightning injury (cardiovascular, neurological, burns).
- Skills:
    - Recognize high-risk weather conditions and prevention strategies. Have a lightning plan, know local weather patterns, leave the scene, and/or seek adequate shelter.
    - Consider that patients who present in cardiac arrest respond well to rescue breathing and CPR/defibrillation (AED).
        - Respiratory muscles may have a prolonged recovery and rescue breathing may need to continue after return of pulse.
    - Decide if evacuation is necessary, and if so, how urgent is the need to evacuate?
    - Initiate appropriate treatment including reverse triage for treating patients in cardiac and respiratory arrest.

The *NWCG Standards for Wildland Fire First Aid* is developed and maintained under the direction of the Emergency Medical Committee (EMC), an entity of the National Wildfire Coordinating Group (NWCG).

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