Participant Workbook

2021 Edition

Typical Course Syllabus

DAY 1 (*8AM – 7PM; LUNCH IS FROM 12:30 PM – 1:15 PM*)

- HOUSEKEEPING & INTRODUCTIONS
- INTRO & BASIC CONCEPTS
- THE PATIENT ASSESSMENT SYSTEM
- EVACUATION CONSIDERATIONS
- SOAP NOTES & DOCUMENTATION*
- WILDERNESS RISK MANAGEMENT*
- WILDERNESS FIRST AID KITS*
- OTC MEDICATIONS*
- SHOCK, ACUTE STRESS REACTIONS & CARDIAC EMERGENCIES
- TRAUMATIC BRAIN INJURIES
- SUSPECTED SPINAL INJURY MANAGEMENT

DAY 2 (*8AM – 7PM; LUNCH IS FROM 12:30 PM – 1:15 PM*)

- BACKCOUNTRY ILLNESSES
- DIABETIC EMERGENCIES
- SEIZURES
- GASTROINTESTINAL & FLU-LIKE ILLNESSES
- COLD EMERGENCIES & HYPOTHERMIA
- HEAT & COLD EMERGENCIES
- WOUND MANAGEMENT
- BURNS & BLISTERS
- ORTHOPEDICS INJURIES
- CHEST WALL INJURIES
- DISLOCATION MANAGEMENT
- ALLERGIES & ANAPHYLAXIS
- LIGHTNING SAFETY
- NORTH AMERICAN SNAKEBITES
- NORTH AMERICAN VENOMOUS SPIDERS
- TICK SAFETY BASICS
- SUBMERSION EMERGENCIES & DROWNING*
- INCIDENT COMMAND BASICS*
- FINAL WRITTEN **OR** PRACTICAL EXAM**

* Denotes an ***elective*** topic that is optional, however we do our best to include it in class.

VITAL SIGNS CHEAT SHEET

LOR: Level of Responsiveness

Alert & Oriented (x 4)

- **4** → Know who, where, when, what (best)
- **3** → Know who, where, when (good)

- **2** → Know who & where (okay)
- **1** → Only know who they are (bad)
- **0** → Speaks only incoherently (very bad)

ALOR

Verbal *stimuli response only*

Painful *stimuli response only*

Unresponsive *to any stimuli*

STOP-EATS ⇨ *ALOR*

Sugar
Temperature
Oxygen
Pressure
-
Electricity
Altitude
Toxins
Salt

HR: Heart Rate

[15 sec X 4 = Min]

- 60-100 BPM (strong, regular)

ⓘ Low HR? Does Pt "*fit the build*"?
ⓘ Irregular Rhythms = Normal? A-Fib?

RR: Respiratory Rate

[15 sec X 4 = Min]

- 12-20 Average (8-30 Acceptable)
- Effortless, Painless

ⓘ Shallow – Gurgling/Wheezing – SoB
🚫 Painful/Labored – Agonal – Irregular Rhythms

SCTM: Skin Color/Temp/Moisture

[*UNREMARKABLE*]

- ***Color:*** Flush – Cyanotic – Pallor – Jaundice – (*PINK?*)
- ***Temp:*** Hot – Cold (*WARM?*)
- ***Moisture:*** Dry – Wet (*UNREMARKABLE?*)

Common Abbreviations

A’	Anticipated
ABC	Airway, Breathing, Circulation
ABD	Abdomen
ALOR	Altered Level of Responsiveness
AMS	Acute Mountain Sickness
AOSTF	Arrived On Scene To Find…
ASA	Aspirin
ASR	Acute Stress Reaction
AVPU	**A**lert + Oriented **V**erbal **P**ain **U**nresponsive
BSI	Body Substance Isolation
C/C	Chief Complaint
CNS	Central Nervous System
CPR	Cardiopulmonary Resuscitation
CSM	Circulation, Sensation, Movement
DNA	Did Not Assess
Fx	Fracture
GI	Gastro-Intestinal
HACE	High Altitude Cerebral Edema
HAPE	High Altitude Pulmonary Edema
HELPS	**H**ydrate, **EL**evate, **P**ain mgt., **S**tabilize
Hx	History
ICP	Intra-Cranial Pressure
Kg	Kilogram (= 2.2 pounds)
LOR	Level of Responsiveness
MI	Myocardial Infarction
MOI	Mechanism of Injury
NKDA	No Known Drug Allergies
NSAID	NonSteroidal Anti-Inflammatory Drug
NVD	Nausea, Vomiting, Diarrhea
OTC	Over the Counter
PAS	Patient Assessment System
PCN	Penicillin
PPE	Personal Protective Equipment
PO	By Mouth
PRN	As Needed
Pt	Patient
PPV	Positive Pressure Ventilations
PROP	Position of Comfort Reassurance Oxygen PPVs
ROM	Range of Motion
Rx	Prescription
S/Sx	Signs & Symptoms
SAMPLE	**S**igns & Symptoms **A**llergies **M**edications **P**ertinent Medical History **L**ast In’s & Outs **E**vents leading up to…
STOP-EATS	**S**ugar **T**emperature **O**xygen **P**ressure **E**lectricity **A**ltitude **T**oxins **S**alts
SOAP	**S**ubjective **O**bjective **A**ssessment **P**lan
SOB	Shortness of Breath
TBI	Traumatic Brain Injury
TBSA	Total Body Surface Area
TIP	Traction into Place
Tx	Treatment
URI	Upper Respiratory Infection
UTA	Unable to Assess
UTI	Urinary Tract Infection
WET	**W**ell-aimed direct pressure **E**levate **T**ourniquet

Shock

Shock is a lack of oxygenated blood flow to the vital organs; in particular, the brain, lungs, and heart. The most common types of shock are an acute stress reaction (mimics true shock but goes away with treatment), hypovolemic shock (loss of fluids), and vasogenic (sepsis or anaphylaxis).

Signs + Symptoms: Initial (compensatory phase)

- Anxiousness & disorientation
- Rapid, shallow heartbeat & respirations
- Red, flushed skin
- Nausea & vomiting
- Unusual sweating
- Dry mouth & excessive thirst

Signs + Symptoms: Late (decompensatory phase)

- Feeling cold
- Altered level of responsiveness
- Pale, cyanotic, clammy skin
- Rapid, weakening pulse
- Rapid, shallow respirations
- Dropping blood pressure

Treatment Principles

- Treat early. Treat the cause. Stay calm.
- Insulate the patient from the ground and keep them warm
- Keep the patient flat with legs elevated 6-12 inches
  - Contraindications to elevating the legs: chest pain, abdominal injury, traumatic brain injury

Evacuation Guidelines

- Evacuate any patient whose vital signs do not stabilize or improve over time
- If evacuation is ≤6 hours away, withhold food and water
- If evacuation is ≥6 hours away, rehydrate slowly with electrolytes (½ cup over 20 minutes)
  - Do NOT give sugar (it slows water absorption into the blood stream)

Altered Level of Responsiveness (ALOR)

The eight most common causes of an altered mental status (altered level of responsiveness) are easily remembered using the acronym, STOP-EATS. It so happens that they go in order from most common to least.

STOP-EATS

Sugar	**E**lectricity
Temperature	**A**ltitude
Oxygen	**T**oxins
Pressure	**S**alts

Treatment Principles

- If injury or assessment dictate, stabilize the spine
- Manage the airway and consider positioning the patient on his or her side
- Search for clues to the patient's altered mental status
- Consider administering sugar
- Monitor the patient's LOR for changes

Evacuation Guidelines

- Evacuate anyone with an altered mental status – especially if treatment does not alleviate symptoms.

Traumatic Brain Injuries

The brain can be injured by bruising, bleeding or swelling. Blunt force trauma to the head and a sudden deceleration (whiplash) are the most common causes of a TBI.

Conditions of a Field Confirmed TBI

- Any loss of consciousness (due to head trauma)
- Any degree of amnesia

Signs + Symptoms: Initial

- Persistent vomiting
- Altered level of responsiveness
- Severe headache

Signs + Symptoms: Late

- Disorientation, irritability and combativeness
- Unequal or blown pupils
- Flushed, red face
- Erratic respirations
- Inability to focus vision (squinting, trying to focus)
- Excessive sleepiness & lethargy
- Fluids coming out of the ears or nose (CSF)
- Inability to remember new information (anterograde amnesia)
- Two black eyes; shiners (raccoon eyes) *
- Bruising behind the ears (Battle's signs) *

Treatment Principles

- If positive significant MOI is suspected (with dyspnea), fully immobilize the spinal column
- Elevate the head 6-12 inches
- Consider positioning the patient in the recovery position (on the left side)
- Monitor the patient for the appearance of late signs of a TBI
- Evacuate immediately via any means necessary

Evacuation Guidelines

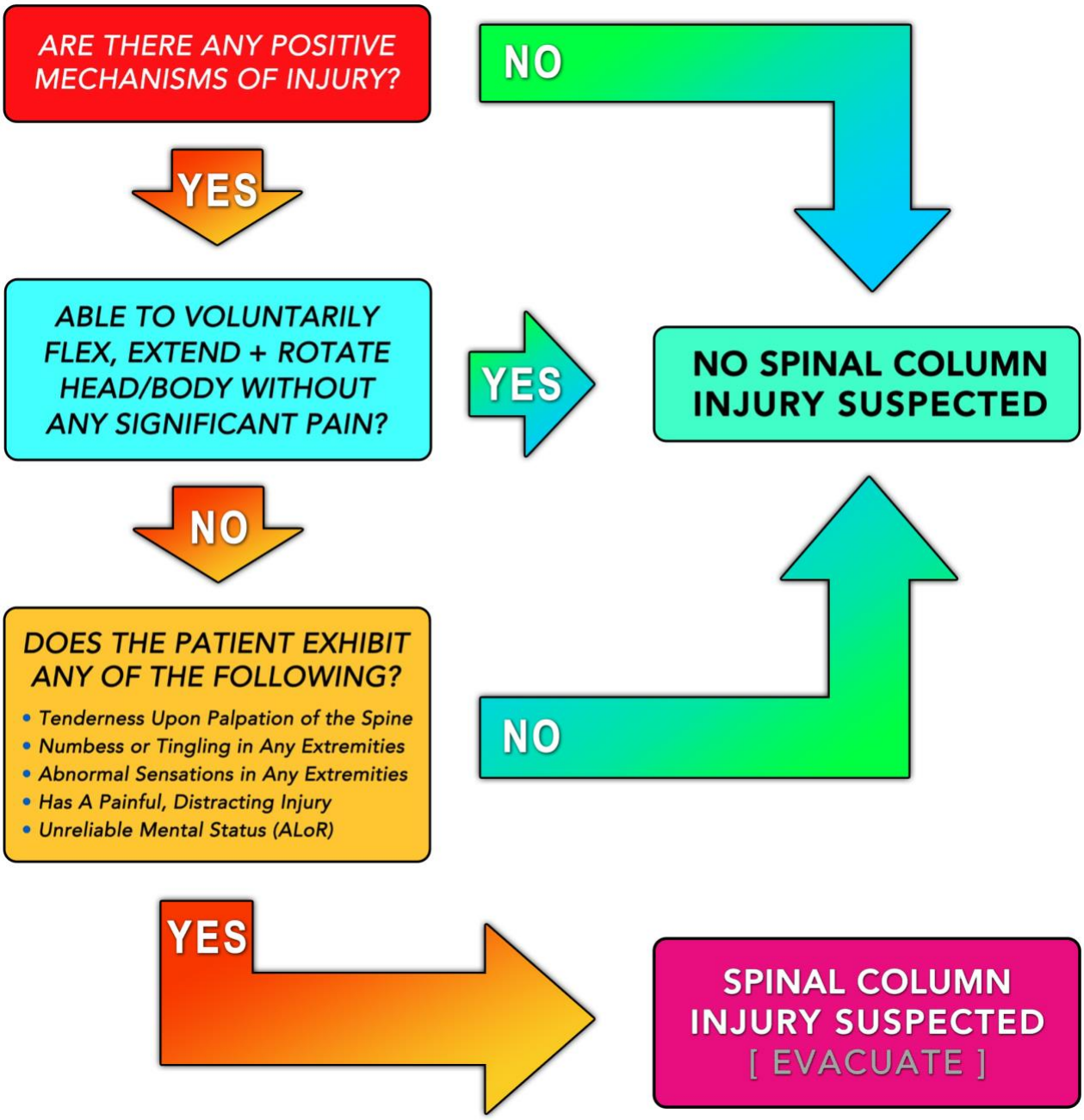
- Evacuate immediately if:
  - The patient lost consciousness (any amount of time) due to head trauma
  - The patient exhibits any late signs or symptoms of a TBI
- If evacuation is not immediately possible:
  - Let the patient rest, but awaken every few hours to assess vital signs
  - Check for anterograde amnesia

Spinal Column Injuries

The spinal cord consists of nerves running continuously from the brainstem to the lumbar. Comprised of 33 vertebrae, the spine supports and protects the spinal cord, and is filled with cerebrospinal fluid (CSF) which allows the cord to move and swell if necessary. Injuries to the cervical spine (neck) may result in trouble breathing, which may be life-threatening. **Above C4, they Breathe No More…**

Positive Significant Mechanisms of Injury:

- Fall w/ Loss of Consciousness
- Evidence of trauma from High Velocity Impact
- Landing on the Buttocks/heels (axial loading)
- Fall from Greater than 3 Feet
- Landing Head-First (compression)
- A Fall onto Rock or other Hard Surface



Start out with finding out if there are the High-Risk factors involved and follow the diagram based upon the answers (YES or NO) to each finding. Upon completion, you will be presented with a ***TREATMENT OUTCOME*** which should help you proceed one way or the other. **Remember:** this is just a guidance tool to help you decide, with reliable certainty, whether or not the patient most likely has a spinal column injury.

Abdominal Illness and Injury

Acute abdominal pain is a symptom of many different medical problems, some of which are urgent and some not. Our role is to assess the patient and decide if an evacuation is warranted.

Abdominal Assessment Tools

- ***What caused the pain? Was it caused by an accident?***
- ***History of the illness***
  - **O**nset - Sudden versus gradual onset?
  - **P**rovoke/palliate - What makes the pain better or worse?
  - **Q**uality - What words describe the pain?
  - **R**egion/Radiate/Refer - Where is the pain? Does it move anywhere? Does anything else hurt?
  - **S**everity - How severe is the pain?
  - **T**ime/trend - How long has the pain been there? Is it getting better or worse?
- ***Are there any associated signs or symptoms?***
  - Blood? Fever?
  - Other people with similar symptoms?
  - Nausea? Vomiting? Diarrhea? Constipation?
  - Recent changes in diet or water intake?
  - Stage in menstrual cycle?
  - History of similar pain?
- ***Physical Exam?***
  - Pain on touch?
  - Rigidity? Guarding? Distention?
  - Bruising?
  - Open wounds?
  - Scars?

Treatment Principles

- Place the patient in a position of comfort (often on their side with knees flexed)
- Maintain hydration with electrolyte solution
- If evacuation is ≤6 hours, give nothing by mouth. If the evacuation is delayed and the patient can tolerate fluids, can swallow, and has a normal mental status, encourage slow rehydration with clear fluids

Evacuation Guidelines

Because it is challenging to correctly assess the severity of abdominal injuries or illnesses in the backcountry, we recommend evacuation for anyone *with abdominal pain that is*:

- Persistent for ≥12 hours, especially if it is constant
- Localized to one specific area of the abdomen
- Accompanied by guarding, tenderness, distension, or rigidity
- Made worse by movement, jarring or heal test

Signs + Symptoms ***That Require*** *Evacuation*

- Blood in the urine, vomit or feces
- Persistent lack of appetite, vomiting, or diarrhea >24 hours
- Fever >103°F
- Signs and symptoms of shock
- Rebound tenderness (pain upon release; not when pressed)
- Unexplained (muscle ache-like) shoulder pain
- Signs and symptoms of pregnancy

Wound Management + Infections

Small wounds are common injuries in the wilderness. Knowing how to stop severe bleeding and then prevent infection are important skills in a wilderness context. Local infections can take days or even weeks to become systemic. Monitor all local infections closely and evacuate immediately if systemic infection is suspected.

Controlling Severe Bleeding

- **W**ell-aimed direct pressure
- **E**levate the wound
- **T**ourniquet as a last resort (arms, legs only)

Once Bleeding Has Stopped

- Clean the wound:
  - With soap and water if available, & remove debris with tweezers
  - By Pressure irrigating the wound with at least ½ liter of clean water
- Cover the wound with a clean dressing and bandage
  - Change bandages once or twice a day

NEW Do ***NOT*** close the wound (with suture strips, tape, butterfly bandages, etc.)

Treatment Principles: ***Specific Wounds***

- ***Bruises*** – Treat with rest, ice, and NSAIDs
- ***Abrasions*** – To prevent infection, use triple-antibiotic ointment on the wound
- ***Lacerations*** – Bring the wound edges together with wound closure strips and tincture of benzoin. Consider evacuation for stitches if the cut gapes more than ½ inch wide or is on the face.
- ***Avulsions*** – Irrigate under the flap but ONLY apply triple-antibiotic ointment on tissue
- ***Amputations*** – Wrap the part in a moist, sterile dressing and seal in a plastic bag. Immerse the bag in cold water and transport rapidly to the hospital with the patient
- ***Punctures*** – Irrigate the surface of the skin only. Do not close the wound. Monitor for infection
- ***Impaled objects*** – Immobilize in place unless it is an airway obstruction or interferes with transport

Signs + Symptoms: ***Local Infections***

- Redness extending beyond the wound
- Warmth; mild swelling; tenderness
- Pus formation

Signs + Symptoms: ***Systemic Infections***

- Heat, swelling, discoloration and pain often associated with increased pus
- Red streaking may form from the wound towards the nearest lymph nodes
- Swollen lymph nodes
- Malaise, fever and shock

Treatment Principles: ***Infections***

- Hot soaks for 20-30 minutes several times daily (keep clean)
- Consider packing the wound open (wet to dry) to allow drainage

Evacuation Guidelines

- Evacuate any patient with a wound that cannot be managed in the field.
- Evacuate any patient with an infection who does not show improvement within 12-24 hours.
- Evacuate any patient with a wound that is heavily contaminated, opens a joint space, involves underlying tendons or ligaments, was caused by an animal bite, is on the face, has an impaled or imbedded object, was caused by a crushing mechanism, gapes >½" wide or shows evidence of serious infection.

Burns

Other than sunburn, the most common burn in the backcountry is from spilled hot water. Types of burns include:

Superficial: These burns injure only the epidermis. The area heals in 4 or 5 days with the epidermis peeling.

Partial-Thickness: Deeper burns injure both the epidermis and the dermis. The burn takes from 5 to 25 days to heal or longer if it becomes infected.

Full-Thickness: These burns penetrate deeply and injure the epidermis, dermis, and subcutaneous tissue. Full-thickness burns destroy the dermis and, if large, require skin grafts to heal.

Treatment Principles

- Be suspicious of face/neck burns, soot in the mouth/nose, singed hair, and a dry cough
- Monitor and assist respiration if necessary
- Estimate the extent of the burns: palm and fingers are 1% of the patient's total body surface area
- Face, neck, hands, feet, armpits, groin, and circumferential burns are particularly dangerous
- Re-dress burns with triple-antibiotic ointment several times daily. Do not drain intact blisters
- Pain medications as needed (NSAIDs are recommended)
- Hydrate patient as needed using an oral rehydration solution

Evacuation Guidelines

- Evacuate all patients with full-thickness burns, regardless of size or location of burn.
- Consider evacuating for partial-thickness burns the size of a quarter or more, to the hands, feet, face (airway compromise), armpits or groin.
- Evacuate any patient with partial-thickness burns covering more than 9% of their total body surface area.
- Evacuate any patient with circumferential burns (as swelling can cause loss of use of injured extremities).
- Evacuate any patient with significant burns who is below age 8, or over age 55.

Orthopedic Injuries

Fractures are broken bones; strains are injuries to muscles; sprains are injuries to ligaments, and tendonitis is an inflammation of the tendons. Specific diagnosis of a musculoskeletal injury is unnecessary as we assess and treat these injuries all the same way. Evacuate based on whether the injury is usable or not.

Signs + Symptoms

- Pain specific to the injury site
- Swelling & Deformity
- Crepitus (sound of bones grinding, popping)
- Guarding
- Ecchymosis (layered bruising)
- Loss of circulation, sensation, movement
- Possible bone protrusion

Treatment Principles

- Check for circulation, sensation, and motion (CSM)
  - If no CSM, apply manual traction to re-align the injury and regain CSM
  - Slow or discontinue if pain increases significantly or you meet resistance
  - If the fracture is open, irrigate & clean wounds prior to applying manual traction
  - Apply manual traction to allow bone ends to slip beneath the skin
  - If bone ends remain exposed, protect them from freezing or drying
  - Rapidly evacuate the patient
  - Only attempt to pull manual traction once to avoid further internal damage
- Assess for stability and usability
- NEW **HELP-S Therapy**
  - **H**ydrate: hydrate with electrolytes
  - **EL**evation: At the same level or above the patient's heart
  - **P**ain management: NSAIDs, short use of ice/cold as needed to manage pain only
  - **S**tabilize: Splint the injury with lots of padding so that it becomes immobile yet comfortable
- Evacuate if unusable

Splinting

- Check C-S-M
- If necessary, use gentle traction-into-place to establish normal anatomical position
- Splint in a position of function. A splint should be:
  - Well padded, but not bulky or heavy
  - Rigid
  - Allow for C-S-M assessment
  - Immobilize the joint above and below long bone injuries
  - Immobilize the bones above and below a joint injury

Dislocations

Dislocations are where a bone comes out of its socket or away from its normal alignment at a joint. The only dislocations that can be reduced in a wilderness context are: shoulder, patella, and digits.

Signs + Symptoms

- Asymmetry (visible deformity)
- Loss of range of motion
- Pain and/or tenderness
- Swelling
- Possible loss of CSM
- Anxiety

Treatment Principles

- Reduce the shoulder, patella or finger/toe dislocation if the evacuation is in a wilderness context
- Treat all other dislocations as unusable musculoskeletal injuries
- Use slow, steady, and gentle in-line-traction to realign the injury
- Start your reduction attempt as soon as possible
- Slow or discontinue if pain increases significantly or if you meet resistance
- After reduction, HELPS, consider pain medication and immobilization as needed
- Monitor CSM before and after reduction and/or immobilization
- Evacuate if necessary

Evacuation Guidelines

- Evacuate all unusable musculoskeletal injuries and any first-time dislocation
- Rapidly evacuate all open fractures, unreduced dislocations and any musculoskeletal injury with altered CSM

Anaphylaxis

An allergic reaction is a hypersensitivity to a foreign substance in the body. Anaphylaxis is a life-threatening allergic reaction characterized by a systemic release of histamines and other substances that cause extreme difficulty in breathing and shock.

*Signs + Symptoms: **Mild***

- Flushed and itchy skin
- Hives and/or welts on the skin

*Signs + Symptoms: **Anaphylaxis***

- Large areas of swelling, typically involving face, lips, and tongue
- Respiratory distress; unable to speak in more than one or two-word clusters
- Signs and symptoms of shock

Treatment Principles

- Remove the allergen or remove the patient from the environment to prevent further contact
- When the patient can speak and swallow, give oral antihistamines (diphenhydramine; Benadryl) at the recommended doses and continue during evacuation
- For facial swelling, respiratory compromise, or shock, administer epinephrine via auto-injector
  - Adult dose, 0.3 ml (>**55** lbs.)
  - NEW Pediatric dose, 0.15 ml (**16.5** lbs. – **55** lbs.)
- If the reaction reoccurs or the epinephrine is ineffective, continue to administer epinephrine.
- If Diphenhydramine is unavailable, when taken *together*, Pepcid AC and Zyrtec may be administered.

Evacuation Guidelines

- Evacuate any patient with anaphylaxis or trouble breathing, regardless of whether epinephrine was administered or not. Up to 20-30% of all anaphylactic reactions are bi-phasic and can reoccur within one to 72 hours after the initial allergic reaction.

Heat Exhaustion

Hydration is vital to health. Dehydration underlies many wilderness medical problems and can be serious by itself. Heat exhaustion results from water and electrolyte loss caused by sweating, heat stress and ineffective hydration.

Signs + Symptoms

- Sweating
- Lethargy & dizziness
- Headache
- Pale, clammy skin
- Nausea, vomiting
- Muscle Cramps
- Dark yellow urine
- Elevated pulse & respirations

Treatment Principles

- Rest in a cool, shady spot until the symptoms subside
- Wet the patient down (spray) with water and fan them if needed.
- Replace fluid losses with water, a solution of sugar drinks with a tsp. of salt or a sports drink
- Monitor for progressive shock symptoms or an altered mental status. If these develop, evacuate the patient

Heat Stroke

The high temperature of heat stroke is a life-threatening emergency.

Signs + Symptoms

- LOR changes: Disoriented (<A&Ox3), irritable, combative
- Hallucinations, seizures, poor balance
- Increased HR and RR
- SCTM hot, dry and red (possibly moist and pale)
- Temperature above 105°F (40.6°C)

Treatment Principles

- Aggressive cooling.
- If available, submerse the patient's body in a stream or cold water.
- NEW Apply cold compresses (or ice) to the palms of the hands, soles of feet & cheeks.
    - Applying cold around the core of the body may work, but not as quickly or effectively.
- Monitor for relapse.
- Evacuate rapidly.

Dehydration

Dehydration is caused by the excessive loss of body fluids. It can be caused by not drinking enough fluids, suffering continuous vomiting or diarrhea, or severe bleeding.

Signs + Symptoms

- Thirst
- Weakness
- Light-headedness, dizziness
- Nausea & vomiting
- Passing small amounts of dark, concentrated urine

Treatment Principles

- Cautious to no fluid intake
- Salty food

Hyponatremia

Over-hydration, excess water intake, may cause low blood sodium levels, resulting in hyponatremia.

Signs + Symptoms

- Headache, weakness and fatigue
- Lightheadedness, dizziness, nausea and vomiting
- LOR: anxiety in mild cases, altered mental status in severe cases
- History of excessive water intake is a key finding

Treatment Principles

- Cautious to no fluid intake
- Salty food
- Evacuate if the patient has an altered mental status.

Evacuation Guidelines Summary: Dehydration, Heat Exhaustion, Hyponatremia and Heat Stroke

- Evacuate any patient with an altered mental status.

Prevention of Heat Illnesses

- Hydrate. Monitor urine output for color and quantity.
- Snack regularly to avoid hyponatremia. Foods with salts & sugar are recommended.
- Heat illness and dehydration can be cumulative
- Exercise early or late in the day in hot environments.
- Rest often.
- Give yourself 10 days to two weeks to acclimate before you exercise heavily in a hot climate.
- Wear well-ventilated, open-weave clothing.
- Cover your head and wear sunglasses.

Frostbite and Non-Freezing Cold Injuries

Frostbite and non-freezing cold injury (e.g. immersion foot) cause a local injury that, while not life-threatening, can be permanent and painful. ***Non-freezing cold injuries*** occur when tissue is chronically cold, but not frozen. Persistent cold and wet conditions can damage nerves and tissue. The prominent symptom may be pain. ***Frostbite*** is a local, freezing injury where tissue may actually be frozen. Injury ranges from minor irritation to extensive tissue loss.

Signs + Symptoms

- Cold
- Waxy, pale or mottled
- Mild tingling, numbness or pain
- Soft (if not frozen or partially frozen), Hard (if completely frozen
- Blisters may form if frostbite has been thawed

Treatment Principles

- If not frozen:
  - Warm the injury using either skin-to-skin contact or with an instant heat pack, warm water, etc.
- If frozen:
  - Warm water bath 99-102°F (37-39°C)
- Both:
  - Protect from re-freezing
  - Never massage or use radiant heat, as it may cause internal damage
  - Managing pain with NSAIDs (such as ibuprofen or aspirin) is strongly recommended

Evacuation Guidelines

- Isolated, small (less than quarter sized) injuries can be kept in the field if infection and subsequent freezing can be prevented. In general, larger or blood-filled blisters should be evacuated. Any frostbite without return of sensation and circulation should be evacuated. The pain from a non-freezing cold injury usually dictates evacuation.

Preventing ***Frostbite***

- Know your environment and be prepared
- Be attentive to yourself and your companions
- Bring wind and rain gear. Wear materials that keep you warm when wet. Layer your clothing
- Maintain adequate nutrition and hydration
- Stay dry. Pace yourself to avoid sweating and overexertion
- Carry emergency gear and food
- Avoid tight clothing and boots
- Do not sleep with cold, wet feet; change socks frequently
- Alcohol, caffeine, nicotine, and many other drugs predispose you to cold injury

Hypothermia

Hypothermia is a lowering of the body's core temperature to a level where brain and/or muscle function is impaired. If not corrected, the patient could die.

Signs + Symptoms: ***Mild Hypothermia***

- Feeling cold
- A case of the "umbles"
- Numb extremities
- Fast; shallow breathing
- Feeling tired
- Stomachache (feeling hungry)

Treatment Principles ***(Mild Hypothermia)***

- Patients can warm themselves in a dry, insulated environment with adequate caloric intake
- Change the patient's environment
  - Find shelter. Gently move the patient off snow, cold ground or out of water
  - Replace wet and subtly damp clothing with clean dry clothing
  - Add wind and waterproof layers as needed
- Insulate the patient:
  - Add insulation under and around the patient using a ground pad and clothing
  - Insulate the patient's head and neck, hands and feet
  - Consider a hypothermia wrap
- Encourage the patient to eat and drink
  - Simple sugars (hot Jell-O or hot cocoa), proteins, and carbs
- Exercise is encouraged for mildly hypothermic patients

Signs + Symptoms: ***Severe Hypothermia***

- Ataxia (lack of muscle coordination)
- Skin is pale, cool, & clammy
- Disorientation
- Possible amnesia
- No longer feeling cold
- ALoR (A&O x0 or below)
- Paradoxical undressing
- Terminal burrowing

Treatment Principles ***(Severe Hypothermia)***

- Handle the patient gently. Avoid any rough movement
- Assist breathing for 5-15 minutes prior to movement (rescue breathing ONLY; NO CPR)
- Field warming is unrealistic; prevent further heat loss with a hypothermia wrap and evacuate ASAP
- Add well-insulated heat packs at the patient's hands, feet, armpits, groin, and neck
- Avoid the chest compressions of CPR, as it may disrupt or alter electrical activity of the heart

Evacuation Guidelines

- Rapidly and gently evacuate any patient with severe hypothermia.

Lightning

Lightning is the second most common storm-related cause of death, exceeded only by flash floods. In typical years, deaths from lightning exceed the number of deaths from tornados, hurricanes, and earthquakes.

Mechanisms of Injury

- ***Direct Hit:*** Most often occurs to persons in an open area (e.g., a meadow).
- ***Splash Lightning:*** Because electrical current is seeking the path of least resistance, when lightning hits an object it may jump onto another nearby object. The average distance of splash is 6 miles.
- ***Ground Current:*** Most common injury mechanism. Lightning hits a nearby object and radiates outward. If a person is in the path of the current, the electricity may pass over or through a person. The most dangerous place to be on the ground is within 200 yards of the lightning contact point.
- ***Blast Injury:*** Blast type injuries may occur from the rapidly expanding air near a lightning strike.

Signs + Symptoms

- Cardiac or respiratory arrest
- Loss of responsiveness, paralysis, seizures, loss of balance
- Eye injuries: Temporary blindness
- Ear Injuries: Temporary deafness
- Trauma associated with being thrown

Treatment Principles

- Scene safety comes first! Lightning may strike twice in the same spot
- Begin CPR on any pulseless or apneic patients immediately
- Be prepared to provide prolonged rescue breathing and/or CPR
- Be thorough in your patient exam and treatment of injuries
- Monitor closely for cardiovascular, respiratory, and neurological collapse
- Evacuate any patient struck by lightning

Prevention & Safety Tips

- In urban areas seek safety in buildings (not small sheds) and vehicles. "*When thunder roars, go indoors.*"
- Outdoors, there are places with greater or lesser risk, but there is no truly 'safe' place in a lightning storm
- Know the local weather patterns
  - Plan wisely to avoid being exposed in dangerous places
  - Pick campsites with prevention in mind; a uniform stand of trees or low rolling hills is optimal
- Know and adhere to the *30/30 Rule*:
  - Assume the lightning stance when the storm is within a 30 seconds count (6 miles) from you
  - The time between seeing lightning and hearing thunder is typically 1 mile for every 5 seconds.
  - Monitor approaching storms; lightning can strike miles ahead or behind a storm
  - Thunder, a clear sign of danger, can be heard for 10 miles in calm air; less in turbulent stormy air
- Avoid dangerous locations:
  - Places higher than surrounding terrain: peaks, ridges, hills
  - Isolated tall objects such as lone trees
  - Open terrain such as meadows
  - Large bodies of water, especially the shoreline
  - Shallow overhangs and caves
  - Long conductors: pipes, wires, wire fences, wet ropes, etc.
- Seek uniform cover: trees about the same height and rolling hills, insulate yourself from ground current, stay low (lightning position), disperse a group to limit casualties

When it is impractical to move to a safer location, insulate yourself from ground current, stay low (lightning position), disperse a group to limit casualties

Altitude Illnesses

Altitude illnesses result from insufficient oxygen in the blood caused by the decreased atmospheric pressure at altitude.

Signs + Symptoms: ***Acute Mountain Sickness (AMS)***

- Persistent headache
- Nausea (& possibly vomiting)
- Loss of appetite
- Lassitude & lethargy
- Nosebleeds
- Dizziness or light-headedness
- Peripheral edema (swelling of the hands, feet)

Signs + Symptoms: ***High Altitude Cerebral Edema (HACE)***

- Signs & symptoms of AMS plus…
- Possible signs of a TBI
- Inability to coordinate movement (ataxia)
- Altered level of responsiveness
- Bizarre mood swings
- Severe headaches that don't go away

Signs + Symptoms: ***High Altitude Pulmonary Edema (HAPE)***

- Severe trouble breathing
- Pink, frothy sputum (saliva)
- Chest tightness & congestion
- Crackles or wheezing when breathing (especially when exhaling)
- Rapid heart rate
- Rapid, shallow breathing

Treatment Principles

- Descend at least 1000-1500 feet immediately
- Maintain adequate hydration
- Light exercise is encouraged
- Taking pain medication for the headache is okay. Avoid sedatives
- Tadalafil (Cialis) may be advised for HACE. Albuterol may be advised for HAPE.

Preventing ***Altitude Illnesses***

- Take 3 tablets of *ibuprofen* or *acetaminophen*, 3x daily beginning at least one day prior to being at high altitude & continue use while at altitude. The maximum recommended dose is 1800–3200mg daily.
- Staged ascent: Ascend 1000-1500 feet per day above 10,000 feet (3048m) with frequent rest days.
- Climb high and sleep low (sleep no higher than 1000-1500 feet in elevation than 24 hours ago).
- Avoid alcohol and sedatives such as sleeping pills, codeine, morphine, etc.
- Acetazolamide (Diamox) may aid in acclimatization.

Evacuation Guidelines

- Severe altitude illness can develop quickly and is life threatening. Evacuate any patients whose symptoms do not resolve by returning to lower elevations. If available, prepare use of a hyperbaric chamber such as a Gamow bag.

LEARN MORE: www.wildsafe.org/altitude

Considerations for a Wilderness First Aid Kit

There is no such thing as a "perfect" first aid kit, so you should consider your needs and build a kit that meets them. Some items to consider are (in no particular order):

- *Trauma Shears*
- *Tweezers*
- *Diaper Pins*
- *SOAP Notes*
- *Thermometer*
- *Emergency Blanket*
- *Triple-Antibiotic Ointment*
- *Knuckle & Fingertip Bandages*
- *Vet- or Ace Wrap*
- *1" or 2" Silk Tape*
- *SAM Splint*
- *Assortment of OTC Medications*
- *Gloves (nitrile)*
- *Irrigation Syringe*
- *Alcohol or Antiseptic Wipes*
- *Wound Closure Strips*
- *Tincture of Benzoin Swabs*
- *Tegaderm Occlusive Dressing*
- *Hydrocortisone Cream*
- *Sterile Gauze Pads*
- *Sterile Gauze Rolls*
- *Trauma Pad Dressing*
- *CPR Mask*
- *Triangular Bandages*

Repack your first aid kit for each and every trip! Check expiration dates on medications, sterile items, etc., and be sure to check for opened or damaged items that may need to be replaced. Note any special supplies or medications required for special trips (i.e. high altitude, especially rocky terrain, etc.).

Do not pack anything in your first aid kit that you do not know how to use! Before you go into the wilderness, go through each item in your kit and familiarize yourself with what's there and how to properly use it. Also think about what else that piece of equipment may be used for (other than it's intended purpose).

It's usually cheaper to buy a prefab kit than to build one from scratch – however CWS will gladly work with you or your organization to custom-build a fully stocked, budget-friendly first aid kit that will meet the needs of your outdoor adventure.

Visit www.RestockYourKit.com for all your first aid needs! We specialize in individual quantities, wholesale prices, and well-designed, custom built first aid kits!

MY 15% OFF DISCOUNT CODE IS: WFA15

A Guide to the *Most Common* Over-The-Counter Medications

Produced by Center for Wilderness Safety as a quick reference guide.

Common OTC Medications – By Use

NSAID: Non-Steroidal Anti-Inflammatory Drug
- *Aspirin, Ibuprofen, Naproxen*

Analgesics: Pain
- *Aspirin, Acetaminophen, Ibuprofen*

Antihistamines: Allergy
- *Diphenhydramine, Famotidine, Loratadine, Fexofenadine*

Antipyretics: Fever
- *Ibuprofen, Acetaminophen, Aspirin, Naproxen*

Antiemetics: Vomit
- *Diphenhydramine, Loperamide, Bismuth, Alamag, Dimenhydrinate*

Antibiotic: Bacterial Infections
- *Bacitracin, Polysporin, Polymyxin, Neomycin, Zinc, Honey*

Diabetic Emergencies: Sugar Related
- *Simple Sugar, Honey, Glucose Tablets, Glutose, Cake Icing, …*

Electrolytes: Dehydration or Over-Hydration
- *Pedialyte, Fluid IV, …*

Common OTC Medications – By Medication

ASPIRIN *(BAYER, BUFFERIN, ST. JOSEPH)*

Aspirin is in a group of drugs called salicylates. It works by reducing substances in the body which cause pain, fever, and inflammation. Aspirin has four associative properties: it is an anticoagulant (blood thinner); antipyretic (fever reducer); anti-inflammatory, and analgesic (pain killer).

USE – Relieves pain caused by conditions such as headaches, rheumatoid arthritis, and muscle pain and is used to reduce fever caused by infection. Aspirin may also help to prevent heart attack if chewed within the first 3 minutes of warning signs of a heart attack appearing.

CONTRAINDICATIONS – People who should NOT take Aspirin include those who: are allergic to aspirin, Ibuprofen (NSAIDs); have asthma, rhinitis or nasal polyps; have an active peptic ulcer; or are under the age of 18. Do NOT take aspirin while also taking ibuprofen, antidepressants, or Coumadin.

DOSAGES – Aspirin comes primarily in two common doses: Adult (325mg) and Low Dose (81mg). Aspirin may also come in the form of "Child Size" (80mg), "Extra Strength" (500mg), or "Arthritis Relief" (650mg). The maximum recommended allowed dose per 24-hour period for an adult is 8000mg (no more than 1000mg is recommended). Use as directed.

IBUPROFEN *(ADVIL, MOTRIN)*

Ibuprofen is in a group of drugs called nonsteroidal anti-inflammatory drugs (NSAIDs). It works by reducing hormones which cause inflammation and pain in the body. Ibuprofen is used to reduce fever and treat pain or inflammation caused by many conditions such as headache, toothache, back pain, arthritis, menstrual cramps, or minor injury.

USE – Relieves pain caused by conditions such as headaches, inflammation, rheumatoid arthritis, and muscle spasms.

CONTRAINDICATIONS – People who should NOT take Ibuprofen include those who: are allergic to Ibuprofen (NSAIDs); are also taking Aspirin (Ibuprofen causes Aspirin to become less effective); or are under the age of 12.

MEDICATION FORMS – Ibuprofen comes in tablets of 200mg, 400mg, 600mg, and 800mg; chewable tablets of 50mg and 100mg; and liquid capsules of 200mg. The maximum allowed recommended dose per 24-hour period for an adult is 3200mg. Use as directed.

DIPHENHYDRAMINE *(BENADRYL, THERAFLU, TRIAMINIC, UNISOM, ETC.)*

Diphenhydramine is an antihistamine used for treating allergic reactions. Histamines are released by the body during several types of allergic reactions. Diphenhydramine also blocks the action of acetylcholine and is used as a sedative because it causes drowsiness. It may also cause hyperactivity in some patients.

USE – Diphenhydramine is used to relieve irritated, itchy, watery eyes; sneezing; and runny nose caused by hay fever, allergies, or the common cold. It may also be used as a sleep aid (except in children), and to help reduce tremors in patients with Parkinson's disease, for example.

CONTRAINDICATIONS – Diphenhydramine should not be given to children, under age 4. When giving to children ages 5-12, use caution and follow directions on the medication. Most people are NOT allergic to diphenhydramine, but rather to the pink dyes used in the capsule form. Clear liquid or dissolving tongue tab forms may not have an adverse reaction.

MEDICATION FORMS – Diphenhydramine comes primarily as a table (25mg) however also comes as a spray (non-oral use) and dissolving tongue tabs (12.5mg and 25mg). The typical adult may require 50mg (2 tablets). The maximum allowed recommended dose per 24-hour period for an adult is 150mg. Use as directed.

ACETAMINOPHEN *(TYLENOL, APAP, ETC.)*

Acetaminophen works by reducing substances in the body which cause pain, fever, and inflammation. Acetaminophen has three associative properties: it is an antipyretic (fever reducer); anti-inflammatory; and analgesic (pain killer).

USE – Relieves pain caused by conditions such as headaches, rheumatoid arthritis, and muscle pain and is used to reduce fever caused by infection. Acetaminophen will NOT help to prevent heart attack, as acetaminophen is not an anticoagulant.

CONTRAINDICATIONS – Acetaminophen is not recommended for those allergic to acetaminophen, as well as those who have liver disease or a history of alcoholism. Do NOT give tablets to children under age 12. For children, only give pediatric acetaminophen! Avoid other cold, allergy, pain, or sleep medications while taking acetaminophen. Do NOT take more than 3000mg in any given 24-hour period, as this may cause liver damage or failure. Do NOT take with ibuprofen or aspirin, simultaneously.

MEDICATION FORMS – Acetaminophen typically comes in tablet form (325mg or 500mg), however it also comes in liquid form. The maximum allowed recommended dose per 24-hour period for an adult is 3000mg. Use as directed.

ELECTROLYTES *(NUUN, PEDIALYTE, VITALYTE, FLUID IV, ETC.)*

Electrolytes are a mixture of salts, potassium, calcium carbonate, glucose and other trace elements which the body needs. When you sweat, you not only evaporate water, but also a massive amount of electrolytes. A loss of electrolytes may lead to dehydration, etc.

USE – Electrolytes are used for those suffering from decreasing fatigue, muscle cramps, or heat exhaustion due to sweating or excessive body fluid loss. Electrolytes come in many forms: powders, tablets, liquids and gels.

CONTRAINDICATIONS – Patients should NOT take electrolytes if they are allergic to any ingredient in electrolytes. Those with high blood potassium levels should also NOT take electrolytes. If the patient is vomiting profusely and presents with ALoR, stomachache, cramps, and claims to have been drinking lots of water and possibly even eating salty foods – do NOT give electrolytes in any other form than liquid solution. Ensure that the solution is administered slowly (1/2 cup over 20 minutes; small, soda bottle cap sized sips are recommended.

MEDICATION FORMS – Electrolytes come in various sizes. The most common is in tablet form, 33mg ea. (packet usually contains 2 tablets). The Oral Rehydration Salts (USCG approved) comes in a 27.9g packet which dissolves in 1 Liter of water (1 Nalgene; 1 Quart). Pedialyte comes in powder (1 packet for 8oz of water) or liquid (1 Liter) forms. There is no stated maximum daily dose of electrolytes. Use as directed.

LOPERAMIDE *(DIAMODE, IMODIUM, KAOPECTATE, MAALOX, ETC.)*

Loperamide is usually used to control diarrhea. It acts by increasing the amount of time substances stay in the intestine, allowing more water to be absorbed out of the fecal matter. It also suppresses the gastrocolic reflex, decreasing bowel movements.

USE – Loperamide is used against diarrhea. Drink extra water while you are taking this medication to keep from getting dehydrated. It may take up to 48 hours before your symptoms improve.

CONTRAINDICATIONS – The use of Loperamide in children under age 2 is not recommended. Use should be stopped in the presence of bloody stool (dysentery) or fever. Loperamide may not help for cholera, Shigella, or Campylobacter.

MEDICATION FORMS – This medication typically comes in tablet form (2mg) which may work for up to 12 hours. Loperamide also exists in Liquid form. The maximum allowed recommended dose per 24-hour period for an adult is 16mg. Use as directed.

BISMUTH SUBSALICYLATE *(PEPTO-BISMOL, ALAMAG, ETC.)*

Bismuth subsalicylate is used to treat occasional upset stomach, heartburn, and nausea. It is also used to treat diarrhea by helping to slow the growth of the bacteria which might be causing the diarrhea.

USE – Bismuth is used to treat heartburn, upset stomach, indigestion, nausea, diarrhea, and may be used to decrease the number of bowel movements.

CONTRAINDICATIONS – Do not use Bismuth for those who have had an allergic reaction to aspirin or other NSAIDs. The use of Bismuth in children under age 3 is not recommended. Use should be stopped in the presence of bloody stool (dysentery) or fever. Do not use while using doxycycline.

MEDICATION FORMS – This medication typically comes in tablet form (262mg) which may work for up to 30 minutes. Bismuth also exists in Liquid form (15mL or 30mL). The maximum allowed recommended dose per 24-hour period for an adult is 1048mg. Use as directed.

GLUCOSE *(INSTA-GLUCOSE, CAKE ICING, HONEY, ETC.)*

Glucose is used to treat reactions caused by reduced blood glucose (sugar) levels. Insta-Glucose is a monosaccharide (simple sugar) which works quickly by raising the glucose level in the blood.

USE – Glucose should be given orally and should be smeared on the gums (where chew tobacco goes). This enables the sugar to get absorbed into the bloodstream within seconds rather than waiting for the system to digest it if swallowed. Glucose may also be administered rectally.

CONTRAINDICATIONS – There are no contraindications for administering glucose, although it is not recommended for children under 3. If symptoms of hypoglycemia do not improve within 10 minutes, administer another tube (31g).

MEDICATION FORMS – This medication typically comes in either gel (31g) or tablet form. An entire tube of Insta-Glucose or cake icing should be given; and another one may also have to be administered. There is no maximum recommended dosage stated. Use as directed.

ACTIVATED CHARCOAL *(ACTIDOSE, ETC.)*

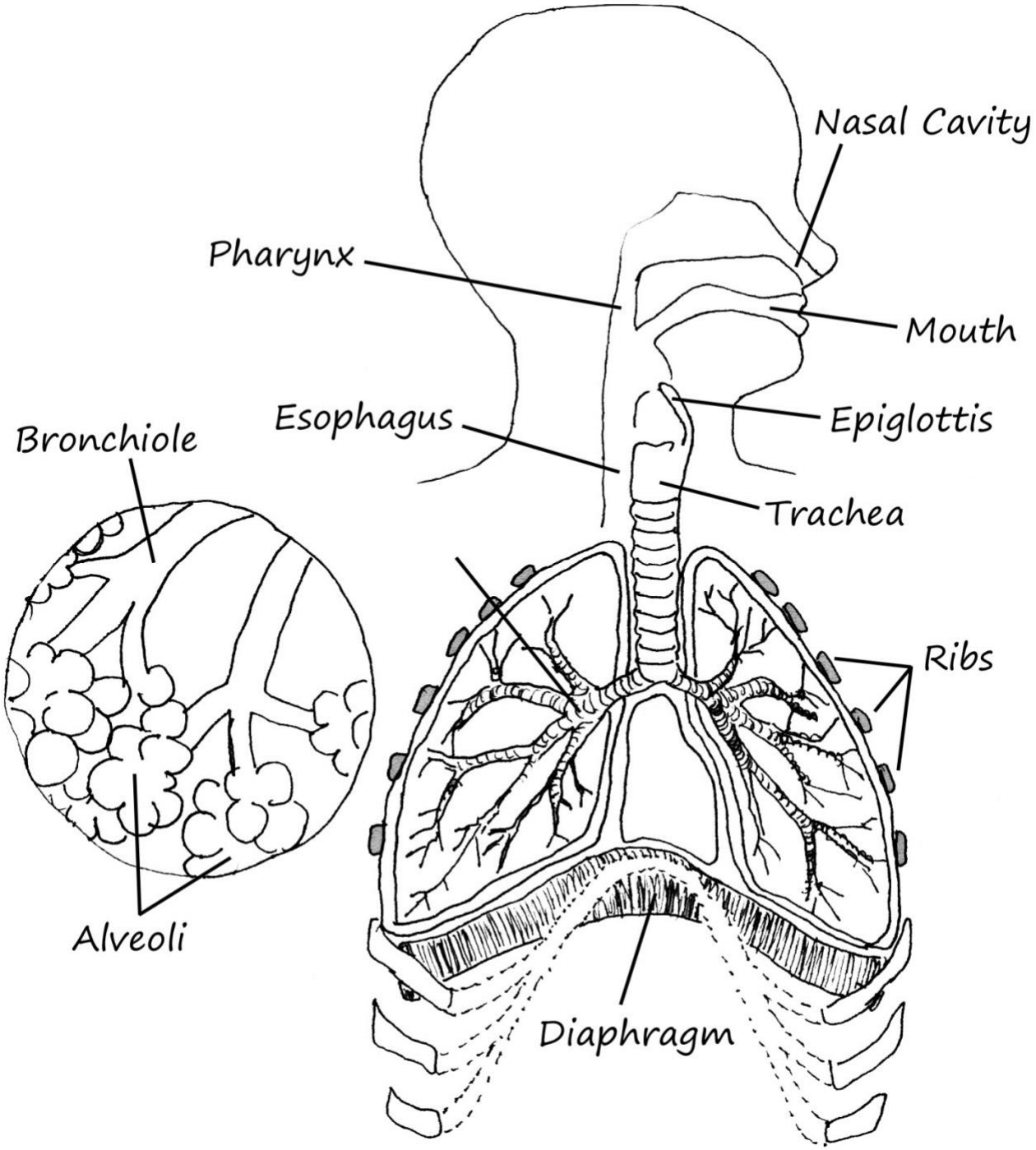
Activated Charcoal is a black pudding or toothpaste like substance which is administered to those who have been poisoned or have ingested toxins. The activated charcoal acts as a binding agent to which the toxins adhere and are then passed through the digestive system. Rather than ipecac which makes one vomit, activated charcoal not only filters out most harmful drugs and poisons, but also does not create any damage as ipecac does. Activated Charcoal has now replaced ipecac and stomach pumping in most hospitals and clinics.

USE – Activated charcoal should be given to those who have ingested poisons or toxins. Dosage is 1 gram/kg; most adults take two entire bottles of 15g or 30g activated charcoal. Children may also take this, but in smaller doses (use as advised by Poison Control, your physician or pharmacist).

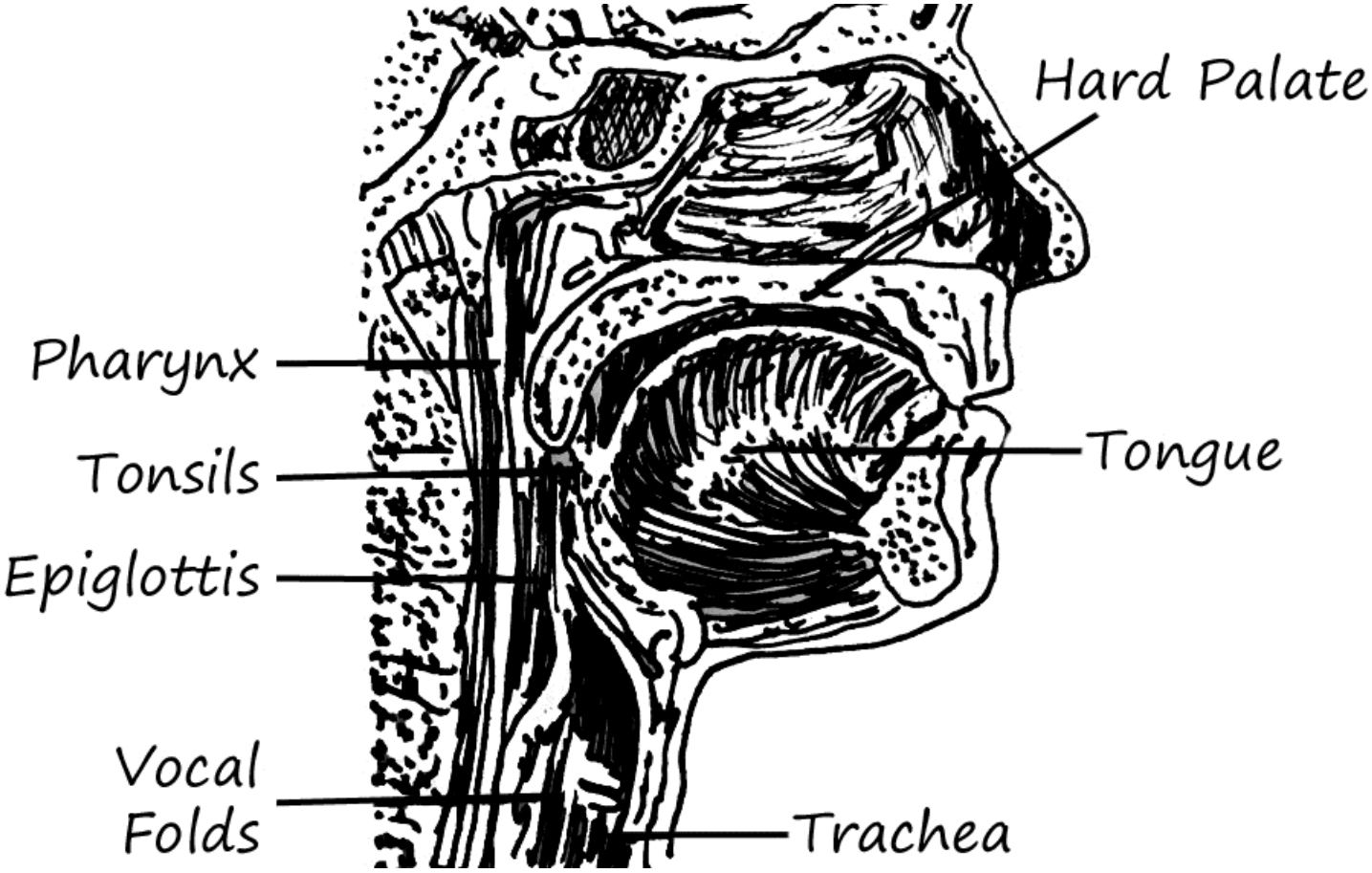
CONTRAINDICATIONS – There are no contraindications to administering activated charcoal, however it is recommended that you call Poison Control (800-222-1222) prior to administering.

MEDICATION FORMS – This medication typically comes in either 15g, or 25g bottles. There is no maximum recommended dosage stated. Use as directed.

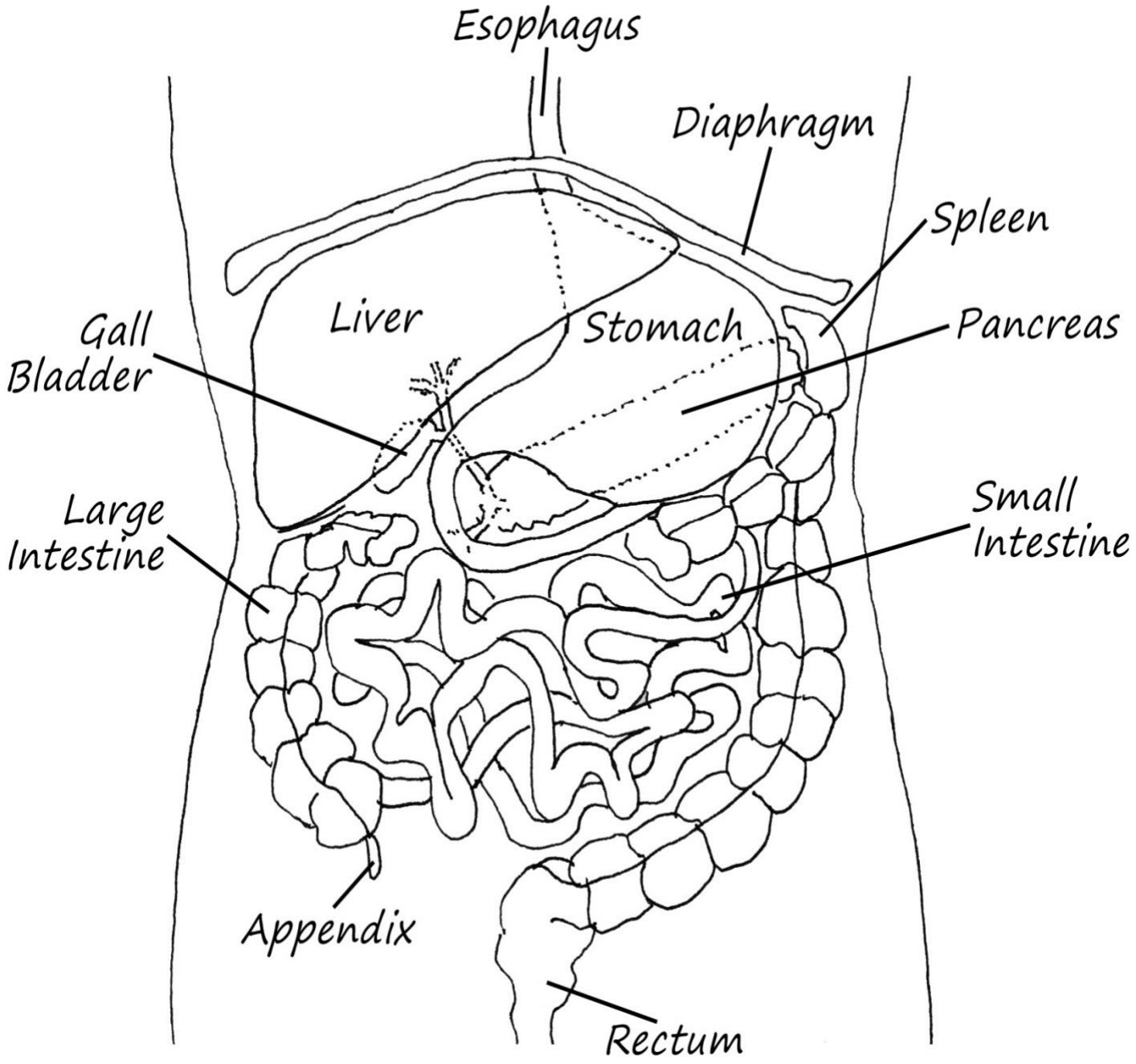
RESPIRATORY SYSTEM



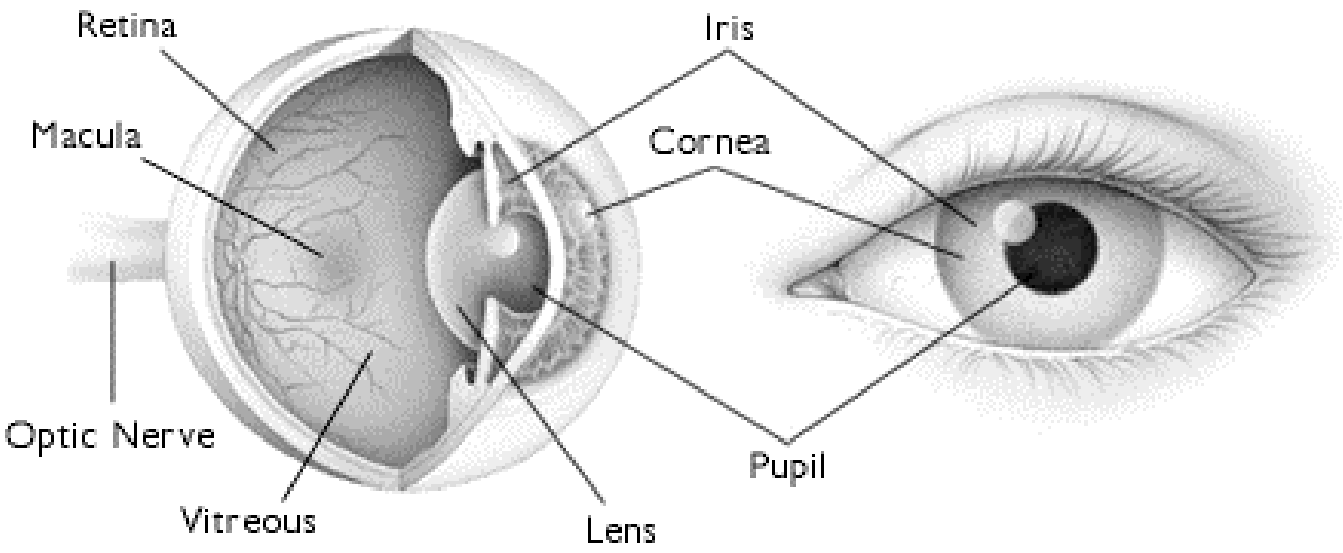
UPPER AIRWWAY


Hard Palate
Pharynx
Tonsils
Tongue
Epiglottis
Vocal
Folds
Trachea

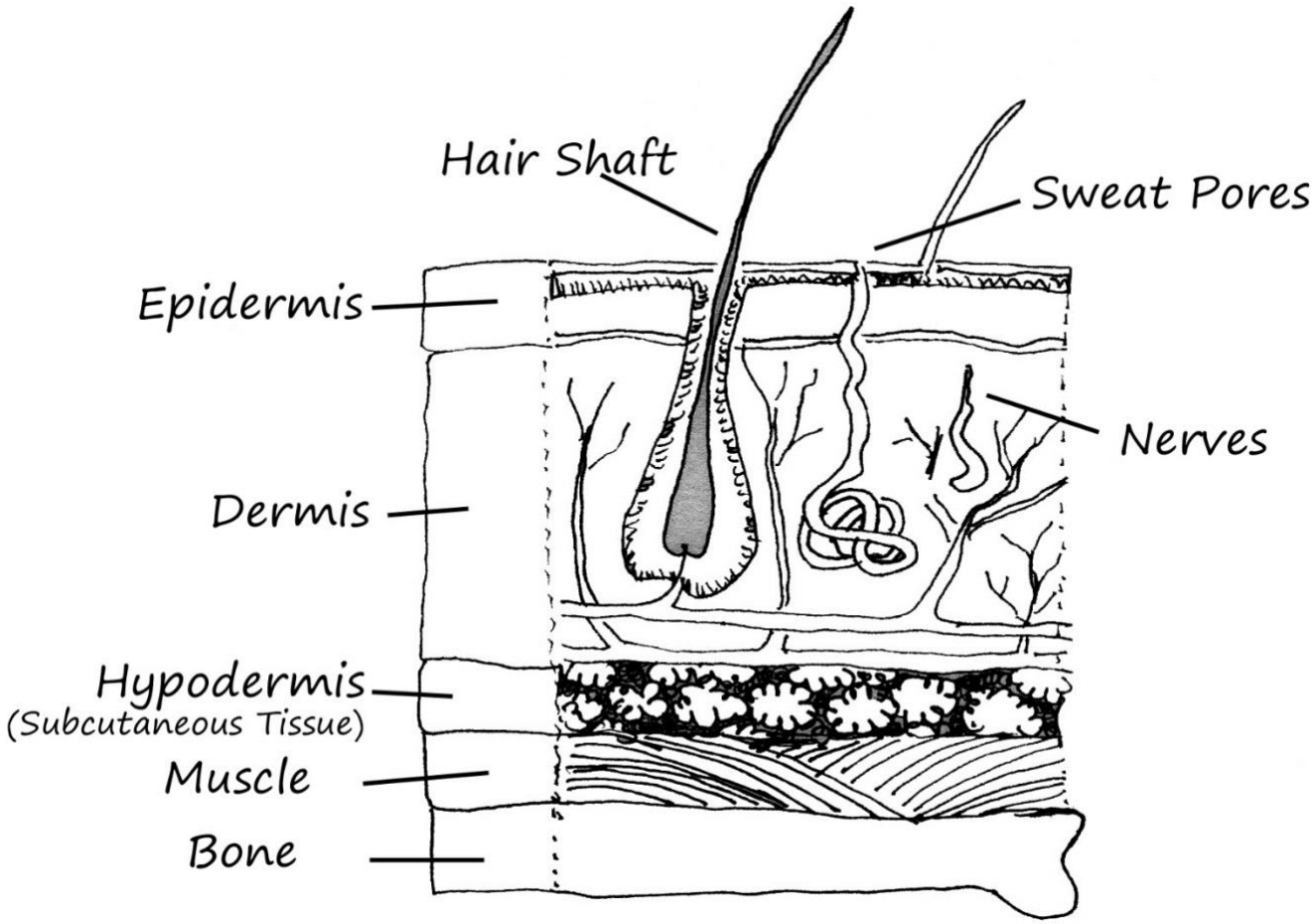
ABDOMEN


Esophagus
Diaphragm
Spleen
Liver
Stomach
Pancreas
Gall
Bladder
Large
Intestine
Small
Intestine
Appendix
Rectum

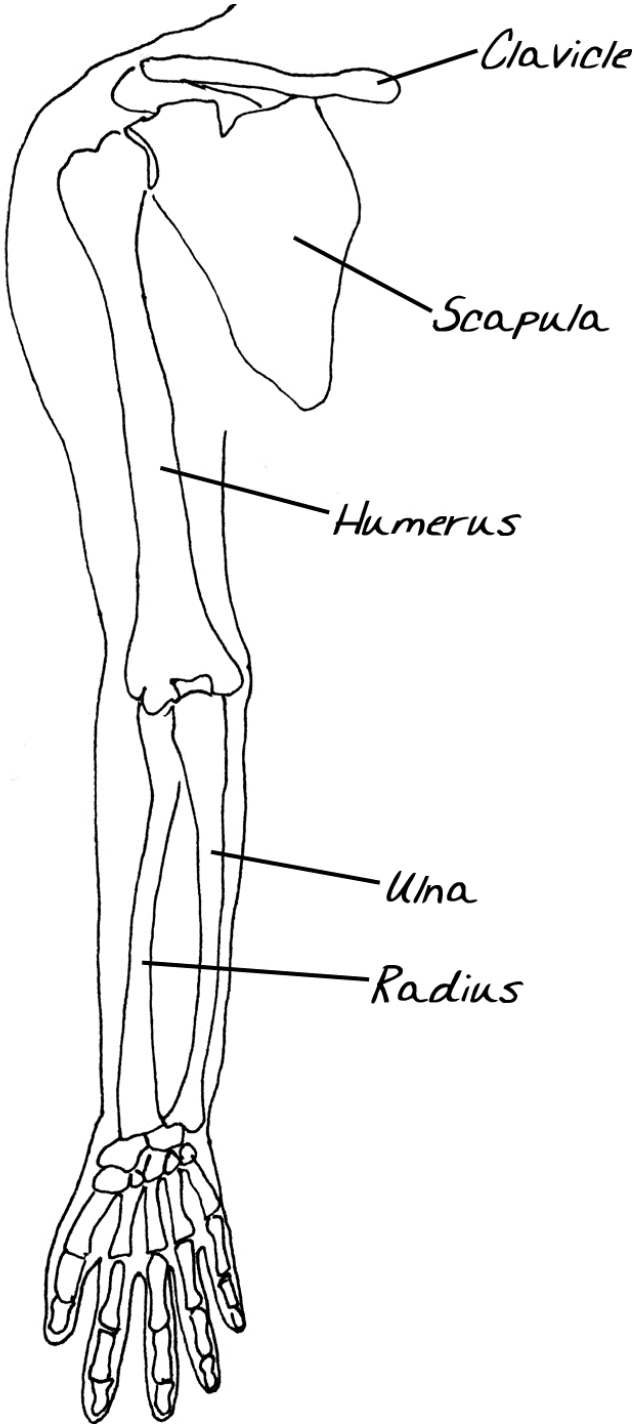
THE EYE

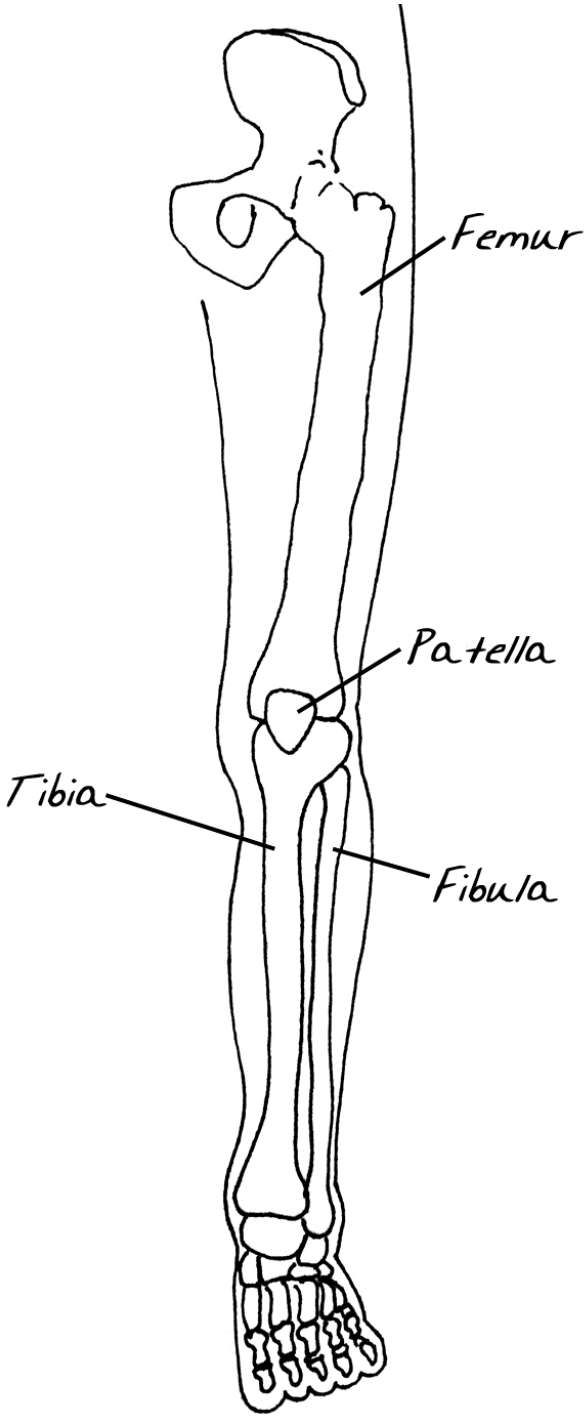


THE SKIN

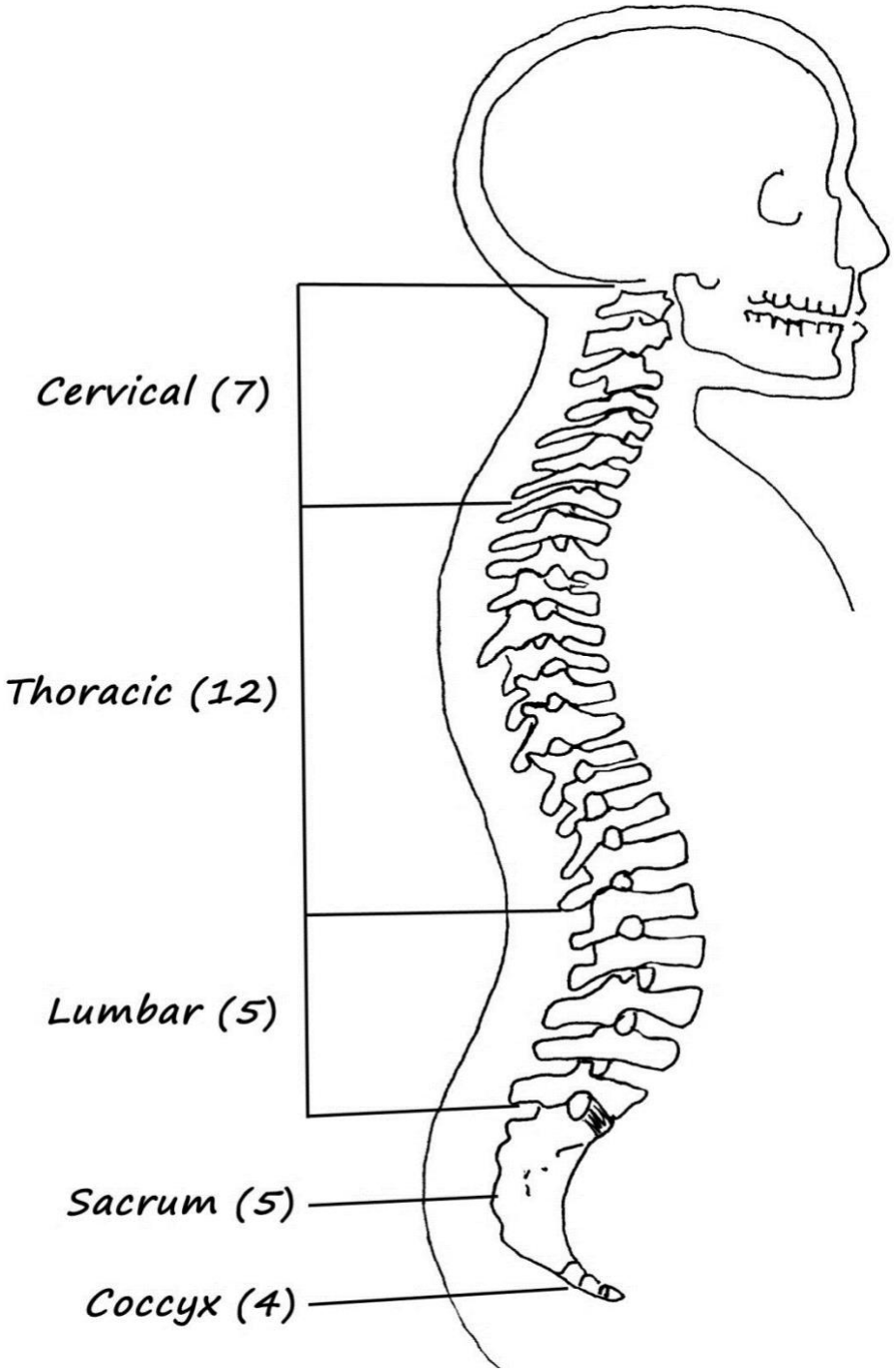


THE ARM **THE LEG**

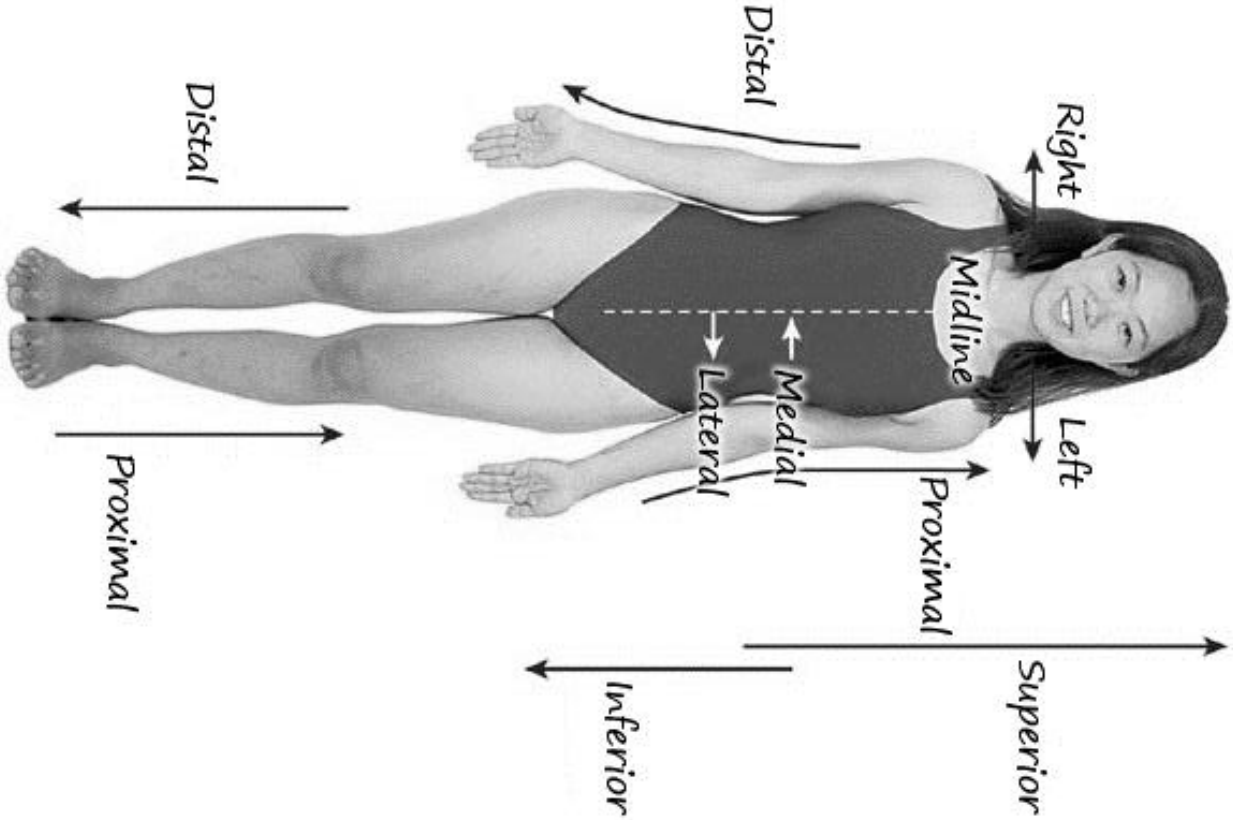

Clavicle
Scapula
Humerus
Ulna
Radius

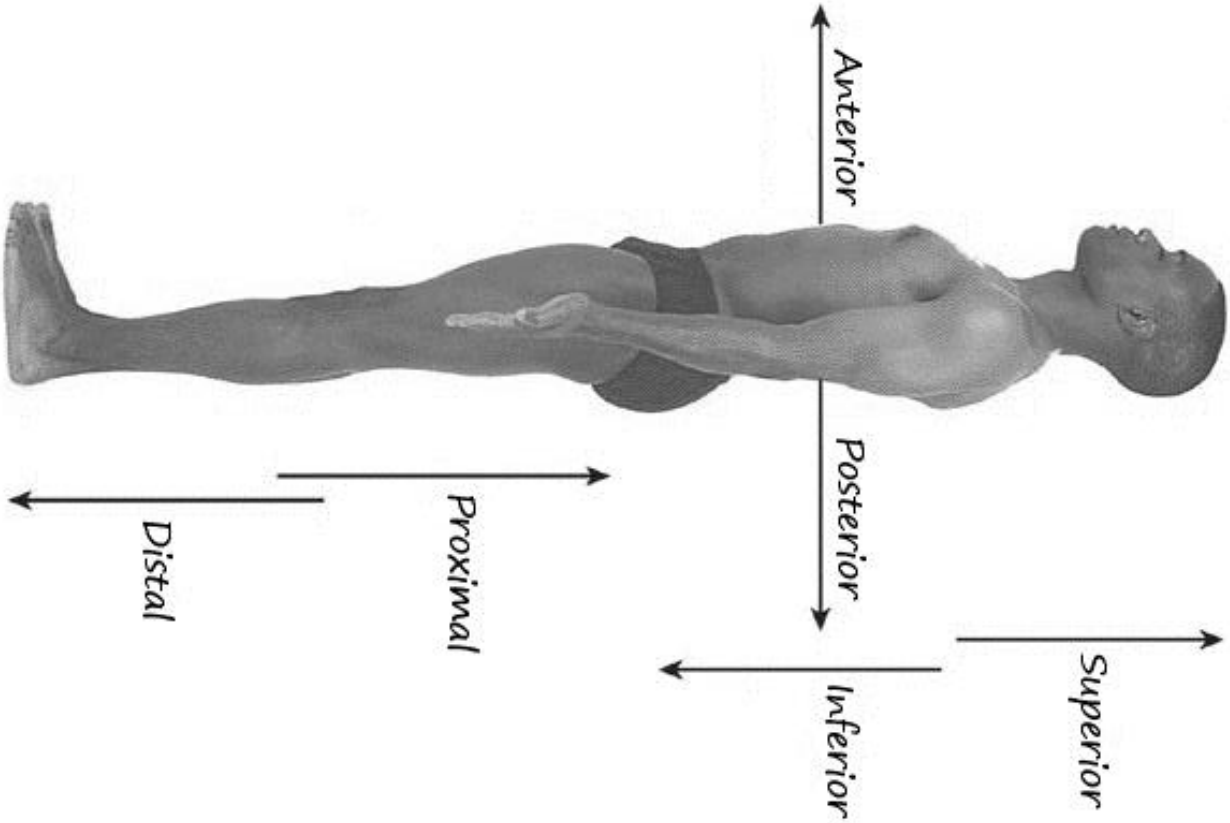

Femur
Patella
Tibia
Fibula

THE SPINE



ANATOMICAL DIRECTIONS


Right
Left
Midline
Medial
Lateral
Proximal
Distal
Superior
Inferior
Proximal
Distal


Anterior
Posterior
Superior
Inferior
Proximal
Distal