For any submersion injury, including drowning and dive (decompression) emergencies

**History**
- Age
- Duration of submersion
- Water temperature
- Type of water (salt, fresh, pool, etc.)
- SCUBA Diving
- Trauma possible? (Diving into pool)

**Signs and Symptoms**
- Airway – Clear vs. Foam vs. water/vomit
- Spontaneous Breathing
- AMS
- Cold/Shivering
- Motor neuro exam/priapism
- Bradycardia

**Differential**
- Hypothermia
- Hypoglycemia
- CNS dysfunction
- Seizure
- Head injury
- Spinal cord injury

**Pearls**
- Check for pulselessness for 30-45 seconds to avoid unnecessary chest compressions.
- Defer ACLS medications in hypothermic patients until patient is warmed. Patients with hypothermia may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed.
- If V-Fib or pulseless V-Tach is present, shock x1, and defer further shocks.
- Extremes of age, malnutrition, alcohol, and other drug use are contributing factors to hypothermia.
- Patients with prolonged hypoglycemia often become hypothermic; blood glucose analysis is essential.
- If a temperature is unable to be measured, treat the patient based on the suspected temperature.
- Warm packs can be placed in the armpit and groin areas. Care should be taken not to place directly on skin.

**Emergency Hyperbaric Chambers**
John Muir Medical Center – Walnut Creek

**Cardiac Arrest**

**Respiratory Distress**

**Supplemental oxygen to maintain SpO₂ >92%**

**SMR if indicated**

**Gently move to a warm environment**

**Remove wet clothing and cover with warm dry sheets or blankets**

**Monitor and reassess**

**Establish IV/IO**

**Cardiac monitor**

**Monitor and reassess**

**Notify receiving facility. Consider Base Hospital for medical direction**

**Alert, awake, and oriented**

**Awake but altered**

**Unresponsive**

**Supplemental oxygen to maintain SpO₂ >92%**

**Blood glucose analysis**

**Spinal motion restriction if indicated**

**Gently move to a warm environment**

**Remove wet clothing and cover with warm dry sheets or blankets**

**Establish IV/IO**

**Cardiac monitor**

**Monitor and reassess**

**ALOC**
Pearls
• CO is colorless and odorless.
• Pulse oximetry will likely be normal with CO toxicity.
• Hyperbaric oxygen is recommended for those with AMS, seizure, coma, focal deficits, blindness, CO levels > 25% or > 20% if pregnant. John Muir Medical Center – Walnut Creek is the only emergency hyperbaric chamber in the Bay Area. Contact the Base Hospital for direction.
• Consider cyanide poisoning in any patient with CO intoxication.
• For suspected cyanide poisoning, contact the receiving hospital early.
• Consider cyanide poisoning in any patient with AMS.

Emergency Hyperbaric Chambers
John Muir Medical Center – Walnut Creek

History
• Industrial or closed space fire
• Facial burns
• Previous CO poisoning
• Propane powered equipment (e.g., power mower, tractor, gas powered equipment)
• Gas home heaters, natural gas stoves, kerosene heaters
• Gas clothes dryer or hot water heater
• Multiple people or pets with similar symptoms

Signs and Symptoms
• AMS
• Malaise/Fatigue
• Flu-like symptoms
• Weakness
• Headache
• Dizziness
• Blurred vision
• Ataxia
• Seizure
• Nausea/vomiting/cramping
• Chest pain

Differential
• Diabetic emergency
• Infection/sepsis
• Myocardial infarction
• Anaphylaxis
• Renal failure
• Head injury/trauma
• Ingestion/toxic exposure

Treatment Protocol PR10
Effective August 2020
History
- Type and time of injury
- Mechanism (electrical shock, electrocution, or lightning strike)
- Entrance and exit wounds
- Past medical history
- Medications

Signs and Symptoms
- Evidence of trauma or burn
- Pain, swelling, deformity, or bleeding
- Altered sensation or motor function
- Airway compromise or respiratory distress
- Altered mental status
- Loss of consciousness
- Cardiac arrest

Differential
- Abrasion
- Contusion
- Laceration
- Thermal injury
- Blast injury

---

Cardiac arrest?

No

- Early transport
  - Limit scene time to 10 minutes
  - Support airway and respiratory rate
  - Cool and treat burns
  - Place splints to stabilize fractures and treat pain as necessary
  - Establish IV/IO
  - Cardiac monitor

  If age-dependent hypotensive
  - Normal Saline bolus IV/IO
  - Use Broselow Tape; refer to dosing guide
  - Reassess patient for criteria above
  - May repeat x2

  In the absence of head trauma, hypotension, poor perfusion or AMS
  - Consider, Fentanyl for pain control
  - Use Broselow Tape; refer to dosing guide

- Notify receiving facility. Consider Base Hospital for medical direction

Yes

- Cardiac arrest patients should be triaged as a priority over those who are conscious

- Cardiac arrest

Burns

Pain

---

Notify receiving facility. Consider Base Hospital for medical direction
The scene of an electrical injury may present many hazards for rescue personnel, so extra consideration must be taken to ensure scene safety. High-voltage power lines are almost never insulated but may appear insulated from atmospheric contaminants deposited on the lines over time. A rescuer standing on the ground touching any part of a vehicle that is in contact with a power line is likely to be killed or seriously injured. In fact, electrocution can occur from ground current simply by walking too close to a downed power line. A common error is establishing a safety perimeter that is too small.

Consider SMR after the primary survey is completed. Prehospital providers should assume that victims of electrical trauma have multiple traumatic injuries. A large percentage of high-voltage electrical trauma patients have either fallen from a height or been thrown by the force of the electric current. Falls, being thrown from the electrical source by an intense muscular contraction, or blast effect from explosive forces that may occur with electric flashes can cause significant secondary blunt trauma. In addition, fractures and joint dislocations can be caused by forceful muscle contractions.

There are five basic mechanisms of injury that occur with lightning strikes:

1. Direct strike: A direct strike is more likely to hit a person who is in the open and unable to find shelter. This type of lightning strike is usually fatal.
2. Splash injury: This occurs when lightning strikes an object (such as a tree or building) or another person, and the current “splashes” to a victim standing nearby. Current can also splash to a victim indoors via plumbing or telephone wires.
3. Contact injury: This occurs when the victim is in physical contact with an object or a person directly struck or splashed by lightning.
4. Step voltage/ground current injury: When lightning hits the ground, the current spreads outward in a radial pattern. Because the human body offers less resistance to electrical current than does the ground, the current will preferentially travel through the body (e.g., up one leg and down the other) between the body’s two points of ground contact.
5. Blunt trauma: Victims of lightning strike may be thrown by the concussive forces of the shockwave created by the lightning. A lightning strike can also cause significant opisthotonic muscle contractions, which may lead to fractures or other trauma.

Electrical/lightning burn images

Pearls

- Never enter an unsafe scene of an electrical injury.
- In multi-casualty incidents involving electrocution, cardiac arrest patients should be triaged as priority over conscious patients to facilitate early defibrillation. Electrocution patients rarely die as a result of electrical injuries and may have a favorable outcome despite prolonged asystole.
- Be prepared to treat cardiac arrhythmias.
- Patients with a combination of trauma and burns should be transported to a trauma center.
### Pearls
- Check an initial temperature and repeat every 15 minutes while actively cooling.
- Extremes of age are more prone to heat emergencies. Obtain and document the patient temperature and location taken.
- Salicylates, antipsychotics, and some recreational drugs may elevate body temperature.
- Sweating generally disappears as body temperature rises above 104°F.
- Active cooling includes: Removal of bulky clothing; wetting patient with water; and air conditioning/fanning; ice packs to the axilla, groin, and neck.
- Intense shivering may occur as a patient is cooled. Stop cooling treatment until shivering stops.
- Seizures may occur with heat stroke; treat seizures per seizure treatment guideline.
- With mild symptoms of heat exhaustion, movement to a cooler environment and fanning may suffice. Increasing symptoms merit more aggressive cooling measures.
Pediatric Hypothermia/Cold Injury

For environmental exposures causing hypothermia and/or frostbite injury

History
- Age
- Exposure to decreased temperatures, but may occur in normal atmospheric temperatures
- Time and length of exposure
- Drug or alcohol use
- Infection or sepsis
- Past medical history
- Medications

Signs and Symptoms
- AMS
- Cold or clammy skin
- Shivering
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension or shock

Differential
- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
  - Stroke
  - Head injury
  - Spinal cord injury

Pearls
- Severe hypothermia may cause cardiac instability. Avoidance of excess stimuli is important in severe hypothermia as the heart is sensitive and interventions may induce arrhythmias. Necessary interventions should be done as gently as possible. If available, use warm saline.
- Check for pulselessness for 30-45 seconds to avoid unnecessary chest compressions.
- Defer ACLS medications until patient is warmed (normothermic). Patients with hypothermia may have good neurologic outcome despite prolonged resuscitation; resuscitative efforts should continue until the patient is rewarmed.
- If V-Fib or pulseless V-Tach is present, shock x1, and defer further shocks.
- Extremes of age, malnutrition, alcohol, and other drug use are contributing factors to hypothermia.
- Patients with prolonged hypoglycemia often become hypothermic; blood glucose analysis is essential.
- If a temperature is unable to be measured, treat the patient based on the suspected temperature.
- Warm packs can be placed in the armpit and groin areas. Care should be taken not to place directly on skin.
Pediatric Stings/Venomous Bites

**History**
- Type of bite or sting
- Description or photo of creature for identification, if safe to do so
- Time, location, size of bite or sting
- Previous reaction to bite or sting
- Domestic vs. wild
- Tetanus and Rabies risk
- Immunocompromised patient

**Signs and Symptoms**
- Rash, skin break, or wound
- Pain, soft tissue swelling, or redness
- Blood oozing from the bite wound
- Evidence of infection
- Shortness of breath or wheezing
- Allergic reaction, hives, or itching
- Hypotension or shock

**Differential**
- Animal bite
- Human bite
- Snake bite (poisonous)
- Spider bite (poisonous)
- Insect sting/bite (bee, wasp, ant, or tick)
- Infection risk
- Rabies risk
- Tetanus risk

**If needed**
California Poison Control
(800) 222-1222

**Effective November 2018**
Treatment Protocol PE04

**Effective August 2020**
Page 1 of 2
Poisonous snakes in our region are generally of the pit viper family: six rattlesnake species.

If no pain or swelling is present, envenomation is unlikely. About 25% of snake bites are dry bites.

Black Widow spider bites tend to be minimally painful initially, but over a few hours, muscular and severe abdominal pain may develop (black spider with a red hourglass on the belly).

Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back).

Evidence of infection includes: swelling, redness, drainage, fever, and red streaks proximal to wound.

Consider contacting the California Poison Control Center for identification (800) 222-1222.
Pediatric Hazmat Exposure/Skin Exposure

**History**
- Type and time of injury
- Duration of exposure
- Exposure to chemical, biological, radiologic, or nuclear hazard
- Potential exposure to unknown substance or hazard
- Farmer or farm worker/harvester with exposure to pesticide
- Radiation exposure

**Signs and Symptoms**
- S.L.U.D.G.E.M.
  - Altered mental status
  - Pupils
  - Seizure activity
  - Respiratory distress/arrest
  - Cardiac arrhythmias/dysrhythmias
  - Abnormal skin signs

**Differential**
- Nerve agent exposure (e.g., VX, Sarin, Soman, etc.)
- Organophosphate exposure (e.g., pesticide)
- Vesicant exposure (e.g., Mustard gas, etc.)
- Respiratory irritant exposure (e.g., hydrogen sulfide, ammonia, chlorine, etc.)

**Collapse**
- Notify receiving facility.
- Consider Base Hospital for medical direction

**Type of exposure**
- Radiation
- Nerve agents
- Chemical burns

**Radiation**
- Remove clothing, if appropriate
- Apply Oxygen to maintain goal $SpO_2 > 92\%$
- Cardiac monitor
- Establish IV/IO
- If needed request Hazmat (650) 363-4981

**Nerve agents**
- Secure airway and support respiratory rate
- Establish IV/IO
- Cardiac monitor
- If purple or higher on Broselow tape
  - Atropine 2mg IV/IO/IM
- If red or low on Broselow tape
  - Atropine 0.5mg IV/IO/IM
- Repeat every 3-5 minutes until symptoms resolve
- If patient is seizing upon EMS arrival, give Midazolam; do not wait to obtain IV or IO access
  - May repeat every 3 to 5 minutes for continued seizure activity

**Chemical burns**
- For burning involving powders, safely brush off powder. Flush with copious water after all powder is removed.
- For burns involving acids, thoroughly flush affected area(s) with water to remove acid.
- For hydrofluoric acid exposure
  - Calcium Chloride for dysrhythmias or cardiac arrest
  - For pain consider Fentanyl

**For thermal burns:**
- Burns

**Eye Irrigation Field Procedure**
Pearls

- For gaseous exposures, refer to appropriate respiratory protocols.
- Follow HAZMAT protocols for decontamination. Do not come into contact with or transport any contaminated patient.
- Salivation; Lacrimation; Urination (increased or loss of control); Defecation or diarrhea; GI upset (abdominal pain/cramping); Emetis; Muscle twitching.
- Nerve agent kits are not approved for children.
- For patients with acute symptoms, there is no limit for Atropine dosing.
- Insecticides: Increased or decreased heart rate, increased secretions, nausea, vomiting, diarrhea, and pinpoint pupils. Consider restraints if necessary for patient’s or personnel’s protection per Restraint Procedure.
- Carefully evaluate patients to ensure they have not been exposed to another type of agent (e.g., narcotics, vesicants, etc.)
- The main symptom that Atropine addresses is excessive secretions, Atropine should be given until respiratory symptoms improves.

Radiation is energy transmitted in waves or particles that are colorless, odorless, invisible. We are exposed to small doses everyday, which have little effect on the body. In very large doses, however, the affect on the body can be deadly. EMS providers should patients and themselves away from the source as quickly as possible to minimize exposure an time of exposure. Supportive care is the mainstay of therapy. For patients who are exposed to radiation, it is crucial that their clothes are moved and they are decontaminated prior to EMS contact, treatment, and transport. All belongings should be left on scene.

External radiation exposure may result from a radiologic dispersant device, radiologic material release, or radiological explosive device. Limit time with suspected source. Once patients are decontaminated, patients pose minimal to no risk to EMS providers.

Internal radiation may result from exposure through an open wound, injection, or inhalation of radioactive materials. These types of exposures are common in both patient diagnostic and treatment care. Internal radiation poses minimal to no risk to EMS providers.
Pediatric Alcohol Intoxication

History
- Known or suspected alcohol use

Signs and Symptoms
- Restlessness or confusion
- Weakness or dizziness
- Flushed skin
- Odor of alcohol on breath

Differential
- Shock (hypovolemic, cardiogenic, septic, neurogenic or anaphylaxis)
- Cardiac dysrhythmias
- Medication effect or overdose
- Head trauma
- Hypoglycemia
- Stroke
- Seizure/post-ictal

For alcohol intoxication if it is the primary problem. Use of secondary primary impression if the patient has another acute emergency.

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**E**
- Assess airway
- Blood glucose analysis
  - Consider, cardiac monitor
  - Consider, IV procedure
  - If age-dependent hypotensive
    - Normal Saline bolus IV/IO
    - May repeat x2
  - Notify receiving facility.
  - Consider Base Hospital for medical direction

**P**
- For intractable nausea/vomiting
  - Consider, Ondansetron

**Hypoglycemia**
**Hyperglycemia**

**Trauma**
**Seizure**
**Stroke**
**Overdose/Poisoning**
Pediatric Overdose/Poisoning/Ingestion

History
- Ingestion or suspected ingestion of a potentially toxic substance
- Substance ingested, route, and quantity
- Time of ingestion
- Reason (suicidal, accidental or criminal)
- Available medications in home
- Past medical history and medications

Signs and Symptoms
- Mental status changes
- Hypo or hypertension
- Decreased respiratory rate
- Tachycardia or dysrhythmias
- Seizures
- S.L.U.D.G.E.M.
- Vision impairment
- Pupillary changes

Differential
- Tricyclic antidepressants (TCAs)
- Acetaminophen (Tylenol)
- Aspirin
- Depressants
- Stimulants
- Anticholinergics
- Cardiac medications
- Solvents, alcohols or cleaning agents
- Insecticides (organophosphates)

California Poison Control Center
(800) 222-1222

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For any intentional or unintentional overdose/poisoning by any route, includes illicit substances and prescription medications, overdose and/or adverse reactions.

**Adequate age-dependent respirations and oxygenation?**

**Yes**

- Blood glucose analysis
- Cardiac monitor
- 12-Lead ECG
- Consider, IV

- If age-dependent hypotensive
  - Normal Saline bolus IV/IO
  - May repeat x2

- Is patient aggressive? **Yes**

- Agitated Delirium

**No**

- Appropriately manage airway

  **Naloxone**
  - Naloxone is titrated to effect of adequate ventilation and oxygenation
  - NOT ADMINISTERED TO RESTORE CONSCIOUSNESS

- If symptomatic bradycardic or hypotension

  **Calcium Channel Blocker OD**

  **Calcium Chloride**

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**Antipsychotic OD**

**Beta-Blocker OD**

**Tricyclic Antidepressant OD**

**If bradycardic and symptomatic**

- **Glucagon**

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**Dystonic Reaction**

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**Symptomatic Bradycardia**

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**Notify receiving facility. Consider Base Hospital for medical direction**

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**Confirmed by California Poison Control Center**

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**Treatment Protocol PX03**

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**Effective August 2020**
Pearls

- Overdose or toxic ingestion patients with significant ingestion/exposures should be monitored very closely and aggressively treated as indicated. Do not hesitate to contact the Base Hospital or Poison Control for advice as certain critically ill overdose patients may quickly overwhelm medication supplies. For example, a tricyclic overdose with a wide QRS and altered mental status may need to receive multiple Sodium Bicarbonate boluses until QRS narrowing and clinical improvement. Note: Poison Control offers advice, not medical direction.
- Bring medication with the patient to the hospital.
- Tricyclic: Progression of toxicity include decreased mental status, dysrhythmias, seizures, hypotension then coma and death; onset can occur within 5 minutes.
- Anticholinergic (i.e. large dose of atropine): Hyperthermia (hot as hades), tachycardia, hypertension, tachypnea
- Cholinergic: Bradycardia (muscarinic), tachycardia and hypertension (nicotinic)
- Hallucinogen: Hyperthermia, tachycardia, hypertension
- Opiod: Hyperthermia, bradycardia, hypotension, bradypnea
- Sedative - hypnotic: Hyperthermia, bradycardia, hypotension, bradypnea
- Serotonin syndrome: Hyperthermia, tachycardia, hypertension, tachypnea
- Sympathomimetic: Hyperthermia, tachycardia, tachypnea
- Acetaminophen: Initially normal or with nausea/vomiting.
- Aspirin: Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure or cerebral edema among other things can present later.
- Depressants: Decreased heart rate, blood pressure or temperature, decreased respirations, and non-specific pupils.
- Stimulants: Increased heart rate, blood pressure or temperature, dilated pupils, and seizures.
- Anticholinergics: Increased heart rate or temperature, dilated pupils, and mental status changes.
- Cardiac medications: Dysrhythmias and mental status changes.
- Solvents: Nausea, vomiting, coughing, and mental status changes.
- Insecticides: Increased or decreased heart rate, increased secretions, nausea, vomiting, diarrhea, and pinpoint pupils. Consider restraints if necessary for patient’s or personnel’s protection per Restraint Procedure. See Hazmat protocol for insecticide treatment.
For suspected dystonic reaction (i.e., reaction, typically from antipsychotic medications, causing abnormal contraction of head and neck muscles)

**History**
- Medical history
- Medications
- Abuse or recreational use of prescription medications

**Signs and Symptoms**
- Restlessness
- Muscle spasms of the neck, jaw and back
- Oculogyric crisis
- Speech difficulties

**Differential**
- Trauma
- Stroke
- Tumor
- Hypoxia
- Infection
- Drug reactions
- Poisoning

**Pearls**
- Common drugs implicated in dystonic reactions include many anti-emetics and anti-psychotic medications including, but not limited to:
  - Prochlorperazine (Compazine)
  - Haloperidol (Haldol)
  - Metoclopramide (Reglan)
  - Promethazine (Phenergan)

  - Fluphenazine (Prolixin)
  - Chlorpromazine (Thorazine)
  - Many other anti-psychotic and anti-emetic drugs
Pediatric Agitated Delirium

For Agitated Delirium only. NOT for psychiatric emergencies or other causes of agitation without delirium

**History**
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medical alert tag
- Substance abuse/overdose
- Diabetes
- PCP/cocaine/methamphetamine use

**Signs and Symptoms**
- Combative or violent
- Extremely aggressive or violent behavior
- Hyperthermia
- Increased physical strength
- Danger to self or others

**Differential**
- Altered mental status
- Alcohol intoxication
- Toxic/substance abuse
- Medication effect/overdose
- Withdrawal symptoms
- Psychiatric (e.g. Psychosis, Depression, Bipolar etc.)
- Hypoglycemia

---

**Ensure scene safety. Law enforcement should be present.**

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**Extremely aggressive or violent?**

- No
  - **Behavioral/Psychiatric Crisis**

- Yes
  - **Consider restraints**
    - Monitor restraints and PMS *if indicated*
  - **Consider external cooling measures**
  - Monitor and reassess
  - Blood glucose analysis
  - Cardiac monitor
  - Establish IV/IO
  - **If age-dependent hypotensive**
    - Normal Saline bolus IV/IO
    - May repeat x2
  - For wide QRS > 0.12mm
    - Sodium Bicarbonate

**Exit to appropriate TP, if indicated**

Assume patient has medical cause of behavioral change

- **Altered Level of Consciousness**
- **Overdose/Poisoning/Ingestion**
- **Trauma**

**Notify receiving facility. Consider Base Hospital for medical direction**

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Pediatric Toxic Exposure Treatment Protocols
**Excited Delirium Syndrome:**

This is a medical emergency. The condition is a combination of delirium, psychomotor agitation, anxiety, hallucinations, speech disturbances, disorientation, violent/bizarre behavior, insensitivity to pain, hyperthermia and increased strength. The condition is life-threatening and is often associated with use of physical control measures, including physical restraints, and tasers. Most commonly seen in male patients with a history of serious mental illness or drug abuse, particularly stimulant drugs such as cocaine, crack cocaine, methamphetamine, amphetamines, bath salts, or similar agents. Alcohol withdrawal or head injury may also contribute to the condition.

**Pearls**

- Crew/responder safety is the main priority.
- Any patient who is handcuffed by Law Enforcement and to remain handcuffed and transported by EMS must be accompanied by Law Enforcement in the ambulance.
- Caution using Midazolam for patients with alcohol intoxication.
- All patients who receive either physical restraint or chemical sedation must be continuously observed by EMS personnel. This includes direct visualization of the patient as well as cardiac and EtCO₂ monitoring.
- Consider all possible medical/trauma causes for behavior (e.g., hypoglycemia, overdose, substance abuse, hypoxia, seizure, head injury, etc.).
- Do not overlook the possibility of associated domestic violence or child abuse.
- Do not position or transport any restrained patient in a way that negatively affects the patient’s respiratory or circulatory status (e.g., hog-tied or prone positions). Do not place backboards, splints, or other devices on top of the patient.
- If restrained, the extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This shall be documented in the PCR.
Pediatric Behavioral/Psychiatric Crisis

History
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medical alert tag
- Substance abuse/overdose
- Diabetes

Signs and Symptoms
- Anxiety, agitation or confusion
- Affect change or hallucinations
- Delusional thoughts or bizarre behavior
- Expression of suicidal/homicidal thoughts

Differential
- Altered mental status
- Alcohol intoxication
- Toxin / substance abuse
- Medication effect/overdose
- Withdrawal symptoms
- Psychiatric (e.g. Psychosis, Depression, Bipolar etc.)
- Hypoglycemia

Pearls
- Crew/responder safety is the main priority.
- Any patient who is handcuffed by Law Enforcement and to remain handcuffed and transported by EMS must be accompanied by Law Enforcement in the ambulance.
- All patients who receive physical restraint must be continuously observed by EMS personnel. This includes direct visualization of the patient as well as cardiac and pulse oximetry monitoring.
- Consider all possible medical/trauma causes for behavior (e.g., hypoglycemia, overdose, substance abuse, hypoxia, seizure, head injury, etc.).
- Do not overlook the possibility of associated domestic violence or child abuse.
- Do not position or transport any restrained patient in a way that negatively affects the patient’s respiratory or circulatory status (e.g., hog-tied or prone). Do not place backboards, splints, or other devices on top of patient.
- If restrained, extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible and shall be documented in the PCR.
Pediatric Abdominal Pain/Problems (GI/GU)

For any pain or problem in the abdominal/flank region that does not have a more specific primary impression; includes post-surgical complications

History
- Age
- Past medical/surgical history
- Medications
- Onset
- Provocation
- Quality (e.g., crampy, constant, sharp, dull, etc.)
- Region/radiation/referred
- Severity (0 – 10 scale)
- Time (duration/repetition)
- Fever
- Last meal eaten
- Last bowel movement/emesis

Signs and Symptoms
- Hypotension
- Pain (location/migration)
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria (painful or difficult urination)
- Constipation

Associated symptoms: (Helpful to localize source)
- Fever, headache, weakness, malaise, myalgia, cough, headache, mental status change, or rash

Differential
- Pneumonia or pulmonary embolus
- Liver (hepatitis)
- Peptic ulcer disease/gastritis
- Appendicitis
- Bladder/prostate disorder
- Pelvic (PID, ectopic pregnancy, or ovarian cyst)
- Spleen enlargement
- Bowel obstruction
- Gastroenteritis (infectious)
- Ovarian or testicular torsion

History Flowchart

Assess symptom severity

Unstable (Hypotension/poor perfusion)
- Cardiac monitor
- Establish IV/IO
- If age-dependent hypotensive
  - Normal Saline bolus IV/IO
  - May repeat x2
- If patient has nausea or vomiting
  - Ondansetron
- For pain consider, Fentanyl

Stable
- Consider, IV/IO
- If patient has nausea or vomiting
  - Ondansetron
- Consider, Cardiac monitor

Improving?
- Notify receiving facility.
  - Consider Base Hospital for medical direction

Pearls
- For chronic abdominal pain, use caution before administering Fentanyl.
- Ondansetron is not indicated or useful for motion sickness.
- Use caution when considering administration of opioids for pain control.
Pediatric Allergic Reaction

For any simple allergic reaction that is isolated to the skin (hives/urticarial only) and does not meet definition of anaphylaxis

History
- Onset and location
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap, or detergent
- Past history of reactions
- Past medical history
- Medication history

Pearls
- Allergic reactions may occur with only respiratory or gastrointestinal symptoms and have no rash or skin involvement.

Signs and Symptoms
- Itching or hives
- Erythema

Differential
- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Cellulitis
- Contact dermatitis

More than skin reaction involved?
- Yes: Anaphylaxis
- No:
  - Establish IV/IO
  - Cardiac monitor
  - Diphenhydramine
  - Monitor for worsening signs and symptoms
  - Notify receiving facility. Consider Base Hospital for medical direction
Pediatric Anaphylaxis

For anaphylaxis; includes systemic reactions that involve two or more symptoms

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<td>Difficulty swallowing</td>
<td>Angioedema (drug induced)</td>
</tr>
<tr>
<td>New clothing, soap or detergent</td>
<td>Hypotension or shock</td>
<td>Aspiration or airway obstruction</td>
</tr>
<tr>
<td>Past history of reactions</td>
<td>Edema</td>
<td>Asthma</td>
</tr>
<tr>
<td>Past medical history</td>
<td>Nausea or vomiting</td>
<td></td>
</tr>
<tr>
<td>Medication history</td>
<td>Feeling of impending doom</td>
<td></td>
</tr>
</tbody>
</table>

**Signs and Symptoms**
- Itching or hives
- Coughing, wheezing or respiratory distress
- Chest or throat restriction
- Difficulty swallowing
- Hypotension or shock
- Edema
- Nausea or vomiting
- Feeling of impending doom

**Differential**
- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration or airway obstruction
- Asthma

**Treatment Protocol**

**Establish IV/IO**
- Cardiac monitor
- Assist patient or administer
  - EpiPen Junior if available

**Epinephrine 1:1,000 IM**
- Establish IV/IO
- Cardiac monitor
- EtCO$_2$ monitoring
- Diphenhydramine
- Albuterol

If age-dependent hypotensive
- Normal Saline bolus IV/IO
  - May repeat x2
If hypotensive or no improvement,
- Epinephrine 1:1,000 IM every 10 minutes until improved

**Consider, 12-Lead ECG**

**Notify receiving facility.**
- Consider Base Hospital for medical direction
Pearls

- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Epinephrine is the drug of choice and the first drug that should be administered in acute anaphylactic reactions. IM Epinephrine should be administered as priority before or during attempts at IV or IO access.
- Anaphylaxis that is unresponsive to initial treatment of IM Epinephrine may require IV Epinephrine administration.
- Fluid bolus for patients demonstrating signs and symptoms of shock.
- Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash or skin involvement.
- Use an EpiPen (>30kg)/EpiPen Junior (15-30kg).
- All patients with respiratory symptoms must have continuous EtCO₂ measurement.
Pediatric Altered Level of Consciousness (ALOC)

For altered mental status not attributed to a more specific primary impression (i.e., cause unknown). Use as secondary primary impression when cause known.

### History
- Known diabetic or medical alert tag
- Suspected or known toxic ingestion
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma or traumatic brain injury
- Change in condition
- Changes in feeding or sleep habits

### Signs and Symptoms
- Change in baseline mental status
- Decrease in mental status or lethargy
- Bizarre behavior
- Hypoglycemia (cold, diaphoretic skin)
- Hyperglycemia (warm, dry skin; fruity breath; Kussmaul respirations; signs of dehydration)
- Irritability

### Differential
- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Thyroid
- Electrolyte abnormality
- Acidosis or alkalosis
- Environmental exposure
- Infection or sepsis
- Overdose or toxicological
- Under dose of prescribed medications
- Trauma
- Insulin or diabetic emergency
- Psychiatric disorder
- Sepsis or shock

### Signs and Symptoms
- Change in baseline mental status
- Decrease in mental status or lethargy
- Bizarre behavior
- Hypoglycemia (cold, diaphoretic skin)
- Hyperglycemia (warm, dry skin; fruity breath; Kussmaul respirations; signs of dehydration)
- Irritability

### Signs of Trauma
- Yes
- No

### Signs of shock/poor perfusion
- Yes
- No

### Signs of OD/toxic exposure
- Yes
- No

### Signs of stroke or seizure
- Yes
- No

### Signs of hypo/hyperthermia
- Yes
- No

### Pearls
- Be aware of ALOC as a presenting sign of an environmental toxin or hazmat exposure and protect personal safety and that of other responders who may already be exposed.
- Consider restraints if necessary for patient or personnel protection.

### Flowchart

---

**Notifiable Receiving Facility**

Notify receiving facility. Consider Base Hospital for medical direction.
Pediatric Brief Resolved Unexplained Event (BRUE)

An infant ≤ 1 year who experienced an episode frightening to the observer, which is characterized by: Cyanosis or pallor; absent, decreased, or irregular breathing; choking or gagging; change in muscle tone; or altered level of consciousness.

**History**
- Recent trauma, infection (e.g., fever, cough)
- GERD
- Congenital heart disease
- Seizures
- Medications

**Signs and Symptoms**
- Brief decrease/change in mentation
- Brief period of cyanosis or pallor
- Brief absence, decrease or irregular respirations
- Brief marked change in muscle tone
- Brief altered responsiveness

**Differential**
- GERD
- Pertussis
- Respiratory infection
- Seizure
- Infection
- Abuse

**Pearls**
- BRUE was formally known as Apparent Life Threatening Event (ALTE).
- BRUE is formally diagnosed in the ED only when there is no explanation for a qualifying event after a physician conducts an appropriate history and physical examination.
- Base Hospital contact is required for all BRUE non-transports.
- Always consider non-accidental trauma in any infant who presents with BRUE.
- Even with a normal physical examination at the time of EMS contact, patients that have experienced BRUE should be transported for further evaluation.
- It is important to document sleeping position as parent co-sleeping with child is associated with infant deaths.
Pearls
- Many STEMIs evolve during prehospital care and may not be noted on the initial 12-Lead ECG.
- An ECG should be obtained prior to treatment for bradycardia if patient condition permits.
- If a patient has taken their own Nitroglycerin without relief, consider potency of medication. Provider maximum doses do not include patient administered doses.
- Monitor for hypotension after administration of nitroglycerin and opioids.
- Diabetics, geriatric, and female patients often have atypical pain, or only generalized complaints. Suspect cardiac etiology in these patients, and perform a 12-Lead ECG.
Pediatric Diarrhea
For diarrhea without bleeding. NOT for melena, use Upper GI Bleeding

History
• Age
• Duration of symptoms
• Severity of symptoms
• Past medical history
• Medications
• Exposure to known food allergy
• Ingestion of new food
• Travel history

Signs and Symptoms
• Warm
• Flushed
• Sweaty
• Chills/rigors

Associated Symptoms (helpful to localize source)
• Malaise, cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

Differential
• Food intolerance or allergy
• Medication or drug reaction
• Viral infection
• Bacterial infection
• Ebola

Differential
• Contact, droplet or airborne precautions, as indicated
• Temperature measurement
• Blood glucose analysis
• Establish IV
• Cardiac monitor
• If age-dependent hypotensive
  Normal Saline bolus IV/IO
  May repeat x2
  Consider, Ondansetron
• For pain
  consider, Fentanyl

Notify receiving facility.
Consider Base Hospital for medical direction

Pearls
• Consider Ebola and obtain recent travel history.
• When you have a concern for a contagious infectious disease (i.e., measles, SARS, Ebola), contact your supervisor.
History
- Age
- Duration of symptoms
- Severity of symptoms
- Past medical history
- Medications/changes in medications
- History of head or recent trauma
- Headache
- Tinnitus or hearing loss

Signs and Symptoms
- Warm
- Flushed
- Sweaty
- Chills/rigors
- Tinnitus
- Nystagmus

Associated Symptoms (helpful to localize source)
- Malaise, cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

Differential
- Infection/sepsis
- Cancer/tumors/lymphomas
- Medication or drug reaction
- Labyrinthitis
- Vestibular neuritis
- Stroke
- Hypoglycemia/Hyperglycemia
- ACS
- Aspirin overdose

Pearls
- Some strokes may present with dizziness/vertigo. If a stroke is suspected, exit to the Stroke protocol.
Pearls

- Significant soft tissue swelling to the face or oral cavity can represent a cellulitis or abscess.
- Scene and transport times should be minimized in complete tooth avulsions. Reimplantation is possible within 4 hours if the tooth is properly cared for.
- Baby teeth are not reimplemented.
- All pain associated with teeth should be associated with a tooth which is tender to tapping or touch, or sensitivity to hot or cold.
### San Mateo County Emergency Medical Services

**Epistaxis**
For any bleeding from the nares

#### History
- Age
- Past medical history (e.g., hemophilia, Von Willebrand)
- Winter syndrome (e.g., warm, dry heat)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding (mild or severe)

#### Signs and Symptoms
- Bleeding from nasal passage
- Pain
- Dizziness
- Nausea
- Vomiting

#### Differential
- Trauma
- Infection (viral URI or Sinusitis)
- Allergic rhinitis
- Lesions
- Epistaxis digitorum
- Aneurysm

---

**Emergencies (E)**
- Control bleeding with direct pressure
  - Compress nostrils with direct pressure with head tilted forward in position of comfort

**Pulse (P)**
- Cardiac monitor
- Consider, IV
- Consider, Ondansetron

- If age-dependent hypotensive
  - Normal Saline bolus IV/IO
  - May repeat x2

---

- Notify receiving facility.
- Consider Base Hospital for medical direction

---

**Pearls**
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.
- Direct pressure is defined as constant, firm pressure for 20 minutes with head positioned forward without reexamining the affected nares(s).
- Encourage children not to swallow blood, which may result in vomiting blood.
### Pearls
- Suspect an eye injury if any significant facial trauma.
- Normal Saline is the preferred solution for irrigation, but sterile water may be used if Normal Saline is not immediately available.
- If globe rupture is suspected (high velocity mechanism, impaled object, irregular pupil, significantly decreased vision in the acute setting), the eye should be protected from environment and NO irrigation should be administered.
- Do not remove impaled objects. Protect them from movement with a protective dressing (eye cup) and cover BOTH eyes to reduce eye movement. Explain to patient that the injured eye moves with the other eye and movement can worsen injury.
- Protect the patient from further eye injury/increases in intraocular pressure by elevating the head of the gurney, keeping the patient’s face upward, consider Ondansetron for nausea.

### History
- Age
- Past medical history
- Trauma or exposure to chemicals
- Time of injury
- Onset of symptoms
- Previous eye surgery

### Signs and Symptoms
- Decreased or blurred vision
- Floaters/flashes/curtain coming down
- Onset moving from dark to bright
- Avulsion
- Orbital edema or contusion
- Deformed pupil
- Burning/pain to eye(s)
- Red eye/sclera
- Nausea or vomiting
- Pain with extraocular movement

### Differential
- Multi-system trauma
- Head trauma
- Orbital cellulitis
- Burn (e.g., chemical, thermal)
- Corneal abrasion
- Conjunctivitis
- Parasite

### Decision Tree

<table>
<thead>
<tr>
<th>Temporary, complete vision loss?</th>
</tr>
</thead>
<tbody>
<tr>
<td>If suspected chemical burn, immediately and continuously irrigate with Normal Saline for 15 minutes</td>
</tr>
<tr>
<td>If impaled object, foreign body, or globe rupture suspected, do not irrigate. Do not remove impaled object.</td>
</tr>
<tr>
<td>Cover eye with a loose, protective dressing (eye cup), putting no pressure on the globe. Cover BOTH eyes if practical to reduce eye movement</td>
</tr>
<tr>
<td>If possible, keep the patient’s face upward and head of bed elevated greater than 30°</td>
</tr>
<tr>
<td><strong>Consider, IV</strong></td>
</tr>
<tr>
<td><strong>Consider, Ondansetron</strong></td>
</tr>
<tr>
<td>For pain <strong>consider, Fentanyl</strong></td>
</tr>
<tr>
<td><strong>Notify receiving facility</strong></td>
</tr>
<tr>
<td><strong>Consider Base Hospital for medical direction</strong></td>
</tr>
</tbody>
</table>

For any pain or problem of the eye or periorbital region, use with primary impression Traumatic Injury if a traumatic mechanism
**Fever**

For reported or tactile fever that is NOT suspected sepsis.

### History
- Age
- Duration of symptoms
- Maximum temperature
- Past medical history
- Medications
- Immunocompromised (e.g., transplant, HIV, diabetes, cancer)
- Environmental exposure
- Last acetaminophen/ibuprofen
- Recent travel

### Signs and Symptoms
- Hot
- Flushed
- Sweaty
- Chills/rigors

**Associated Symptoms (helpful to localize source)**
- Malaise, cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

### Differential
- Infection/sepsis
- Cancer/tumors/lymphomas
- Medication or drug reaction
- Connective tissue disease (e.g., Juvenile Rheumatoid Arthritis (JRA) or vasculitis)
- Heat stroke
- Meningitis
- Overdose/toxic ingestion
- Travel illness (e.g., Malaria, Ebola)

---

**Pearls**
- Children under the age of two years should receive a rectal temperature when possible.
- Signs and symptoms of poor perfusion include delayed cap refill, AMS, mottling, and tachypnea.
- Rehydration with fluids increases the patient’s ability to sweat and facilitates natural heat loss.
- Consider Ebola and obtain recent travel history.
- When you have a concern for a contagious infectious disease (i.e., measles, SARS, Ebola), contact your supervisor.
San Mateo County Emergency Medical Services

General Weakness
For non-focal weakness, general malaise, and any nonspecific ‘sick’ symptoms

<table>
<thead>
<tr>
<th>History</th>
<th>Signs and Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Age</td>
<td>• General malaise</td>
<td>• Infection/sepsis</td>
</tr>
<tr>
<td>• Duration of symptoms</td>
<td>• Fatigue</td>
<td>• Medication/drug/toxin reaction</td>
</tr>
<tr>
<td>• Severity of symptoms</td>
<td>• Isolated or general weakness</td>
<td>• Hypothermia/hyperthermia</td>
</tr>
<tr>
<td>• Past medical history (e.g., cancer, heart disease, adrenal disease, diabetes)</td>
<td>• Associated Symptoms (helpful to localize source)</td>
<td>• Electrolyte imbalance</td>
</tr>
<tr>
<td>• Medications</td>
<td>• Cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash</td>
<td>• Botulism</td>
</tr>
<tr>
<td>• Recent history of oral intake</td>
<td></td>
<td>• Dehydration</td>
</tr>
<tr>
<td>• Number of wet diapers</td>
<td></td>
<td>• Myasthenia gravis/Guillain-Barre</td>
</tr>
</tbody>
</table>

**Signs and Symptoms**
- General malaise
- Fatigue
- Isolated or general weakness

**Associated Symptoms (helpful to localize source)**
- Cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

**Differential**
- Infection/sepsis
- Medication/drug/toxin reaction
- Hypothermia/hyperthermia
- Electrolyte imbalance
- Botulism
- Dehydration
- Myasthenia gravis/Guillain-Barre

**Pearls**
- Obtain an accurate history of formula use, including brand and concentration when made. Bring formula with you to hospital.
- Botulism can be caused by the oral intake of honey in children under the age of 1 year.

**Blood glucose analysis**
**Temperature measurement**
**Notify receiving facility. Consider Base Hospital for medical direction**
**Establish IV**
If age-dependent hypotensive
Normal Saline bolus IV/IO
May repeat x2

**Hyperglycemia**
**Hypoglycemia**
**Hypothermia**
**Hyperthermia**
### Genitourinary Disorder – Unspecified

**For urinary or genital related complaints; NOT vaginal bleeding – use primary impression Vaginal Bleeding; NOT trauma-related – use primary impression Traumatic Injury**

#### History
- Past medical/surgical history
- Previous episodes
- Medications
- Duration of symptoms
- Severity of symptoms
- History of back pain/surgery
- Diaper rash

#### Signs and Symptoms
- Pain
- Frequency
- Hematuria (pink vs. red; with vs. without clots)
- Abdominal/flank pain
- Nausea or vomiting
- Fever

#### Differential
- Urinary retention
- Urinary tract infection/pyelonephritis
- Kidney stones
- Sexual assault/abuse

---

**E** Apply heat pack(s) as tolerated

- Cardiac monitor

**P**

- Consider, IV
- If age-dependent hypotensive
  - Normal Saline bolus IV/IO
  - May repeat x2
- Consider, Ondansetron
  - For pain consider, Fentanyl

- Notify receiving facility. Consider Base Hospital for medical direction

---

**Pearls**
- Suspected sexual assault patients should be transported to San Mateo Medical Center for a SART evaluation.
Hyperglycemia

For patients with primary concern for hyperglycemia and/or associated symptoms (e.g., blurred vision, frequent urination or thirst) without more specific primary impression and those requiring field treatment. DO NOT list for incidental finding of hyperglycemia related to another illness.

**History**
- Past medical history
- Medications
- Recent blood glucose check
- Last meal
- Compliance with diet/meds
- Blood sugar log
- Insulin pump

**Signs and Symptoms**
- Altered mental status
- Combative or irritable
- Diaphoresis
- Seizure
- Abdominal pain
- Nausea or vomiting
- Weakness
- Dehydration
- Deep or rapid breathing

**Differential**
- Alcohol or drug use
- Toxic ingestion
- Trauma or head injury
- Seizure
- Stroke
- Altered mental status

**Blood glucose analysis**

**Cardiac monitor**

**Consider, 12-Lead ECG**

**Consider, Establish IV**

If blood glucose ≥ 350mg/dL

**Normal Saline bolus**

May repeat x2

**Notify receiving facility.**

**Consider Base Hospital for medical direction**

**Pearls**
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Quality control checks should be maintained per manufacturer’s recommendation for all glucometers.

Effective August 2020
### Hypoglycemia

**For glucose < 70mg/dL**

#### History
- Past medical history
- Medications
- Recent blood glucose check
- Last meal
- Compliance with diet/meds
- Blood sugar log
- Insulin pump

#### Signs and Symptoms
- Altered mental status
- Combative or irritable
- Diaphoresis
- Seizure
- Nausea or vomiting
- Weakness

#### Differential
- Alcohol or drug use
- Toxic ingestion
- Trauma or head injury
- Seizure
- Stroke
- Altered mental status
- Sepsis

---

**Suspected hypoglycemia or patient’s glucometer results read < 70mg/dL**

- Blood glucose analysis
- Cardiac monitor
- Establish IV/IO

**Blood glucose < 70mg/dL**

- Able to follow commands but symptomatic?
  - Yes → **E** Consider Glucose Paste or Glucola
  - No → **D-10 IV**

**If no venous access**
- Glucagon IM
  - Consider IO access as a last resort

**If blood glucose remains < 70mg/dL**
- D-10 IV

**Notify receiving facility. Consider Base Hospital for medical direction**
Hypoglycemia

For glucose < 70mg/dl

**Pearls**

- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Recheck BGL after each D-10 or Glucagon administration.
- Patients with prolonged hypoglycemia may not respond to Glucagon.
- Response to Glucagon can take 15-20 minutes.
- Consider IO access to give D-10 solution early in patients who are critically ill and hypoglycemic.
- Do not administer oral glucose to patients that are not able to swallow or protect their airway.
- Quality control checks should be maintained per manufacturer’s recommendation for all glucometers.
- Patient’s guardian/parent refusing transport to a hospital after treatment of hypoglycemia:
  - **Oral agents:** Patients taking oral diabetic medications should be strongly encouraged to allow ambulance transportation to a hospital. They are at risk of recurrent hypoglycemia that can be delayed for hours and require close monitoring even after a prehospital blood glucose level of greater than 70mg/dl has been achieved. Patients who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal with complex carbohydrates and protein now.
  - **Insulin agents:** Many forms of Insulin now exist. Longer acting Insulin places the patient at risk of recurrent hypoglycemia even after a prehospital blood glucose level of greater than 70mg/dl has been achieved. Patient who meet criteria to refuse care should be instructed to contact their physician immediately and consume a meal with complex carbohydrates and protein now.

---

**Common error messages for the True Metrix Pro (GDH-FAD) glucometer**

<table>
<thead>
<tr>
<th>Display Messages</th>
<th>Reason</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invalid Hematocrit</td>
<td>Repeat with new test strip, using capillary whole blood from the finger or forearm or venous whole blood collected with sodium heparin blood collection tube. If error persists, call for assistance.</td>
<td></td>
</tr>
<tr>
<td>Temperature Error Too Cold/Too Hot</td>
<td>Move meter and test strips to area between 41°F-104°F; wait 10 minutes for System to reach room temperature before testing.</td>
<td></td>
</tr>
<tr>
<td>Sample Not Detected or Using Wrong Test Strip</td>
<td>Retest with new TRUE METRIX® PRO Test Strip and larger sample.</td>
<td></td>
</tr>
<tr>
<td>Used Test Strip, Test Strip outside of vial too long, Sample on top of Test Strip.</td>
<td>Repeat with new test strip. Make sure sample is touched to edge of test strip (but top). If error persists, call for assistance.</td>
<td></td>
</tr>
<tr>
<td>Meter Error</td>
<td>Call for assistance.</td>
<td></td>
</tr>
<tr>
<td>Test Strip Error, Very high blood glucose result - higher than 600mg/dl.</td>
<td>Retest with new Test Strip. If error persists, call for assistance. If you have symptoms such as fatigue, excess urination, thirst, or blurry vision follow your healthcare professional’s advice for high blood glucose.</td>
<td></td>
</tr>
<tr>
<td>Test Strip Removed During Test</td>
<td>Retest with new test strip. Make sure result is displayed before removing test strip.</td>
<td></td>
</tr>
<tr>
<td>Communication Error</td>
<td>Call for assistance.</td>
<td></td>
</tr>
<tr>
<td>Low or Dead Battery</td>
<td>Low: About 50 tests can be done before battery dies. Dead: Battery Symbol appears and beeps before meter turns off.</td>
<td></td>
</tr>
<tr>
<td>Out of Range - High Results &gt; 600 mg/dl.</td>
<td>WARNING!! Retest with new test strip. If result is still &quot;W&quot; (High) or &quot;L&quot; (Low) contact Doctor immediately.</td>
<td></td>
</tr>
<tr>
<td>Out of Range - Low Results &lt; 20 mg/dl.</td>
<td>WARNING!! Retest with new test strip. If result is still &quot;W&quot; (High) or &quot;L&quot; (Low) contact Doctor immediately.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Troubleshooting Display Messages**

- DO NOT USE METER FOR TESTING. CALL 1-800-803-6035.

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**Effective November 2018**

**Treatment Protocol P16**

**Effective August 2020**
**Hypertension**

For patients with primary concern for hypertension without symptoms related to a more specific primary impression. For symptomatic patients, use related primary impression as primary (e.g., headache) and hypertension as secondary. DO NOT use for incidental finding of hypertension.

**History**
- Age
- Past medical history
- Drug allergies and medications
- Access to Nicotine products
- Use of over-the-counter medications
- Access to illicit drug use

**Signs and Symptoms**
- Tinnitus
- Hypertension

**Differential**
- Stroke (hemorrhagic or ischemic)
- Drugs of abuse (e.g., amphetamines, cocaine, PCP)
- Primary Aldosteronism/Wilm’s tumor
- Hypertrophic cardiomyopathy
- Overdose/toxic ingestion

**Pearls**
- Hypertension is defined as a patient with a systolic blood pressure > 130 or a diastolic blood pressure > 80.
- This primary impression should be reserved only for asymptomatic patients complaining of high blood pressure, regardless of actual blood pressure.
Hypotension

For age dependent hypotension in children with transient low BP or rapidly responds to fluid resuscitation and without signs of shock.

**History**
- Volume loss (vomiting, diarrhea or blood)
- Infection (e.g., UTI, pneumonia, etc.)
- Poor oral intake
- Allergic reaction
- Access to medications (e.g., diuretics, beta blockers)
- History of congenital heart defects

**Signs and Symptoms**
- Pale, cool skin
- Mottling
- Tachycardia
- Weak, rapid pulse
- Delayed capillary refill
- Wounds/bruising/active bleeding
- Shortness of breath

**Differential**
- Shock (neurogenic vs. hemorrhagic vs. obstructive (tension pneumothorax))
- Sepsis
- Medication
- Hypovolemia
- Anaphylaxis
- Vasovagal event

**Treatment Protocol**

1. **Blood glucose analysis**
2. **Cardiac monitor**
   - **Consider, IV**
   - **Consider, 12-Lead ECG**
3. **Blood pressure normal?**
   - Yes
   - No
   - **Consider hypovolemic (dehydration or GI bleed), cardiogenic, distributive (sepsis or anaphylaxis), and obstructive (PE, cardiac tamponade or tension pneumothorax) shock**

**Pearls**
- Pediatric systolic hypotension is defined as:
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x2)
  - Over 10 years: < 90mmHg
**History**
- Age
- Past medical history
- Food history
- Medications
- Number of episodes
- Weight loss

**Signs and Symptoms**
- Hematochezia (bright red blood per rectum)
- Hematemesis
- Syncope

**Differential**
- Cancer
- Vascular malformation
- Infectious diarrhea
- Fissure
- Hemorrhoids
- Food allergy
- Intussusception
- Meckel’s diverticulum
- Sexual abuse

---

**Pearl**
- For massive blood loss establish an IV and administer fluids.
San Mateo County Emergency Medical Services

Nausea/Vomiting

For any nausea or vomiting without blood. Not for adverse reaction to opiate administration by EMS; manage with primary impression

History
• Age
• Time of last meal
• Last emesis/bowel movement/number of wet diapers
• Improvement or worsening with food or activity
• Duration of problem
• Contact with other sick person
• Past medical history
• Past surgical history
• Medications
• Allergies
• Travel history
• Bloody emesis/diarrhea

Signs and Symptoms
• Abdominal pain
• Character of pain (i.e., constant, intermittent, dull, sharp, etc.)
• Distension
• Constipation
• Diarrhea
• Anorexia
• Radiation

Associated symptoms (helpful to localize source):
Fever, headache, blurred vision, weakness, malaise, myalgia, cough, dysuria, mental status changes, and rash

Differential
• CNS (increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage, vestibular)
• GI or renal disorders
• Diabetic ketoacidosis
• Infections (pneumonia, influenza)
• Electrolyte abnormalities
• Food or toxin induced
• Medication or substance exposure

Pearls
• Document the mental status and vital signs prior to administration of anti-emetics and pain medications.
• Nausea and vomiting are common symptoms but can be symptoms of uncommon and serious pathology. Consider other primary impressions.
Pearls
- Discuss with parent/guardian to determine reason for 9-1-1 request to best determine if there is no medical complaint.
- All persons who request medical evaluation or treatment are considered patients and shall have an ePCR completed.
- Should a patient refuse evaluation or decline further evaluation once begun, document as much as you can. Even patients who refuse vital signs can be observed and respirations measured. The ePCR narrative in these cases is key and must accurately and thoroughly describe the patient encounter.
**Non-Traumatic Body Pain**

For pain not related to trauma that is not localized to chest, abdomen, head, or extremity

**Pearls**
- Pain severity (0 – 10 scale) shall be recorded before and after all BLS pain control measures and ALS pain medication delivery. Monitor blood pressure and respirations closely as pain control medications may cause hypotension or respiratory distress.
- FLACC scale is intended for patients under 12 months of age.
- Patients may display a wide variation of response to opioid pain medication (Fentanyl). Consider the patient’s age, weight, clinical condition, other recent drugs, or alcohol and prior exposure to opiates when determining initial dosing.
- Minimal doses of opioids may cause respiratory depression in those patients who weigh less.
- It is strongly recommended that vascular access be established for patients who receive IM or IN medication.
- Have Naloxone available to reverse respiratory depression should it occur.

### FLACC Scale

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<td>No particular expression or smile</td>
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<td>Activity</td>
<td>No particular expression or smile</td>
<td>Squirming, shifting, back and forth, tense, hesitant to move, guarding, pressure on body part</td>
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<tr>
<td>4</td>
<td>Cry</td>
<td>No particular expression or smile</td>
<td>Moans or whimpers, occasional cries, sighs, occasional complaint</td>
</tr>
<tr>
<td>5</td>
<td>Consolability</td>
<td>No particular expression or smile</td>
<td>Reassured by occasional touching, hugging, or talking to, distractible</td>
</tr>
</tbody>
</table>

---

**FLACC Scale**

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>0</td>
<td>Distressing Pain Dolor con Angustia</td>
</tr>
<tr>
<td>1</td>
<td>Unbearable Pain Dolor Incospetible</td>
</tr>
<tr>
<td>2</td>
<td>Pain severity (0 – 10 scale) shall be recorded before and after all BLS pain control measures and ALS pain medication delivery. Monitor blood pressure and respirations closely as pain control medications may cause hypotension or respiratory distress.</td>
</tr>
</tbody>
</table>

---

**Choose a number from 0 to 10 that best describes your pain**

Escoja un número del 0 al 10 que mejor describa su dolor

---

**FLACC Scale**

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</tr>
<tr>
<td>4</td>
<td>Consolability</td>
<td>No particular expression or smile</td>
</tr>
</tbody>
</table>
Non-Traumatic Extremity Pain/Swelling
For pain, swelling, or other non-traumatic problem of an extremity; includes rashes and non-traumatic bleeding (e.g., cellulitis)

History
- Age
- Location and duration
- Severity (0 – 10 scale)
- Past medical history
- Pregnancy status
- Drug allergies and medications

Signs and Symptoms
- Severity (pain scale)
- Quality (e.g., sharp, dull, or stabbing)
- Radiation
- Relation to movement or respiration
- Increased with palpation of area

Differential
- Arthritis
- Deep venous thrombosis
- Juvenile rheumatoid arthritis (JRA)/septic joint
- Back pain/sciatica
- Bursitis
- Tendonitis
- Pain in limb, not otherwise specified
- Cellulitis

Assess pain severity
Use combination of pain scale, circumstances, HPI, and illness severity

Severe pain
(Pain scale 7 or greater)
- Position of comfort/splint if needed
- Apply cold pack if applicable
- Consider, IV
- Assess and monitor respiratory status
- Consider, cardiac monitor
- For pain consider, Fentanyl
- Consider, Ondansetron
- Notify receiving facility. Consider Base Hospital for medical direction

Mild pain
- Position of comfort/splint if needed
- Apply cold pack if applicable
- Monitor and reassess

Effective August 2020
### FLACC Scale

<table>
<thead>
<tr>
<th>FLACC</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>No particular expression or smile</td>
<td>Occasional grimace or frown, withdrawn, disinterested, worried look to face, eyebrows lowered, eyes partially closed, cheeks raised, mouth pursed</td>
<td>Frequent to constant frowning, clenched jaw, quivering chin, deep furrows on forehead, eyes closed, mouth opened, deep lines around nose/lips</td>
</tr>
<tr>
<td>Legs</td>
<td>No particular expression or smile</td>
<td>Uneasy, restless, tense, increased tone, rigidity, intermittent flexion/extension of limbs</td>
<td>Kicking or legs drawn up, hypertonicity, exaggerated flexion/extension of limbs, tremors</td>
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<tr>
<td>Activity</td>
<td>No particular expression or smile</td>
<td>Squirming, shifting, back and forth, tense, hesitant to move, guarding, pressure on body part</td>
<td>Arched, rigid, or jerking, fixed position, rocking, side to side head movement, rubbing of body part</td>
</tr>
<tr>
<td>Cry</td>
<td>No particular expression or smile</td>
<td>Moans or whimpers, occasional cries, sighs, occasional complaint</td>
<td>Crying steadily, screams, sobs, moans, grunts, frequent complaints</td>
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<td>Consolability</td>
<td>No particular expression or smile</td>
<td>Reassured by occasional touching, hugging, or talking to, distractible</td>
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### Pearls
- Pain severity (0 – 10 scale) shall be recorded before and after all BLS pain control measures and ALS pain medication delivery. Monitor blood pressure and respirations closely as pain control medications may cause hypotension or respiratory distress.
- FLACC scale is intended for patients under 12 months of age.
- Patients may display a wide variation of response to opioid pain medication (Fentanyl). Consider the patient’s age, weight, clinical condition, other recent drugs, or alcohol and prior exposure to opiates when determining initial dosing.
- Minimal doses of opioids may cause respiratory depression in those patients who weigh less.
- It is strongly recommended that vascular access be established for patients who receive IM or IN medication.
- Have Naloxone available to reverse respiratory depression should it occur.
History
- Age
- Location and duration
- Severity (0 – 10 scale)
- Past medical history
- Drug allergies and medications
- Fever

Signs and Symptoms
- Severity (pain scale)
- Quality (e.g., sharp, dull, or stabbing)
- Radiation
- Relation to movement or respiration
- Photophobia
- Nausea/vomiting
- Fever

Differential
- Migraine
- Intracranial hemorrhage
- Arterial hypertension
- Behavioral
- Viral/bacterial infection
- Hypoxia
- Hypercapnia
- Carbon monoxide poisoning

Assess pain severity
Use combination of pain scale, circumstances, HPI, and illness severity

Neurologic symptoms? → Yes → Stroke/CVA/TIA

Severe pain (Pain scale 7 or greater)
- Position of comfort
- Temperature measurement
- Consider, IV
- Assess and monitor respiratory status
- Apply and monitor cardiac rhythm
- Consider, Ondansetron

Mild pain
- Position of comfort
- Temperature measurement

Fever

Notify receiving facility. Consider Base Hospital for medical direction
**FLACC Scale**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>0</th>
<th>1</th>
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- FLACC scale is intended for patients under 12 months of age.
Palpitations

For any patient complaint of palpitations (e.g., rapid heart rate beat, skipped beats, chest fluttering) with normal rate and rhythm on the ECG

<table>
<thead>
<tr>
<th>History</th>
<th>Signs and Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Age</td>
<td>• Anxiety</td>
<td>• PVC/PAC</td>
</tr>
<tr>
<td>• Past medical history</td>
<td>• Irregular heart beat</td>
<td>• A-Fib/A-Flutter</td>
</tr>
<tr>
<td>• Medications (e.g., Theophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)</td>
<td>• O₂ sat &gt; 92%</td>
<td>• Electrolyte imbalance</td>
</tr>
<tr>
<td>• Diet (caffeine)</td>
<td>• Jitter</td>
<td>• Exertion, pain, or emotional stress</td>
</tr>
<tr>
<td>• Drugs (e.g., nicotine and illegal drugs; withdrawal)</td>
<td>• Heart rate &lt; 120</td>
<td>• Fever</td>
</tr>
<tr>
<td>• History of palpations/SVT</td>
<td>• Normotensive blood pressure</td>
<td>• Hypovolemia or anemia</td>
</tr>
<tr>
<td>• Frequency of heart beat irregularity</td>
<td>• Normal mental status</td>
<td>• Drug effect/overdose (see History)</td>
</tr>
</tbody>
</table>

Differential

- PVC/PAC
- A-Fib/A-Flutter
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypovolemia or anemia
- Drug effect/overdose (see History)
- Hypoxia
- Congenital heart disease

### Signs and Symptoms

- Anxiety
- Irregular heart beat
- O₂ sat > 92%
- Jitter
- Heart rate < 120
- Normotensive blood pressure
- Normal mental status
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter

### History

- Age
- Past medical history
- Medications (e.g., Theophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
- Diet (caffeine)
- Drugs (e.g., nicotine and illegal drugs; withdrawal)
- History of palpations/SVT
- Frequency of heart beat irregularity

### Pearls

- If the patient has an identifiable dysrhythmia (e.g., narrow or wide complex tachycardia), exit to appropriate treatment protocol.
- For ASYMPTOMATIC patients (or those with only minimal symptoms, such as palpitations) and any tachycardia with a rate of approximately 100 – 120 with a normal blood pressure, consider CLOSE OBSERVATION or fluid bolus rather than immediate treatment with an anti-arrhythmic medication.

### Diagram

- Cardiac monitor
- 12-Lead ECG
- Consider, IV
- If age-dependent hypotensive
- Normal Saline bolus IV/IO
- May repeat x2
- Notify receiving facility.
  - Consider Base Hospital for medical direction

---

San Mateo County Emergency Medical Services

Pediatric Medical Treatment Protocols

San Mateo County Health Emergency Medical Services
### Pearls
- IM Midazolam is effective in the termination of seizures. Do not delay IM administration to obtain IV or IO access or blood glucose analysis in an actively seizing patient.
- For a seizure that begins in the presence of EMS, if the patient was previously conscious, alert and oriented, take the time to assess and protect the patient and providers and CONSIDER THE CAUSE. The seizure may stop, especially in patients who have prior history of self-limiting seizures. However, do not hesitate to treat recurrent or prolonged (> 1 minute) seizure activity.
- Status Epilepticus is defined as two or more successive seizures without a period of consciousness or recovery, or one prolonged seizure lasting longer than 5 minutes. This is a true emergency requiring rapid airway control, treatment, and transport.
- Grand Mal seizures (generalized) are associated with a loss of consciousness, incontinence, and oral trauma.
- Focal seizures (Petit Mal) affect only a part of the body and are not associated with a loss of consciousness.
- Assess the possibility of occult trauma and substance abuse.
- Be prepared for airway problems and continued seizures. Be prepared to assist ventilations or manage the airway, especially if Midazolam is used.

### History
- Reported or witnessed seizure
- Previous seizure history
- Medical alert tag
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy
- Time of seizure onset
- Document number of seizures
- Alcohol use, abuse, or abrupt cessation
- Fever

### Signs and Symptoms
- Altered mental status
- Tonic/clonic movements
- Incontinence
- Seizure activity
- Evidence of trauma
- Unconscious
- Incontinence
- Tongue biting
- Blank stare
- Rhythmic facial movement

### Differential
- Fever
- Metabolic, hepatic or renal failure
- Tumor
- Hypoxia
- Electrolyte abnormality
- Drugs or medication non-compliance
- Overdose/toxic ingestion/exposure
- Infection/meningitis
- Stroke
- Head/occult trauma

### Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>High-flow Oxygen while seizing</td>
</tr>
<tr>
<td></td>
<td>Loosen any constrictive clothing and protect airway</td>
</tr>
<tr>
<td></td>
<td>Blood glucose analysis</td>
</tr>
<tr>
<td></td>
<td>Temperature measurement</td>
</tr>
<tr>
<td></td>
<td>If patient is seizing upon EMS arrival, give Midazolam IM; do not wait to obtain IV or IO access</td>
</tr>
<tr>
<td></td>
<td>Establish IV/IO</td>
</tr>
<tr>
<td></td>
<td>Cardiac monitor</td>
</tr>
<tr>
<td></td>
<td>EtCO₂ monitoring</td>
</tr>
<tr>
<td></td>
<td>SMR procedure if indicated</td>
</tr>
<tr>
<td></td>
<td>If patient seizures again Midazolam IV/IO</td>
</tr>
<tr>
<td>P</td>
<td>Notify receiving facility. Consider Base Hospital for medical direction</td>
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**SMR Procedure**
- SMR procedure if indicated
- Notify receiving facility. Consider Base Hospital for medical direction

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- Assess the possibility of occult trauma and substance abuse.
- Be prepared for airway problems and continued seizures. Be prepared to assist ventilations or manage the airway, especially if Midazolam is used.
Pearls

- Status Epilepticus is defined as two or more successive seizures without a period of consciousness or recovery, or one prolonged seizure lasting longer than 5 minutes. This is a true emergency requiring rapid airway control, treatment, and transport.
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Shock

San Mateo County Emergency Medical Services

History
- Blood loss (amount?)
- Fluid loss (vomiting, diarrhea or fever)
- Infection (e.g., UTI, cellulitis, etc.)
- Cardiac ischemia (MI or CHF)
- Medications
- Allergic reaction
- History of poor oral intake

Signs and Symptoms
- Restlessness or confusion
- Weakness or dizziness
- Weak, rapid pulse
- Pale, cool, clammy skin signs
- Hypotension
- Delayed capillary refill
- Coffee-ground emesis
- Tarry stools

Differential
- Shock (see pearls for types)
- Cardiac dysrhythmia
- Pulmonary embolus
- Tension pneumothorax
- Medication effect or overdose
- Vasovagal effect

WAS TRAUMA INVOLVED?

Yes
- Trauma

No
- Anaphylaxis

Consider hypovolemic (dehydration or GI bleed), cardiogenic, distributive (sepsis or anaphylaxis), and obstructive (PE or cardiac tamponade) shock

If age-dependent hypotensive or evidence of poor perfusion

Normal Saline bolus IV/IO
- May repeat x2

Notify receiving facility.
- Consider Base Hospital for medical direction

Apply Oxygen to maintain goal $SpO_2 > 92$

Blood glucose analysis

Cardiac monitor

IV/IO procedure

12-Lead ECG

EtCO₂ monitoring

Hypoglycemia

Hyperglycemia

Effective November 2018

Treatment Protocol   P28

Effective August 2020
Pearls

- Shock is often present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.
- For patients with suspected cardiogenic shock who are not responsive to an initial fluid bolus, limit additional IV fluids and avoid Dopamine. Contact Base Hospital for medical direction.
- Consider all causes of shock and treat per appropriate Treatment Protocol.
- Hypovolemic shock:
  - Hemorrhage, trauma, or GI bleeding,
- Cardiogenic shock:
  - Myocarditis, heart failure, congenital, cardiomyopathy, myocardial contusion, ruptured ventricle/septum/valve or toxins.
- Distributive shock:
  - Sepsis, anaphylactic, neurogenic, or toxins.
  - Neurogenic shock generally presents with normal to slow heart rate with acute spinal cord injuries.
- Obstructive shock:
  - Pericardial tamponade, pulmonary embolus (PE), or tension pneumothorax.
  - Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart tones.
History
- Last seen normal
- A&O Status and GCS
- Family members phone number
- Previous stroke or TIA or brain hemorrhage
- Major surgery within last 2 weeks
- Signs of active bleeding, including Melena
- Associated diseases (DM, HTN, CAD)
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma
- History of brain tumor, aneurysm, or AVM.

Signs and Symptoms
- Altered mental status
- Weakness or paralysis
- Blindness or other sensory loss
- Aphasia or dysarthria
- Syncope
- Vertigo or dizziness
- Vomiting
- Headache
- Seizure
- Respiratory pattern change
- Hypertension/hypotension
- Diplopia or double vision

Differential
- See Altered Mental Status
- TIA
- Sepsis
- Seizure/Todd's paralysis
- Hypoglycemia
- Stroke
  - Thrombotic or embolic (~85%)
  - Hemorrhagic (~15%)
- Tumor
- Trauma
- Dialysis or renal failure
- Bell's Palsy

Recent signs and symptoms consistent with Stroke
- Perform Cincinnati Prehospital Stroke Scale (CPSS)
  - If CPSS screening is positive, then perform mNIHSS (if trained)
- Temperature measurement
- Blood glucose analysis
- Cardiac monitor
- Establish IV

CINCINNATI PREHOSPITAL STROKE SCALE consistent with acute Stroke?
- Yes
  - INITIATE TRANSPORT TO CLOSEST Stanford Hospital or UCSF Mission Bay
  - Notify receiving facility. Consider Base Hospital for medical direction
- No
  - Consider other causes
  - Monitor and reassess

Temperature measurement
- Fever
- Hypoglycemia
- Hyperglycemia
Pearls

- Pediatric strokes do occur.
- Time last known well: One of the most important items that prehospital providers can obtain, on which all treatment decisions are based. Be very precise in gathering data to establish the time of onset and report as an actual time (i.e., “13:45,” NOT “about 45 minutes ago”). Without this information, patients may not be able to receive thrombolytics at the hospital. For patients who “woke up and noticed stroke symptoms,” time starts when the patient was last awake.
- The differential listed on the Altered Mental Status TP should also be considered.
- Be alert for airway problems (difficulty swallowing, vomiting and aspiration). PO meds are not appropriate.
- Hypoglycemia or hyperglycemia can present as a LOCALIZED neurologic deficit.
- Document the Cincinnati Prehospital Stroke Scale in the ePCR.

---

**Finding**

**Interpretation**

<table>
<thead>
<tr>
<th>Facial Droop</th>
<th>Arm Weakness</th>
<th>Grip</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absent</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>0 points</td>
<td>1 point</td>
<td>0 points</td>
</tr>
<tr>
<td>Drifts</td>
<td>Weak</td>
<td>No grip</td>
</tr>
<tr>
<td>1 point</td>
<td>1 point</td>
<td>2 points</td>
</tr>
<tr>
<td>Falls rapidly</td>
<td>No grip</td>
<td>2 points</td>
</tr>
<tr>
<td>2 points</td>
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<td>2 points</td>
</tr>
</tbody>
</table>

**LAMS Assessment**

- Normal: Equal grip in both hands
- Abnormal: Unequal grip in one hand
- Normal: Both arms move symmetrically
- Abnormal: Asymmetrical arm movement
- Falls rapidly: some or no effort
- Normal: Equal grip in both hands
- Weak: Unequal grip in one hand
- No grip: no muscle strength or contraction

A LAMS score of $\geq 4$ indicates a high likelihood of a LVO stroke.
Syncope/Near Syncope

For syncope (transient loss of consciousness), NOT for cardiac arrest; use primary impression Cardiac Arrest – Non-Traumatic only

### History
- History of cardiac, stroke or seizures
- Occult blood loss
- Females: vaginal bleeding
- Fluid loss: nausea, vomiting or diarrhea
- Past medical history
- Medications
- Recent air travel

### Signs and Symptoms
- Loss of consciousness with recovery
- Lightheadedness or dizziness
- Palpitations
- Pulse irregularity
- Hypotension

### Differential
- Vasovagal
- Orthostatic hypotension
- Cardiac syncope
- Micturition or defecation syncope
- Psychogenic syncope
- Stroke
- Hypoglycemia
- Seizure
- Shock
- Toxicological
- Medication effect (hypotension)
- Pulmonary embolism

### Signs and Symptoms
- Loss of consciousness with recovery
- Lightheadedness or dizziness
- Palpitations
- Pulse irregularity
- Hypotension

### Vital signs
- Blood glucose analysis
- Cardiac monitor
- 12-Lead ECG
- Consider, IV/IO

### If age-dependent hypotensive
- Normal Saline bolus IV/IO
- May repeat x2

### Suspected or evident trauma
- Yes → Trauma
- No

### Altered mental status
- Yes → ALOC
- No

### Hypotension or poor perfusion
- Yes → Shock
- No

### Notify receiving facility.
Consider Base Hospital for medical direction

### Pearls
- Consider dysrhythmias, Gi bleed, and seizure as possible cause of syncope.
### Upper GI Bleeding

For vomiting blood or coffee ground emesis, and for melena (i.e., black, tarry stools)

#### History
- Congenital abnormalities
- Varices
- Medications (e.g., ibuprofen, ASA, steroids)
- Stress
- GERD
- Ulcers
- Vomiting
- Liver disease
- History of oral intake

#### Signs and Symptoms
- Coffee ground emesis
- Hematemesis
- Tachycardia
- Hypotension
- Black, tarry stool

#### Differential
- Varices
- Gastritis
- Bleeding ulcer
- Epistaxis
- Hemoptysis
- Mallory Weiss tear
- Pepto Bismol use
- Food allergy

<table>
<thead>
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<td>For pain, consider, Fentanyl</td>
</tr>
<tr>
<td>Notify receiving facility. Consider Base Hospital for medical direction</td>
</tr>
</tbody>
</table>

#### Pearls
- Hemoptysis and epistaxis can appear to be an upper GI bleed. Perform a thorough history and assessment.
- Limit time on scene and transport quickly.
### San Mateo County Emergency Medical Services

#### Vaginal Bleeding

For vaginal bleeding in the NON-pregnant patient. For vaginal bleeding in pregnancy, use primary impression Adult Pregnancy Complications

<table>
<thead>
<tr>
<th>History</th>
<th>Signs and Symptoms</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Age</td>
<td>• Dysuria</td>
<td>• UTI/cystitis</td>
</tr>
<tr>
<td>• Amount of bleeding (volume and duration)</td>
<td>• Abdominal pain</td>
<td>• Sexual assault</td>
</tr>
<tr>
<td>• Trauma/sexual assault</td>
<td>• Vaginal discharge</td>
<td>• Straddle injury</td>
</tr>
<tr>
<td>• Comorbid illnesses/medications (e.g., hormone therapy, anticoagulants)</td>
<td>• Fever/chills</td>
<td>• Foreign body</td>
</tr>
<tr>
<td>• Other bleeding/bruising</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Pearls
- For suspected sexual assault, complete and submit mandated reporting form and consider notifying law enforcement.
- Vaginal bleeding can be a normal physiologic finding in infant females.
- Amount of bleeding best determined by number of fully saturated pads per hour.
- If patient has passed tissue, collect and properly secure for transport.

### History

- Age
- Amount of bleeding (volume and duration)
- Trauma/sexual assault
- Comorbid illnesses/medications (e.g., hormone therapy, anticoagulants)
- Other bleeding/bruising

### Signs and Symptoms

- Dysuria
- Abdominal pain
- Vaginal discharge
- Fever/chills

### Differential

- UTI/cystitis
- Sexual assault
- Straddle injury
- Foreign body

---

### Consider

- Cardiac monitor
- Consider 12-Lead ECG
- Establish two large bore IVs if hemodynamically unstable
- If age-dependent hypotensive
  - Normal Saline bolus IV/IO
  - May repeat x2
- Consider, Ondansetron

For pain consider, Fentanyl

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### Notify receiving facility

Consider Base Hospital for medical direction

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### Effective August 2020

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### Effective November 2018

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### Treatment Protocol   P32

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### San Mateo County Health Emergency Medical Services

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Measure vital signs and level of consciousness

1. GCS ≤ 13
2. Systolic blood pressure < 90 mmHg ≤ 6 years old SBP < 60 mmHg
3. Adult respiratory rate < 10 or > 29 or need for ventilatory support
4. Infant (< 1 year of age) respiratory rate < 20

Assess anatomy of injury

1. All gunshot wounds
2. Chest wall instability or deformity (e.g., flail chest)
3. Two or more proximal long bone fractures
4. Crushed, degloved, mangled, or pulseless extremity
5. Amputation above the wrist or ankle
6. Penetrating injuries to head, neck, torso, groin and extremities proximal to elbow and knee
7. Pelvic fractures
8. Open or depressed skull deformity
9. Traumatic paralysis or paresthesia
10. Combination of trauma with burns

Assess mechanism of injury and evidence of high-energy impact

1. Adult fall > 20 feet
2. Pediatric fall > 10 feet or 2 times height of child
3. High risk auto crash: Death in same vehicle Ejection (partial or complete) Extrication > 20 minutes' Vehicle telemetry data confer high risk Intrusion on patient side or roof > 12 inches or > 18 inches at any site
4. Auto-pedestrian/auto-bicycle/motorcycle Separated from, thrown or run over Obvious injury Complaint of pain or injury Significant blunt trauma to head/torso from large animal (i.e. kick/fall from horse)

Trauma Center transport with early notification

Transport to closest facility to secure airway

Scene time goal is 10 minutes
For other situations not described below, consider Trauma Base Hospital contact if paramedic has concern that a serious injury may exist.

### Risk Factor Advisory

Patients who do not meet Box 1-3 criteria may still be prone to seriously injury, specifically if they have one or more of the following risk factors:

- Pregnancy over 20 weeks
- Communication barrier (e.g., age, language, psychiatric, or developmental issues)
- Age 55 or older
- Patient taking anticoagulants or with known bleeding disorder
- Patient with co-morbidity factors
- Central nervous system changes
- Time sensitive injuries

**Motor vehicle crash**
- Estimated impact speed of > 40mph
- Mechanical extrication required by fire department personnel
- Rollover with unrestrained occupant

**Person struck by a vehicle at < 20mph**

**Person ejected/fell from other object (e.g., motorcycle, horse, or ATV)**

**Blunt assault with weapon (e.g., pipe, bat, or golf club)**

**Falls > 10 but < 20 feet**

*This list is not all-inclusive and other high energy mechanisms encountered also merit Trauma Base Hospital contact.*
Pearls
• Do not let alcohol confuse the clinical picture. Persons using alcohol may have unrecognized injuries, particularly head bleeds.
• A complete hands on head-to-toe assessment is required for all trauma patients.
• Transport should be initiated within 10 minutes of ambulance arrival unless patient requires extrication.

Age Categories
Adult Patient – Trauma patients 15 years of age and older.
Pediatric Patients – Trauma patients under the age of 15 years.

Trauma Receiving Facilities
Adult Trauma Center catchment areas:
• Stanford Hospital – Any area south of and including Devil’s Slide; City of Millbrae south of Trousdale Drive between I-280 and El Camino Real; and south of Millbrae Avenue between El Camino Real and the San Francisco Bay.
• Zuckerberg San Francisco General Hospital – Any area north of Devil’s Slide; City of Millbrae north of Trousdale Drive between I-280 and El Camino Real; and north of Millbrae Avenue between El Camino Real and the San Francisco Bay. Include San Francisco International Airport.
• Eden Medical Center – Eastbound on the San Mateo or Dumbarton Bridges.

Pediatric Trauma Center catchment areas:
• Stanford Hospital – All patients ≤ 6 years or any area south of and including Devil’s Slide; City of Millbrae south of Trousdale Drive between I-280 and El Camino Real; and south of Millbrae Avenue between El Camino Real and the San Francisco Bay.
• Zuckerberg San Francisco General Hospital – All patients > 6 years and any area north of Devil’s Slide; City of Millbrae north of Trousdale Drive between I-280 and El Camino Real; and north of Millbrae Avenue between El Camino Real and the San Francisco Bay. Include San Francisco International Airport.

Receiving Facilities – Local hospitals that are not trauma receiving facilities are destinations for patients who are triaged by the Base Hospital at the time of report as not requiring trauma center care. A trauma receiving facility may also serve as the receiving facility when it is the patient’s facility of choice.

Low Energy Mechanism Trauma
Low energy mechanism trauma may not obviously reveal significant trauma. Examples include, but are not limited to ground level or short falls, blunt assault without a weapon (e.g., closed fist), low speed motor vehicle crash, or other blunt trauma (e.g., sports injury). Symptoms or concern may include:
• Symptoms in the presence of head injury such as headache, vomiting, loss of consciousness, repetitive questioning, abnormal, or combative behavior or new onset of confusion
• Pain level greater than 5/10 related to head, neck, or torso injury
• Any concerns due to hypotension, tachycardia, or tachypnea
• Systolic BP < 110mmHg in patients 65 years of age or older
• Torso injury with tenderness of abdomen, chest/ribs or back/flank
• Suspected hip dislocation or pelvis injury

Other Definitions
Unmanageable Airway – A patient whose airway is unable to be adequately maintained with BLS or ALS maneuvers. All trauma patients are candidates for immediate redirection to the trauma center following airway stabilization at a non-trauma receiving facility.
Extremity Trauma

For any traumatic injury (ies) to the extremities that does not involve the head

**History**
- Type and time of injury
- Mechanism (crush, penetrating, blunt, or amputation)
- Open vs. closed wound/fracture
- Past medical history
- Medications

**Signs and Symptoms**
- Evidence of trauma
- Pain, swelling, deformity, or bleeding
- Altered sensation or motor function
- Diminished pulse or capillary refill
- Decreased extremity temperature

**Differential**
- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation

**Crush injury?**

- No
- Yes

**Early transport after release**
- Limit scene time to 10 minutes

**Control hemorrhaging**
- Apply tourniquet for hemorrhage

**P**
- Place splints and cold packs to stabilize fractures as necessary
- Establish IV/IO
- Cardiac monitor
- If SBP < 80 in adults
  - Normal Saline bolus 500ml IV/IO
  - May repeat as long as criteria above exists.
  - **Maximum 1L**
- If poor perfusion or shock in peds
  - Normal Saline bolus IV/IO
  - Use pediatric tape and refer to dosing guide
  - Repeat to age dependent goal SBP
  - May repeat as long as criteria above exists
- In the absence of head trauma, age-specific hypotension, poor perfusion or AMS
  - Consider, Fentanyl for pain control
- Notify receiving facility.
  - Contact Base Hospital for medical direction

**Exit to Airway TG**

**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**

**Exit to Airway TG if indicated**

**P**
- Secure airway and support respiratory rate
- Place splints and cold packs to stabilize fractures as necessary
- Establish IV/IO
- Cardiac monitor
- EtCO\(_2\) monitoring
- If SBP < 80 in adults
  - Normal Saline bolus 500ml IV/IO
  - May repeat as long as criteria above exists.
  - **Maximum 1L**
- If poor perfusion or shock in peds
  - Normal Saline bolus IV/IO
  - Use pediatric tape and refer to dosing guide
  - Repeat to age dependent goal SBP
  - May repeat as long as criteria above exists
- In the absence of head trauma, age-specific hypotension, poor perfusion or AMS
  - Consider, Fentanyl for pain control
- Prior to release from entanglement
  - Albuterol
- For suspected hyperkalemia:
  - Peak T-waves; or
  - QRS > 0.12 seconds; or
  - Loss of P-waves
  - Albuterol
  - Calcium Chloride
  - Sodium Bicarbonate
  - Do NOT administer Sodium Bicarbonate and Calcium Chloride in the same IV.
San Mateo County Emergency Medical Services

Extremity Trauma

For any traumatic injury (-ies) to the extremities that does not involve the head

**Pearls**

- For partial amputations, splint affected extremity in anatomic location and elevate extremity.
- For complete amputations, place amputated part in a dry container or bag and place on ice. Seal or tie off bag and place in second container or bag. DO NOT place amputated extremity directly on ice or in water. Elevate extremity and dress with dry gauze.
- Penetrating trauma to an extremity may hide significant vascular injury and hemorrhage. Early application of a tourniquet should be considered.
- Hypotension is age dependent. This is not always reliable and should be interpreted in context with the patient’s typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x 2)
  - Over 10 years: < 90mmHg
  - Over 65 years: < 110mmHg
- If vigorous hemorrhage is not controlled with direct pressure and elevation on wound, apply a tourniquet. Tourniquets may be used in pediatric patients. Tourniquets may also be appropriate for hemorrhage control in multi-casualty incidents.
- Crush Injury Syndrome is caused by muscle crush injury and cell death. Most patients have an extensive area of involvement such as a large muscle mass in a lower extremity or the pelvis. May develop after one (1) hour in the presence of a severe crush, but usually requires at least four (4) hours of compression. Hypovolemia and hyperkalemia may occur, particularly in extended entrapments.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Do not overlook the possibility of associated domestic violence or abuse.
**History**
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications (anticoagulants)

**Signs and Symptoms**
- Evidence of trauma
- Pain, swelling, or bleeding
- AMS
- Unconscious
- Respiratory distress or failure
- Vomiting
- Seizure

**Differential**
- Skull fracture
- Spinal injury
- Abuse

---

**Early transport**

Limit scene time to 10 minutes

- Control hemorrhaging
  - Apply tourniquet for hemorrhage

- Spinal Motion Restriction
  - Secure airway
  - and support respiratory rate

- Elevate head 30 degrees unless contraindicated. Position patient on left side if needed for vomiting

- Establish IV/IO
- Cardiac monitor
- EtCO₂ monitoring

- If SBP < 110 in adults
  - Normal Saline bolus 500ml IV/IO
  - May repeat as long as criteria above exists.
  - Maximum 2L

- If poor perfusion or shock in ped
  - Normal Saline bolus IV/IO
  - Use pediatric tape and refer to dosing guide
  - Repeat to age dependent goal SBP
  - May repeat as long as criteria above exists

- For nausea in adults, consider
  - Ondansetron

- For peds patients ≥ 4 years, consider
  - Ondansetron
  - Use pediatric tape and refer to dosing guide

- Notify receiving facility.
- Contact Base Hospital for medical direction

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Respiratory Arrest/Failure

**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**
**Pearls**

- ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.
- Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize modified jaw thrust technique to open the airway.
- Intubation of head injury patients is best addressed at the hospital.
- Hypotension is age dependent and is not always a reliable sign. It should be interpreted in context with the patient’s typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x2)
  - Over 10 years: <90mmHg
  - Over 65 years: <110mmHg
- Avoid hyperventilation. Maintain an EtCO$_2$ of 35 or greater, which may be unreliable if the patient was subject to multisystem trauma or poor perfusion.
- In patients with a dilated pupil on one side or posturing, which indicates brainstem herniation, modest hyperventilation is appropriate. Keep EtCO$_2$ of 30 or greater.
- Scalp hemorrhage can be life threatening. Treat with direct pressure and pressure dressing.
- Increased intracranial pressure may cause hypertension and bradycardia.
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Limit IV fluids unless the patient is hypotensive.
- Concussions are traumatic brain injuries involving any number of symptoms including confusion, LOC, vomiting, or headache. Any prolonged confusion or mental status abnormality which does not return to the patient’s baseline within 15 minutes of injury or any documented LOC should be evaluated by a physician.
- Do not overlook the possibility of associated domestic violence or abuse.
### Multi-System Trauma

**History**
- Time of injury
- Mechanism (blunt vs. penetrating)
- Damage to structure or vehicle
- Location of patient in structure or vehicle
- Restraints or protective equipment use
- Past medical history
- Medications

**Signs and Symptoms**
- Evidence of trauma
- Pain, swelling, deformity, lesions, or bleeding
- Unconscious
- Respiratory distress or failure
- Hypotension or shock
- Arrest

**Differential**
- Chest:
  - Tension pneumothorax
  - Flail chest
  - Pericardial tamponade
  - Open chest wound
  - Hemothorax
- Intra-abdominal bleeding
- Pelvis or femur fracture
- Spinal injury
- Head injury
- Hypothermia

### Early Transport

**Limit scene time to 10 minutes**

- Control hemorrhaging
- **Apply tourniquet for hemorrhage**

<table>
<thead>
<tr>
<th>E</th>
<th><strong>Spinal Motion Restriction if indicated</strong></th>
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<td><strong>Place splints and cold packs to stabilize fractures as necessary</strong></td>
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<tr>
<td></td>
<td><strong>Consider</strong></td>
</tr>
<tr>
<td>P</td>
<td><strong>Needle decompression</strong></td>
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<tr>
<td></td>
<td><strong>For open wounds to chest/abdomen, apply occlusive dressing</strong></td>
</tr>
</tbody>
</table>

**Respiratory Arrest/Failure**

**Suspected head injury?**

**Trauma – Head Trauma**

**Notify receiving facility. Contact Base Hospital for medical direction**

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**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**

---

**For any traumatic injuries that involve multiple systems or isolated chest or abdominal injuries. For injuries involving the head, use Head Trauma protocol**

**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**
Pearls

- ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.
- Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize modified jaw thrust technique to open the airway.
- Intubation of head injury patients is best addressed at the hospital.
- Hypotension is age dependent and is not always a reliable sign. It should be interpreted in context with the patient’s typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x 2)
  - Over 10 years: < 80mmHg
  - Over 65 years: < 110mmHg
- Stabilize flail segments with bulky dressing.
- Cover eviscerated bowel with dry sterile dressing.
- Stabilize impaled object(s) with bulky dressing. Do not remove.
- Avoid hyperventilation. Maintain an EtCO₂ of 35 or greater, which may be unreliable if the patient was subject to multisystem trauma or poor perfusion.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Do not overlook the possibility of associated domestic violence or abuse.
For cardiac arrest with penetrating or blunt traumatic mechanism. NOT for trauma sustained after cardiac arrest, use primary impression Cardiac Arrest – Non-traumatic.

### History
- Evidence of trauma or blood loss
- Events leading to arrest
- Estimated downtime

### Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

### Differential
- Tension pneumothorax
- Cardiac tamponade
- Hypovolemic shock
- Spinal shock
- Traumatic brain injury

### Pearls
- Patients who do not qualify for field determination of death but have or develop cardiopulmonary arrest should be transported to the closest trauma center.

### Control hemorrhaging
**Apply tourniquet for hemorrhage**
- Begin continuous chest compressions
- Push hard (> 2 inches) and fast (110/min)
- Use metronome to ensure proper rate
- Change compressors every 2 minutes (Limit changes/pulse checks to < 5 seconds)
- High flow oxygen via BVM
- Immediate transport to trauma center
- If suspected thoracic trauma, bilateral pleural decompression
- If shockable rhythm, defibrillate

**Notify receiving facility. Consider Base Hospital for medical direction**

### AT ANY TIME
Return of spontaneous circulation

**Multi-System Trauma**

**Tourniquet use should not be delayed until a patient is in shock or is clearly exsanguinating. It should be applied early and can be used safely without risk of patient injury. Do not wait; apply often and tighten if needed.**

**Yes**

**No**
# San Mateo County Emergency Medical Services

## Burns

### History
- Type of exposure (heat, gas or chemical)
- Inhalation injury
- Time of injury
- Other trauma
- Past medical history
- Medications

### Signs and Symptoms
- Burns, pain, or swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise or distress could be presented as hoarseness or wheezing

### Differential
- Superficial – red and painful (do not include in TBSA)
- Partial thickness – blistering
- Full thickness – painless with charred or leathery skin
- Chemical injury
- Thermal injury
- Radiation injury
- Blast injury

---

### Assess burn injury severity

#### Minor
- < 20% TBSA partial or full thickness burns
- No inhalation injury
- GCS > 13

- **E** Remove rings, bracelets, and constricting items
- **P** Apply clean dressing to burn area
- **E** Consider, IV
- **P** Normal Saline bolus
  - ≤ 5 years – 125ml
  - 6-13 years – 250ml
  - ≥ 14 years – 500ml
- **P** For pain consider, Fentanyl

- **E** Trauma Triage if indicated
- **P** Transport to facility of choice.

**Consider transporting** to Burn Center for burns to the face, hands, perineum, or feet and circumferential burns

### Major
- ≥ 20% TBSA partial or full thickness burns, burns with suspected inhalation injury or high voltage electrical burns

- **E** Remove rings, bracelets, and constricting items
- **P** Apply clean dressing to burn area
- **E** Consider, IV
- **P** Maintain airway
- **P** Establish IV/IO
  - Consider, one large bore IV in each AC
- **E** Cardiac monitor
- **P** EtCO₂ monitoring

- **P** Normal Saline bolus
  - ≤ 5 years – 125ml
  - 6-13 years – 250ml
  - ≥ 14 years – 500ml
- **P** For pain consider, Fentanyl

- **E** Trauma Triage if indicated
- **P** Transport to appropriate facility
  - Burns with trauma to Trauma Center
  - Burns only to Burn Center

### Notify receiving facility.
- Contact Base Hospital for medical direction

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**Approved Burn Receiving Centers**
- St. Francis – San Francisco
- Valley Med. Center – San Jose
- UC Davis – Sacramento

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**Effective April 2020**

**Cardiac monitor**

**EtCO₂ monitoring**

**Normal Saline bolus**

**≤ 5 years – 125ml**

**6-13 years – 250ml**

**≥ 14 years – 500ml**

**For pain consider, Fentanyl**
Pearls

- Airway burns may lead to rapid compromise of the airway and can be identified by soot around the nares or mouth or visible burns or edematous mucosa in the mouth.
- Early intubation is required when the patient experiences significant inhalation injuries. If the patient requires advanced airway management that cannot be quickly achieved in the field, transport to the nearest facility for stabilization prior to transfer to the Burn Center. Do not wait for a helicopter if airway patency is a critical concern.
- Contact Burn Center prior to transport to confirm bed availability.
- For major burns, do not apply wet dressings, liquids or gels to burns unless it is to remove whatever caused the burn (i.e. dry chemical agent, etc.). Cooling large burns may lead to hypothermia.
- Burn patients are often trauma patients. If burns are evident in the presence of trauma, follow trauma triage guidelines and transport to trauma center if activation criteria is met.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
- Never administer IM pain medication into a burned area.
- IV/IOs may be placed through burns as a last resort.

Rule of Nines

- Seldom will you find a complete isolated body part that is injured as described in the Rule of Nines. More likely, it will be portions of one area, portions of another, and an approximation will be needed.
- For the purpose of determining the extent of serious injury, differentiate the area with minimal (superficial) burn from those of partial or full thickness burns.
- When calculating TBSA of burns, include only partial and full thickness burns; do not include superficial burns in the calculation.

<table>
<thead>
<tr>
<th>Burn Assessment Terminology</th>
<th>Approved Terminology</th>
<th>Old Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superficial</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; degree</td>
<td></td>
</tr>
<tr>
<td>Partial thickness</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; degree</td>
<td></td>
</tr>
<tr>
<td>Full thickness</td>
<td>3&lt;sup&gt;rd&lt;/sup&gt; degree</td>
<td></td>
</tr>
<tr>
<td>Burn assessment should be documented and reported using only approved terminology</td>
<td></td>
<td></td>
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