"*DOCTORS AMPUTATE FROSTBITTEN FEET OFALL-AMERICAN RUNNER*"

This tragic recent headline involving Marco Cheseto serves as a grim reminder of the potential devastation inflicted by frostbite and hypothermia from prolonged cold exposure. As we approach the winter season in Northeast Ohio, it would be prudent to review some of the more common serious environmental injuries which threaten our patients. Although there are several types of cold injuries (trench foot, chilblains) I will focus on two of the most severe—frostbite and hypothermia.

FROSTBITE

As with any other disease or traumatic entity, there are **risk factors** associated with the likelihood of frostbite occurrence. Obviously, the weather conditions are the primary determining factor. The majority of occupational outdoor cold injuries occur during the few coldest days of winter. Rates of cold injury dramatically increase when temperatures fall below 10 degrees F (-12◦C). Wind, wetness and duration of cold exposure are all determinants for frostbite. Other risk factors include pre-existing disease (Diabetes, Raynaud's, chronic alcoholism) and age. The very young and very old are susceptible to frostbite and other cold related syndromes. Occupation is a risk factor. Military personnel, construction workers,

athletes who compete in winter sports are at risk. Smokers and those with peripheral vascular diseases have higher rates of frostbite complications.

The head, hands and feet are the usual areas affected by frostbite. Fortunately, most cases of frostbite are mild, but severe cases can lead to amputation of the affected areas. The damage from frostbite occurs because of cellular damage and tissue necrosis *inflicted by the freezing*. The degree of tissue injury depends on the temperature, the duration of exposure and the velocity of freezing. Tissue damage also occurs as a result of the *thawing* process. Immediately after thawing, a complex cascade **of chemical, cellular and vascular events** occur, which involve arachidonic acid, platelets, leukocytes, red blood cells and vasoconstriction. The end result is vein and **arterial thrombosis**, ischemia, necrosis and gangrene. It is interesting to note, that in our sepsis lecture, we pointed out that the final common pathway to end organ damage was also *thrombosis of the vasculature.*

Frostbite injuries, similar to burn injuries, are classified according to depth of injury and amount of tissue damage based on appearance (see diagram above). The exact degree of tissue injury is very often difficult to determine until days or weeks after the injury. First-degree injury is called **frostnip** and is usually identified by skin erythema, mild swelling, and lack of blisters. The patient may experience some stinging and burning sensations, but the overall prognosis is excellent. Second degree frostbite involves full-thickness skin freezing, edema and formation of clear blisters filled with prostaglandin-rich fluid. Blisters can form within 6 to 24 hours and after a few days they slough to form hard black eschars. Patients complain of numbness, followed by throbbing and aching pain. The prognosis is generally good.

Note the **clear blisters** in this case of second degree frostbite.

Third degree frostbite involves damage that extends deep below the dermis layer. Hemorrhagic blisters are noted and skin necrosis and eventual sloughing occurs. The patient may lose sensation initially, and later complain of burning, throbbing and shooting pains. The prognosis is poor.


Frostbite - Day 2

Note the hemorrhagic blisters in the above two cases of third degree frostbite.

Fourth degree frostbite involves the subcutaneous tissue, nerves, muscle, bone and tendon. Amputation is inevitable.

TREATMENT OF FROSTBITE

In the field, the goal is to prevent further cold injury, hypothermia and dehydration. The EMT should protect the patient from the cold and wind. Wet clothing should be removed and replaced with dry garments. Immediate dry heating of the frozen area may do more harm than good. Thawing is best done when there is no risk of refreezing and with warm circulating water at 104 to 107 degrees. Blisters may be left intact and treated with aloe vera cream, which alleviates some of the effect of the arachidonic acid cascade. The injured digits should be separated with cotton and wrapped with sterile, dry gauze. Elevation of the extremity may help prevent further edema and reduce pain. Antibiotics are controversial. Some authorities advocate the use of topical antibiotic ointments.

In some of the more severe cases, Penicillin IV is utilized. Tetanus immunization should be current (frostbite is a tetanus-prone wound).

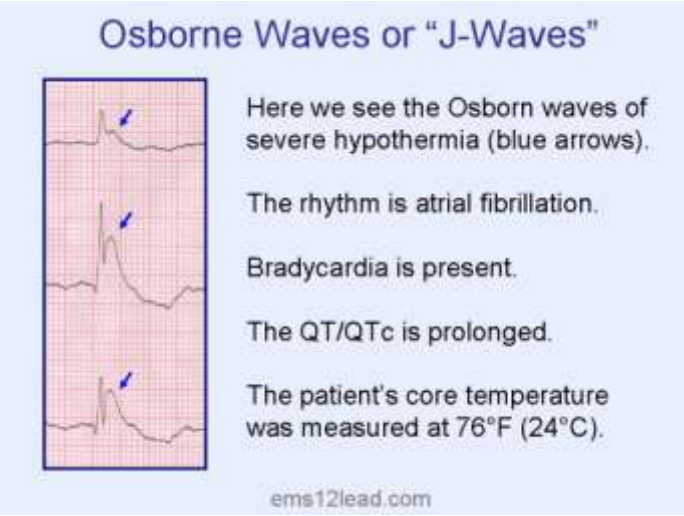
HYPOTHERMIA

Hypothermia has played a significant role in the history of the world, which is essentially a chronology of wars. Hannibal's crossing of the Alps, Valley Forge, Napolean's invasion of Russia were major events which were severely impeded by hypothermia, which is defined as a core body temperature of $\leq 35^{\circ}C$ ($95^{\circ}F$). Heat is conserved by peripheral vasoconstriction and behavioral responses. If behavioral responses are impaired (trauma, drug or alcohol intoxication, dementia), hypothermia risk increases. Heat can be generated by shivering and increased metabolic rates.

Accidental (environmental) hypothermia can occur in healthy individuals. Body temperatures of 32to 35 degrees Centigrade fall into the mild hypothermia range. Generally, the body is able to make physiological adjustments to retain and generate heat. Heart rate, cardiac output and blood pressure rise to compensate for the lower body temperature. If the temperature drops below 32 degrees C, there is a progressive slowing of body responses and metabolism is reduced. Shivering (which is a major source of compensatory heat production) no longer occurs when the body temperature falls below 30 to 32 degrees C. As opposed to the physiological changes which occur in mild hypothermia (increase in heart rate, blood pressure and cardiac output), with **severe hypothermia there is decrease in cardiac output and blood pressure.** Hypothermia can be exacerbated by prior medical problems and alcohol. Some conditions can actually cause hypothermia, such as hypoglycemia, hypothyroidism, stroke, and Sepsis. Please recall from our sepsis lecture that fever is usually present, *but hypothermia can also occur.*

Hypothermia is associated with various EKG changes and arrhythmias. The Osborne, or J wave, is a slow positive deflection in the latter portion of the QRS complex. This J wave is characteristic of hypothermia. (see below). A typical sequence of rhythm disturbances for progressively severe hypothermia could

include: sinus bradycardia, atrial fibrillation with slow ventricular response, ventricular fibrillation and asytole.



The J wave is characteristic of severe hypothermia

Clinical features of hypothermia include loss of coordination, decreased blood pressure, confusion, lethargy and eventually coma. Metabolically, a "cold dieresis" ensues, which causes dehydration. Oxygen release to tissues is impaired by hypothermia. Acidosis may occur due to severe respiratory depression (and buildup of carbon dioxide) as well as to accumulation of lactic acid from shivering and poor tissue perfusion.

TREATMENT of HYPOTHERMIA

The patient should be removed from the cold environment and wet clothing removed. The patient should be moved gently because vigorous manipulation of the patient could precipitate ventricular fibrillation in the hypothermic, irritable heart. As a result, the EMT should spend extra time (up to 45 seconds) checking for pulses and signs of life in the severely hypothermic patient prior to initiating CPR.

Indications for airway control and intubation are as per usual. Warmed oxygen and intravenous fluids should be used. Most rhythm disturbances (sinus

bradycardia and atrial fibrillation) do not require specific therapy and will convert spontaneously with rewarming. The hypothermic heart is resistant to atropine, pacing and countershock— good reasons to rewarm the patient. Ventricular fibrillation will also be refractory to treatment until the heart is rewarmed. The 2005 AHA guidelines recommend a single defibrillation attempt, and if this is unsuccessful, CPR should be initiated until rapid rewarming is performed. Defibrillation should be reattempted when the core temperature is 30 degrees C.

Glucose levels should be checked and D50 administered if indicated. In alcoholics, thiamine should be given.

Rewarming Techniques

Passive rewarming is physiologically sound –it allows for slow, steady and safe body temperature increases with minimal stress to the cardiovascular system. **Active rewarming** is indicated for those patients with severe hypothermia, hypothermia secondary to underlying disease, and patients with cardiovascular compromise. Passive rewarming allows the patient to warm up on their own, using their own heat produced by metabolism. Active rewarming is divided into Active External and Active Core rewarming methods.

Active External Rewarming (AER) is the application of exogenous heat to the body surfaces. In the ED, warm water immersion—though beneficial-- is not practical. Rewarming with heated air forced through slits in plastic or paper blankets is the mechanism utilized by Bair Hugger, and is quite successful. There are some disadvantages to AER. It is ineffective in patients with poor perfusion or cardiac arrest. Application of external heat may cause peripheral vasodilation and venous pooling. Washout of lactic acid from peripheral tissues may lead to rewarming acidosis. The core temperature may continue to decline after rewarming has been imitated. Core temperature after drop has been attributed to the return of cold blood into the core induced by external warming.

Active Core Rewarming has advantages because the internal organs, including the heart, are warmed resulting in improvement of organ function. Peripheral

vasodilation is avoided. Warm humidified are or oxygen can be given by mask or ET tube. IV fluids can be warmed to 40 degrees C. NG or colonic lavage can be accomplished with warm saline. Peritoneal lavage is effective. More extreme measures include pump-assisted cardiopulmonary bypass whereby blood is shunted through a warming device before being returned to the patient. In general, if the patient has stable cardiovascular status, many experts believe that rapid rewarming is not necessary. Others would argue that profoundly hypothermic patients, although stable, should be rapidly rewarmed . Since there have been no prospective, controlled studies comparing rewarming modalities in humans, specific guidelines are not available.

Routine Medical Care Protocol

A. Scene Size-up

1. Conduct a scene size-up.
    i. Assure the well being of the providers on scene.
    ii. Do not enter if the scene is unsafe.
    iii. If there are several patients with the same complaint, consider the possibility of a hazmat incident, toxic exposure, WMD incident, or carbon monoxide poisoning
2. Take body substance isolation precautions as indicated.
3. Determine the nature of the emergency.
4. Determine the number of patients. If there are multiple patients, establish Incident Command and call for additional resources.
5. Determine the nature of the illness and/or the mechanism of injury.

B. Initial Assessment

1. Form a general impression while approaching the patient. Determine the patient's age, gender, level of consciousness, spontaneous breathing and quality of respirations.
2. Provide manual c-spine immobilization, if indicated.
3. Determine the chief complaint.
4. Determine level of consciousness:
    i. Level of consciousness
        a. AVPU (**A**lert, **V**erbal, **P**ain, **U**nresponsive)
5. Airway
    i. Open the patient's airway if it is not patent.
        a. Perform a jaw-thrust maneuver if a neck or back injury is suspected.
        b. To obtain a neutral airway position, consider padding behind the shoulders of the pediatric patient.
        c. Perform a head-tilt-chin-lift maneuver if a neck or back injury is **NOT** suspected.
    ii. Inspect the inside of the patient's mouth and remove any visible objects. **DO NOT** perform blind finger sweeps.
    iii. Suction as needed.
    iv. Insert an adjunct as indicated.
        a. Acceptable adjuncts depending on the patient's status include the OPA, NPA, ETT, and King LT.
6. Breathing
    i. Assess the patient's respirations.
        a. Assess the patient's chest for rise and fall.
        b. Listen for respirations.
        c. Feel for respirations.
        d. Auscultate the patient's lung sounds.
    ii. Assess the patient for respiratory distress.
    iii. Assure adequate ventilation.
        a. If indicated, assist the patient's ventilations.

iv. Initiate appropriate O2 therapy.
v. Manage any illness or injury that may compromise breathing/ventilations.

7. Circulation
    i. Check pulse.
        a. If absent, begin CPR, and perform a quick look. If indicated, refer to the Field Pronouncement Procedure. (Non-Transport-2)
    ii. Assess skin (color; temperature; condition).
    iii. Assess for and control any major bleeding.
    iv. Initiate shock management as indicated.
8. Disability
    i. Evaluate the patient's neurological status.
        a. Assess the patient's Glasgow Coma Score, and mental status.
        b. Note any seizures, confusion, and lethargy.
        c. Assess the patient for gross abnormality in motor function and sensation in the extremities.
    ii. Expose areas as indicated.
9. Identify priority patients and make a transport decision. If the patient is critical, refer to the specific protocol and treat accordingly.

C. Focused History and Physical Exam

1. Interview the patient or bystanders to obtain a history of the present complaint
    i. Obtain information of the complaint, including:
        a. OPQRST (**O**nset, **P**rovocation, **Q**uality, **R**adiation, **S**everity, and **T**ime of illness)
    ii. Obtain a patient history
        a. SAMPLE (**S**igns and Symptoms, **A**llergies, **M**edications, **P**ast pertinent history, **L**ast oral intake, **E**vents leading to present illness).
2. Obtain baseline vital signs.
    i. Blood pressure.
    ii. Respiratory rate and quality.
    iii. Heart rate and quality.
    iv. Skin color, temperature, and condition.
    v. Pulse oximetry.
        a. Attempt to obtain a SpO2 prior to oxygen administration. **DO NOT** discontinue oxygen administration if it was already started in order to obtain a pre-oxygen administration SpO2.
        b. **DO NOT** withhold oxygen from a critical patient in order to obtain a baseline SpO2 measurement.
3. Perform a **FOCUSED** physical exam as indicated:
    i. Head
        a. Assess the patient for a headache, dizziness, or lightheadiness.
        b. Assess the patient for any visual disturbances.
        c. Assess the patient for any facial droop.
        d. Assess the eyes for PEARL. (**P**upils **E**qual **A**nd **R**eactive to **L**ight)
    ii. Neurologic

a. Assess the patient's Glasgow Coma Score, mental status, and note any confusion, lethargy, or seizures.
b. Assess for gross abnormality in motor function and sensation in the extremities.
c. Perform a Prehospital Stroke Scale.

iii. Neck
a. Check for JVD

iv. Chest/Cardiovascular
a. Assess the patient for chest discomfort or palpitations.
b. Assess the patient for cardiac dysrhythmias.
c. Assess the patient for pedal edema.

v. Respiratory
a. Assess the patient for respiratory distress.
b. Assess the patient for retractions, accessory muscle use, and nasal flaring.
c. Auscultate the patient's lung sounds.

vi. Abdominal
a. Assess the abdomen for tenderness, rigidity and distension.
b. Assess the abdomen for a pulsating mass.

vii. GI/GU/Reproductive
a. Only if indicated, assess the genitalia/perineum.
b. Assess the patient for any bleeding or unusual discharge
c. Assess the patient for any pain and discomfort

viii. Lower Extremities
a. Assess the lower extremities for motor, sensory, and distal circulation.

ix. Upper Extremities
a. Assess the upper extremities for motor, sensory, and distal circulation.

x. Posterior Thorax, Lumbar, and Buttocks
a. Assess the posterior thorax, lumbar, and buttocks for any abnormality

xi. Psychological/Social
a. Assess the patient's orientation
b. Determine if the patient is a threat to him/herself or to others
c. Assess if the patient's living conditions are dangerous to his/her welfare
d. Assess for red flags for maltreatment
e. Make the appropriate reports if abuse or neglect is suspected.
i. Contact a Captain/Commander and report your suspicions, and:
1. If it is a geriatric or pediatric patient, call 216-696-KIDS or CPD to file a report.

xii. Perform appropriate interventions and refer to the appropriate protocol as indicated.

xiii. Transport the patient to the appropriate medical facility.

D. Ongoing Exam

1. Repeat initial assessment as needed.
2. Reassess the patient's vital signs
i. Critical Patient: Reassess every 5minutes.

ii. Stable Patient: Reassess every 15 minutes.
iii. Reassess after every significant intervention or change in patient status.

3. Repeat the focused history and physical exam as needed.

Key Points

General

- All patient care and documentation **MUST** be appropriate for your level of training and within the standard of care of the city of Cleveland.
- Only functioning paramedics can perform ALS procedures.
- Refer to the appropriate protocol for all successfully resuscitated cardiac arrest patients.
- One provider can begin resuscitation and treatment while the other performs the assessment.
- It may be necessary to reference several protocols while treating a patient.
- Refer to the appropriate protocol and provide the required interventions as indicated.
- Additional focus may be needed in specific areas as indicated by the patient's chief complaint.
- Airway management and oxygen administration should be initiated based upon the results of the patient assessment and the protocols.
- Check the patient's BGL based upon the patient's assessment and the protocols.
- When assessing for pain, use a 0-10 pain scale; 0 = no pain; 10 = worst pain ever experienced.
- It is mandatory to document the reason why an intervention was not performed if it was indicated.
- Pre-hospital care providers must contact the receiving hospital as early as possible in any of the following situations:
    - Any patient with deranged vital signs:
        - Pulse less than 60 bpm or greater than 120 bpm.
        - Respirations of less than 10 or greater than 30 per minute in an adult.
        - Blood pressure of less than 90 systolic or greater than 180 systolic in an adult.
        - Any pediatric patient with abnormal vital signs
        - Altered mental status or coma.
    - Any patient whose treatment required a medication administration besides Oxygen or IV fluids.
    - Any patient who is believed to be experiencing a myocardial ischemia/infarction, stroke, obstructed airway, or active labor.
    - Any combative or suicidal patient.
    - Any patient who may have been a victim of sexual assault.
    - Any patient who has special needs, such as a ventilator, special bed, or any patient who may need to be isolated.
    - Any patient who is considered a major trauma.

Adult

- Use the current AHA guidelines for the appropriate number of compressions and

ventilations.

- o 1 Person CPR: 30 compressions to 2 ventilations
- o 2 Person CPR: 30 compressions to 2 ventilations

• Once an advance airway is placed, give 1 ventilation every 6-8 seconds without attempting to synchronize breaths betweens compressions. The rate of compressions is approximately 100 per minute.
• When providing ventilations to an adult patient with a pulse, provide 1 ventilation every 5-6 seconds.
• Patients who are taking beta-blockers may not have an elevated heart rate, but may be in shock.
• General weakness can be a symptom of a life threatening illness.
• Diabetic patients may have abnormal presentations of AMI and other conditions due to neuropathy.
• An adult patient is considered hypotensive if their systolic BP is 100 mmHg or less.
• An elderly patient (70 or older) is considered hypotensive if their systolic BP is 120 mmHG or less.
• Assess the patient after every 300 ml of normal saline, and continue with fluid resuscitation until it is no longer indicated.

Pediatric

• Use the current AHA guidelines for the appropriate number of compressions and ventilations.

- o 1 Person (Child and Infant) CPR: 30 compressions to 2 ventilations
- o 2 Person (Child and Infant) CPR: 15 compressions to 2 ventilations

• Once an advance airway is placed, give 1 ventilation every 6-8 seconds without attempting to synchronize breaths betweens compressions. The rate of compressions is approximately 100 per minute.
• When providing ventilations to a child or infant patient with a pulse, provide 1 ventilation every 3-5 seconds.
• When using the AHA guidelines, a child is a patient that is 1 year of age to the onset of puberty (about 12-14 years old) as defined by the presence of secondary sex characteristics. For example, breast development in girls and armpit hair in boys.
• When using the AHA guidelines, an infant is under the age of 1 year.
• Assess the pediatric patient after every 20 ml/kg fluid bolus of normal saline, and continue with fluid resuscitation until it is no longer indicated.
• A weight based medication dose administered to a pediatric patient should **NOT** exceed the adult dose.
• Refer to the Intraosseous Procedure (Procedure-7), if indicated.
• It may be necessary to alter the order of the assessment (except for the Initial Assessment) based upon the developmental stage of the patient.
• A pediatric trauma patient is any trauma patient who is 15 years old or younger.
• Refer to the Pediatric Vital Signs Chart, as needed.

AGE	Systolic BP	Respirations	Heart Rate
Infant	>60	30 – 60	100 – 160
Toddler	>70	24 - 40	90 – 150

Preschooler	>75	22 – 34	80 – 140
School-aged Child	>80	18 – 30	70 – 120
Adolescent	>90	12 - 16	60 – 100

Routine Trauma Care Protocol

A. Scene Size-up

1. Conduct a scene size-up.
    i. Assure the well being of the providers on scene.
    ii. Do not enter if the scene is unsafe.
    iii. If there are several patients with the same complaint, consider the possibility of a hazmat incident, toxic exposure, WMD incident, or carbon monoxide poisoning
2. Take body substance isolation precautions as indicated.
3. Determine the nature of the emergency.
4. Determine the number of patients. If there are multiple patients, establish Incident Command and call for additional resources.
5. Determine the mechanism of injury and provide c-spine immobilization as indicated.

B. Initial Assessment

1. Form a general impression while approaching the patient. Determine the patient's age, gender, level of consciousness, spontaneous breathing and quality of respirations.
2. Provide manual c-spine immobilization if indicated.
3. Determine the chief complaint.
4. Determine:
    i. Level of consciousness
        a. AVPU (**A**lert, **V**erbal, **P**ain, **U**nresponsive)
5. Airway
    i. Open the patient's airway if it is not patent.
        a. Perform a jaw-thrust maneuver if a neck or back injury is suspected.
        b. To obtain a neutral airway position, consider padding behind the shoulders of pediatric patients.
        c. Perform a head-tilt-chin-lift maneuver if a neck or back injury is **NOT** suspected.
    ii. Inspect the inside of the patient's mouth and remove any visible objects.
    iii. Suction as needed.
    iv. Insert an adjunct as indicated.
        a. Acceptable adjuncts depending on the patient's status include the OPA, NPA, ETT, and King LT.
6. Breathing
    i. Assess the patient's respirations.
        a. Assess the patient's chest for rise and fall.
        b. Listen for respirations.
        c. Feel for respirations.

d. Auscultate the patient's lung sounds.

ii. Assure adequate ventilation.

a. If indicated, assist the patient's ventilations.

iii. Initiate appropriate O2 therapy.

iv. Manage any injury that may compromise breathing/ventilations.

7. Circulation

i. Check pulse.

a. If absent, begin CPR, and perform a quick look. If indicated, refer to the Field Pronouncement Procedure (Non-Transport-2).

ii. Assess skin (color temperature condition)

iii. Assess for and control any major bleeding.

iv. Initiate shock management as indicated.

8. Disability

i. Evaluate the patient's neurological status.

a. Assess the patient's Glasgow Coma Score, and mental status.

b. Note any seizures, confusion, and lethargy.

c. Assess the patient for gross abnormality in motor function and sensation in the extremities.

ii. Expose areas as indicated.

9. Identify priority patients and make a transport decision. If the patient is critical, or meets Major Trauma Triage Criteria (Adult: Trauma-9, Pediatric: Ped-10), complete the rest of your assessment enroute.

a. Limit the scene time to less than 10 minutes if the patient meets **ANY** of the major trauma criteria.

b. If the patient meets **ANY** of the Major Trauma Triage Criteria (Adult: Trauma-9, Pediatric: Ped-10), transport the patient to the closest appropriate trauma center.

c. Perform appropriate interventions as indicated.

C. Focused History and Physical Exam/Rapid Trauma Assessment

1. Interview the patient or bystanders to obtain a history of the present complaint.

i. Obtain information of the complaint, including (if it applies);

a. The mechanism of injury.

b. The estimated speed of the impact.

c. The movement of the vehicle after the impact.

d. Position of the patient in the vehicle and if restraints were used.

e. If the airbags were deployed.

f. Number of shots heard.

g. The size of the knife or type of firearm.

h. Height of the fall.

i. Any other pertinent information.

ii. Obtain a patient history

a. SAMPLE (**S**igns and Symptoms, **A**llergies, **M**edications, **P**ast pertinent history, **L**ast oral intake, **E**vents leading up to the present injury)

2. Obtain baseline vital signs.

i. Blood pressure.
ii. Respiratory rate and quality.
iii. Heart rate and quality.
iv. Skin color, temperature, and condition.
v. Pulse oximetry.
    a. Attempt to obtain a SpO2 prior to oxygen administration. **DO NOT** discontinue oxygen administration if it was already started in order to obtain a pre-oxygen administration SpO2.
    b. **DO NOT** withhold oxygen form a critical patient in order to obtain a baseline SpO2 measurement.

3. Perform a Rapid Trauma Assessment (DCAP-BTLS: **D**eformities, **C**ontusions, **A**brasions, **P**enetrations, **B**urns, **T**enderness, **L**acerations, and **S**welling).

i. Head
    a. Check the entire head for DCAP-BTLS.
    b. Check the head for instability and crepitus.
    c. Check the nose, ears and mouth for cerebrospinal fluids.
    d. Assess eyes for PEARL. (**P**upils **E**qual **A**nd **R**eactive to **L**ight)
ii. Neurologic
    a. Assess the patient's Glasgow Coma Score, mental status, and note any confusion, lethargy, or seizures.
    b. Assess for gross abnormality in motor function and sensation in the extremities.
iii. Neck
    a. Check the entire neck for DCAP-BTLS.
    b. Check the neck for instability, crepitus, and "step offs."
    c. Check for tracheal deviation.
    d. Check for JVD.
iv. Chest
    a. Check the entire chest for DCAP-BTLS.
    b. Check the chest for instability and crepitus.
    c. Auscultate the chest for lung sounds.
v. Abdominal
    a. Check the entire abdomen for DCAP-BTLS.
    b. Check the abdomen for rigidity and distension.
    c. Check the pelvis for instability and crepitus.
    d. Only if indicated, inspect the genitalia/perineum as indicated.
vi. Lower Extremities
    a. Check the entire lower extremities for DCAP-BTLS.
    b. Check the lower extremities for instability and crepitus.
    c. Check the lower extremities for motor, sensory, and distal circulation.
vii. Upper Extremities
    a. Check the entire upper extremities for DCAP-BTLS.
    b. Check the upper extremities for instability and crepitus.
    c. Check the upper extremities for motor, sensory, and distal circulation.
viii. Posterior Thorax, Lumbar, and Buttocks
    a. Check the posterior thorax, lumbar, and buttocks area for DCAP-BTLS.

b. Check the entire posterior thorax, lumbar, and buttocks area for instability and crepitus.

ix. Psychological/Social

a. Assess the patient's orientation.
b. Determine if the patient is a threat to him/herself or to others.
c. If possible, assess if the patient's living conditions are dangerous to his/her welfare.
d. Assess for red flags of maltreatment.
e. Make the appropriate reports if abuse or neglect is suspected.
i. Contact a Captain/Commander and report your suspicions, and:
1. If it is a geriatric or pediatric patient, call 216-696-KIDS or CPD to file a report.

x. Manage secondary injuries appropriately.

a. If the patient is a major trauma, treat secondary injuries while enroute and only if it does not interfere with performing more important interventions.

D. Detailed Physical Exam (If time allows)

1. Repeat the initial assessment as needed.
2. Perform a more detailed rapid trauma assessment.
3. Reassess the patient's vital signs.
   i. Critical Patient: Reassess every 5minutes.
   ii. Stable Patient: Reassess every 15 minutes.
   iii. Reassess after every significant intervention or change in patient status.

E. Ongoing Exam

1. Repeat the initial assessment as needed.
2. Repeat the detailed physical exam as indicated.
3. Reassess the patient's vital signs.
   i. Critical Patient: Reassess every 5minutes.
   ii. Stable Patient: Reassess every 15 minutes.
   iii. Reassess after every significant intervention or change in patient status.

Key Points

General

- All patient care and documentation **MUST** be appropriate for your level of training and within the standard of care of the city of Cleveland.
- Only functioning paramedics can perform ALS procedures.
- Use the most current AHA guidelines for CPR and rescue breathing.
- Refer to the appropriate protocol for all successfully resuscitated cardiac arrest patients.
- One provider can begin resuscitation and treatment while the other performs the assessment.
- It may be necessary to reference several protocols while treating a patient.
- Refer to the appropriate protocol and provide the required interventions as indicated.
- Additional focus may be needed in specific areas as indicated by the patient's chief complaint.

- Airway management and oxygen administration should be initiated based upon the results of the patient assessment and the protocols. NPAs are **NOT** to be used for patients with a head injury.
- Check the patient's BGL based upon the patient's assessment and the protocols.
- When assessing for pain, use a 0-10 pain scale; 0 = no pain; 10 = worst pain ever experienced.
- It is mandatory to document the reason why an intervention was not performed if it was indicated.

Adult

- Patients who are taking beta-blockers may not have an elevated heart rate, but may be in shock.
- Hip fractures and dislocations in the elderly have a high mortality rate.
- What would be considered a minor or moderate injury in the adult patient can be life threatening in the elderly.
- An adult patient is considered hypotensive if their systolic BP is 100 mmHg or less.
- An elderly patient (70 or older) is considered hypotensive if their systolic BP is 120 mmHG or less.
- Assess the adult patient after every 300 ml of normal saline, and continue with fluid resuscitation until it is no longer indicated.

Pediatric

- It may be necessary to alter the order of the assessment (except for the initial assessment) based upon the developmental stage of the patient.
- A pediatric trauma patient is any trauma patient who is 15 years old or younger.
- Refer to the Pediatric Vital Signs Chart, as needed.

AGE	Systolic BP	Respirations	Heart Rate
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