

Abdominal Pain

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Discomfort or pain: OPQRST (Onset, Provocation, Quality, Region, Radiation, Severity, Time)
- Associated symptoms: indigestion, fever or chills, nausea, vomiting, diarrhea, diaphoresis, dizziness, shortness of breath
- Gastrointestinal: time and description of last meal, description of vomit if any, time of last bowel movement and description of feces (color, consistency, presence of blood, etc.)
- Urination: difficulty, pain, burning, frequency and description (color, consistency, unusual odor, presence of blood, etc.)
- Gynecological: last menstrual period, vaginal bleeding, history of GYN problems, vaginal discharge, sexual activity, trauma, and possibility of pregnancy
- Medical history: surgery, related diagnoses (e.g., infection, pelvic inflammatory disease, hepatitis, gallstones, kidney stones, etc.) medications (over the counter and prescribed) and other self-administered remedies (baking soda, Epsom salts, enemas, etc.)

Objective Findings:

- General appearance: severity of pain, skin color, diaphoresis
- Abdominal tenderness (guarding, rigidity, distention)
- Pulsating masses
- Quality of femoral pulses
- Orthostatic symptoms present (dizziness with sitting or standing)
- Consider 12 lead EKG

Treatment:

- Position of comfort
- NPO
- Routine Medical Care
- Consider IV access
- If hypotensive (SBP<90 or signs of poor perfusion), fluid challenge of 250-1000 ml NS. If SBP remains <90 continue fluid resuscitation. Titrate to SBP of 90 or symptoms of improved perfusion.
- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.

- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patients pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.

Precautions and Comments:

- If primary or secondary survey indicates shock, initiate transport early
- Consider Ondansetron (Zofran) 4 mg ODT, may repeat every 15 minutes to a total of 12 mg for patients who develop nausea
- Upper abdominal pain or “indigestion” may reflect cardiac origin. Refer to Chest Pain/Discomfort Of Suspected Acute Coronary Syndrome.

ADULT PAIN ASSESSMENT AND MANAGEMENT

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- All patients expressing verbal or behavioral indicators of pain shall have an appropriate assessment and management of pain as indicated.
- Measurement of a patient's pain is subjective; therefore, s/he is the best determinant of the presence and severity of his or her pain
- Prior treatment for pain provided by the patient, friends or family members.

Objective Findings:

- Discomfort: onset, provocation, quality, region, radiation, severity, time.
- Assess and document the scale/intensity using the numeric intensity scale equivalent of 0-10 (0=no pain; 10=worse pain ever).
- Reassessment and documentation of a patient's pain shall be performed following any intervention that may affect pain intensity.

Treatment:

- Determine appropriate form(s) of pain management as indicated. Initial pain management may include any of the following interventions: repositioning, bandaging, splinting, elevation, traction, cold packs and psychological coaching. Reassess pain intensity.
- If a patient's pain is assessed as Moderate to Severe (5 –10) and no contraindications are noted the patient should be offered treatment for pain.
- IV access
- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patients pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.

Precautions and Comments:

- Morphine is contraindicated for the following conditions:
 - Childbirth or suspected active labor
 - Closed head injury
 - Sudden onset of acute headache
 - Altered mental status related to injury

- SBP less than 90 mmHg
 - Respiratory rate less than 12
- Treatment of pain with morphine should be used with caution in chronic pain states
- Consider Ondansetron (Zofran) 4 mg ODT, may repeat every 15 minutes to a total of 12 mg for patients who develop nausea
- Base physician consultation is recommended in patients with abdominal pain of unknown etiology
- An accurate and thorough assessment of pain requires that an initial assessment and on-going assessments be performed and documented. This is the community standard of care and provides clinicians with a baseline to compare subsequent evaluations of the patient's pain
- Any standard pain assessment tool using a scale of 0-10 may be used to evaluate the adult's pain. If the patient is unable or unwilling to scale his or her pain, the patient's words and behavioral clues should be documented prior to treatment and after each intervention.

ALLERGIC REACTIONS

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Exposure to allergens (bee stings, drugs, nuts, seafood, new food consumed, etc.)
- Prior allergic reactions
- Any known specific allergen
- Signs/Symptoms:
 - Localized: pain, swelling, stinging sensation
 - Systemic: dizziness, sweating, weakness, itching, trouble breathing, muscle cramps
- History of previous exposures, allergic reactions, any known specific allergen

Mild:

- Hives, rash
- Normotensive
- No bronchospasm (wheezing)

Treatment:

- Remove etiologic agent if possible or relocate patient
- May help the patient administer their own medications
- Diphenhydramine 25-50 mg IM/IV (1 mg/kg)

Moderate:

- Hives, rash
- Bronchospasm (wheezing)
- Normotensive

Treatment:

- Remove etiologic agent if possible or relocate patient
- May help the patient administer their own medications
- Routine medical care
- Diphenhydramine 25-50 mg IM/IV
- Albuterol 2.5 – 5 mg via nebulizer for wheezing. May repeat as needed
- Consider epinephrine (1:1,000) 0.3 ml IM / 0.3 mg IM, may repeat q 5 minutes as needed. Epinephrine IM should be administered in the thigh.
- IV access

Severe: ANY or ALL of the localized findings plus

- Altered mental status with
- Hypotension (SBP <90) or evidence of hypoperfusion,
- Stridor

Treatment:

- Remove etiologic agent if possible or relocate patient
- May help the patient administer their own medications
- Routine medical care
- Monitor EKG
- Pulse oximetry
- Epinephrine (1:1000) 0.3 mg IM. May repeat q 5 minutes, if acute symptoms persist. Epinephrine IM should be administered in the thigh.
- IV access
- If there is no response to IM epinephrine, and the patient is in extremis consider epinephrine 1:10,000 slow IV push 0.1 mg (1 ml). May repeat every 3-5 minutes to a maximum of 0.3 mg (3 ml).
- Diphenhydramine 50 mg IV (or IM if unable to establish IV access).
- Albuterol 2.5 - 5 mg via nebulizer for bronchospasm, may repeat as needed
- IV/IO Fluid challenge 250-1000 ml NS (titrate to SBP of 90)

Precautions and Comments:

- An allergy kit or “Epipen” is frequently prescribed for persons with known systemic allergic reactions. Prehospital personnel may assist with use of patient’s own medication.
- Anxiety, tremor, palpitations, tachycardia, and headache are not uncommon with administration of epinephrine. These may be particularly severe if given IV. In elderly patients, it may precipitate angina, AMI or dysrhythmias
- Obtain base hospital/receiving hospital consultation, if possible, prior to the intravenous administration of epinephrine 1:10,000.
- Use epinephrine with caution in patients over 35 years of age.
- Be sure you are giving the proper dilution of epinephrine to your patient, and give slowly.
- Edema of any of the soft structures of the upper airway may be lethal. Observe closely, and be prepared for early intubation before swelling precludes this intervention.

ALTERED MENTAL STATUS/SEIZURE

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: March 2013

Information Needed:

- Surroundings: syringes, blood glucose monitoring supplies, insulin, etc.
- Change in mental status: baseline status, onset and progression of altered state, preceding symptoms such as headache, seizures, confusion, trauma, etc.
- Medical history: psychiatric and medical problems, medications, and allergies
- Consider stroke as a possible etiology

Objective Findings:

- Level of consciousness and neurological assessment
- Pulse Oximetry on room air
- Rate and depth of respirations before and after treatment
- Signs of trauma
- Breath odor
- Pupil size and reactivity
- Needle tracks
- Medical information bracelets or medallions
- Blood glucose level

Treatment:

Known or Suspected Hypoglycemia

- Routine Medical Care
- Glucose paste or other oral glucose administration if patient is able to maintain an airway and swallow the solution without difficulty
- If unable to tolerate oral glucose, IV access
- D₅₀W 25 g IV slow push for blood glucose <80mg/dL. May repeat as indicated
- **D₁₀W 100 ml (10 g) IV/IO for blood glucose <80/dL**
 - **If no response in LOC or glucose remains <80/dmg/dL administer 150 ml (15 g) and reassess the patient, May repeat as indicated**
- Glucagon 1mg IM if IV access is not immediately available. May repeat once after 10 minutes if blood glucose <80 mg/dL

Suspected Intracranial Hemorrhage

- Routine Medical Care
- Spinal immobilization if any suspicion of head trauma
- Elevate head of gurney if possible to 30 degrees

- Consider IV access
- Avoid excess fluid administration
- Comfort and reassure patient

Seizure

- Routine Medical Care
- Spinal immobilization for any suspicion of head trauma
- Consider IV access
- For persistent generalized seizures (>5 minutes) or recurrent seizures without regaining a normal mental status, treat with midazolam (Versed®) 1-2 mg IV or IM, may repeat every 5 minutes, up to a maximum of 10 mg. Monitor the patients EKG monitor and pulse oximetry after administration.

Unknown Cause

- Routine Medical Care
- Spinal immobilization if any suspicion of head trauma
- Consider IV access
- If narcotic overdose is a possibility (e.g. pinpoint pupils) and the patient is in respiratory failure or shock, give naloxone 1-2 mg IV or IM (titrate to overcome respiratory depression and repeat as needed)
- Blood glucose measurement

Behavioral or Psychological

- Routine Medical Care
- Comfort and reassure patient
- Restrain only as necessary

Precautions and Comments:

- Consider transport in left lateral recumbent position if no spinal injury is suspected
- Be attentive for excessive oral secretions, vomiting, and inadequate tidal volume
- Carefully monitor pulse oximetry and respiratory status including rate and depth of ventilation after administration of midazolam (Versed®)
- Aggressive use of naloxone may precipitate withdrawal symptoms and combativeness
- Glucagon can take 15 minutes or more to have an effect
- Focal seizures without mental status changes do not require prehospital pharmacological intervention
- Consider withholding naloxone in narcotic-dependent comfort care patients, such as hospice, end-stage terminal illness or DNR patients. Base Hospital contact is encouraged

BITES AND STINGS

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Type of animal or insect: time of exposure
- Symptoms:
 - Localized: pain, swelling, stinging sensation
 - Systemic: dizziness, sweating, weakness, itching, trouble breathing, muscle cramps

Objective Findings:

- Hives, rash
- Puncture marks at injury site
- Localized erythema and/or edema

Treatment:

- Remove etiologic agent if possible or relocate patient
- EMTs and paramedics may help the patient administer their own medications
- Ensure personal safety. If safe for the rescuer, bring in offending spider, bee, marine animal or other suspected creature for identification
- Grab and remove the stinger or injection/biting mechanism if visible as soon as possible
- Apply heat to stingray and sea urchin and other unidentified marine animal stings using warm water or compresses
- Consider IV
- Diphenhydramine 25-50 mg IM or IV (1 mg/kg). If there are signs or symptoms of anaphylaxis, see Allergic Reaction Protocol
- Consider pain management if indicated, see Adult Pain Assessment protocol
- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patients pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.

Precautions and Comments:

- Allergy kits or Epipens[®] are frequently prescribed for persons with known systemic allergic reactions. Prehospital personnel may assist with the use of the patient's own medication.

- Ice applied directly to skin surfaces can cause serious tissue damage and should not be used.

BURNS

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Type and source of burn: explosion, chemicals, electrical, steam, smoke or toxic fumes
- Complicating factors: exposure in enclosed space, total time exposed, drugs or alcohol
- Medical history: cardiac or respiratory disease, circulatory problems, etc.
- Physical Exam: presence or absence of sputum, singed nasal hairs, and quality of voice

Objective Findings:

- Evidence of inhalation injury or toxic exposure, i.e. carbonaceous sputum, hoarseness, or singed nasal hairs
- Measure the extent of the burn including the depth, full or partial thickness and the total body surface area (TBSA) affected. As a guide, the surface area covered by the patient's palm equals one percent of his TBSA.
- Identify entrance/exit wounds if electrical or lightning strike
- Identify associated trauma from explosion, electrical shock, or fall

General Burn Treatment:

- Routine Medical Care
- Stop the burning process
- Early intubation for patients with evidence of significant inhalation injury or respiratory distress
- Should not delay transport to appropriate facility, if feasible
- Continuous cardiac monitoring: treat dysrhythmias according to appropriate protocols
- Consider IV access (avoid burned skin but use if necessary)
- Consider pain management if indicated, see Adult Pain Assessment protocol
- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patients pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.

Treatment (Thermal):

- Remove jewelry and non-adhered clothing. Do not break blisters.
- Cover affected body surface
 - If <10% of body surface, cover with sterile, moist saline dressing
 - If >10% TBSA, cover with sterile or clean dry sheet
- Use sheets/blankets to prevent hypothermia if burns are extensive
- Transport to appropriate facility (see Precautions and Comments)
- For major burns, establish IV or IO access, preferably in unburned skin
- If partial or total thickness >10% TBSA give 250 – 1000 ml NS
- Monitor lung sounds

Treatment (Chemical):

- Follow decontamination and HazMat procedures if indicated
- Provide routine medical care as soon as it is safe to do so
- Brush off dry powder if present
- Remove any contaminated or wet clothing (including underwear)
- Irrigate with copious amounts of saline or water
- Transport to appropriate facility

Treatment (Electrical):

- Routine medical care
- Moist dressing on exposed, injured area
- Transport to appropriate facility
- Continuous cardiac monitoring: treat dysrhythmias according to appropriate protocols

Precautions and Comments:

- Depth of burn:
 - Superficial = 1st degree (skin red but intact with pain)
 - Partial thickness = 2nd degree (severe pain with blisters)
 - Full thickness = 3rd degree (no sensation in burned skin)

Major burns are defined as:

- >10% of TBSA partial or full thickness burn
- Burns to critical areas : face, hands feet or genitalia, perineum, or major joints
- Electrical burns or lightning injury
- Chemical burns
- Respiratory burns
- Burns associated with trauma
- Contact receiving facility physician for further fluid orders, assistance with destination decision, or further morphine orders if needed
- Inhalation injuries may cause delayed but severe airway compromise. Be prepared for early intubation

- Do not apply ice or ice water directly to skin surfaces as additional injury may result
- Consider presence of associated multisystem trauma if patient presents with signs or symptoms of hypovolemia. See Trauma Protocol for associated trauma
- Document the total IV fluid administered on the PCR and provide this in report to the receiving hospital

Transportation:

- Patients with minor burns should be transported to the closest appropriate hospital
- Patients with a combination of burns and trauma should be transported to the appropriate Trauma Center
- Patients with suspected partial (>10%TBSA), or full thickness burns, electrical burns or partial/full thickness burns of critical areas (hands, face, or perineum) should be transported to the appropriate burn receiving hospital: St. Francis Hospital ED (Bothen Burn Center) or Santa Clara Valley Medical Center
- Patients with symptoms of respiratory burns (cough, sore throat, wheezing, stridor, or hoarse voice) should be transported to the closest receiving hospital. Carefully observe patients with signs (soot in the mouth or singed nasal hair) of potential respiratory burns for any symptoms of respiratory burns

**CARDIAC ARREST
OVERVIEW (GENERAL GUIDELINES)
(MEDICAL ETIOLOGY, NON-TRAUMA RELATED)**

APPROVED: Gregory Gilbert, MD EMS Medical Director
Sam Barnett EMS Administrator

DATE: January 2012

Information Needed:

- History of arrest:
 - Witnessed collapse-time down and preceding symptoms
 - Unwitnessed collapse-time down and preceding symptoms if known
 - Bystander CPR and treatments, including first responder defibrillation, prior to arrival
- Past medical history: diagnoses, medications
- Scene: evidence of drugs, hypothermia, trauma, DNR or POLST form or medallion, nursing home or hospice patient

Objective Findings:

- Unconscious with agonal or absent ventilations
- Absence of pulse (carotid or brachial)
- Signs of trauma or blood loss (see Trauma Evaluation and Management)
- Rigor; fixed dependent lividity (see Guidelines for Determining Death in the Field)
- Air and skin temperature

Treatment:

- Automatic External Defibrillator if available and shock as appropriate
- Start CPR
- Monitor cardiac rhythm and treat dysrhythmia according to appropriate protocol

Precautions and Comments:

- Ensure that effective CPR continues while advanced skills are carried out
- Remove any nitroglycerin patch to avoid further vasodilation during cardiac arrest and to prevent potential hazard if defibrillation becomes necessary
- If patient is hypothermic, transport may be indicated to rewarm patient in a hospital setting prior to termination of efforts
- Consider termination of efforts if there is no response to ALS measures. (see Guidelines for Determining Death in the Field)
- Provide grief support and referrals to on-site survivors as appropriate
- Note: When confirming tube placement with an end-tidal CO₂ detector, most asystole patients will have a color change but there may be a false negative

reading (e.g. no color change although tube is in the trachea) if the patient has been down for some time. Revisualize the ET tube to verify placement and use the esophageal detection device.

CARDIAC ARREST: PULSELESS ELECTRICAL ACTIVITY (PEA) and ASYSTOLE

APPROVED: Gregory Gilbert, MD EMS Medical Director
Sam Barnett EMS Administrator

DATE: January 2012

Information Needed:

- See Cardiac Arrest overview protocol

Objective Findings:

- Pulseless (check carotid and femoral pulses)
- Apneic
- Electrical activity on the monitor exclusive of ventricular fibrillation or ventricular tachycardia

Treatment:

- Assess patient and confirm pulselessness
- Start CPR and assure adequacy of compressions and ventilations. An emphasis on high quality CPR with minimal interruptions in chest compressions.
- Determine cardiac rhythm
- BLS should use Automatic External Defibrillator if available and shock as appropriate
- For Asystole or PEA, confirm in two ECG leads
- Establish large bore IV or IO of normal saline
- Give **epinephrine** (1:10,000) 1 mg IV/IO, repeat q 3 to 5 minutes until rhythm change or termination of resuscitation efforts
- Assess for possible causes of PEA and administer corresponding treatments (See Precautions and Comments)
- Consider advanced airway. Confirm ventilation with capnography
- Fluid challenge 250-1000 cc NS for suspected hypovolemia
- In the setting of renal failure, dialysis, DKA, or potassium ingestion (possible hyperkalemia), give **calcium chloride** 1 gm IV/IO over one minute **then flush** and then administer **sodium bicarbonate** 1 mEq/kg IV/IO

Precautions and Comments:

- Consider termination of efforts if patient is unresponsive to initial treatments (see Guideline for Determining Death in the Field Policy)
- External pacing has not been shown to be effective in PEA
- See Guidelines for Determining Death in the Field
- Consider possible causes of PEA and possible treatments

Cause

Myocardial Infarction

Specific Field Treatment

None

San Mateo County EMS Agency
Adult Treatment Protocols

CARDIAC ARREST: PEA/ASYSTOLE

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Acidosis	Secure airway and hyperventilate patient
Tension Pneumothorax	Perform pleural decompression if indicated
Cardiac Tamponade	None
Hypoxia	Secure airway and ventilate patient
Hypovolemia	Give fluid challenge, for any suspicion
Hypothermia	Limit aggressive handling of the patient
Hyperkalemia	Consider bicarbonate and calcium chloride
Hypokalemia	None
Hypoglycemia	Give glucose
Pulmonary Embolus	None
Drug Overdose (Toxins)	Obtain history- treat accordingly
Organophosphate Poisoning/ Nerve Gas	Consider Atropine 2mg IVP

CARDIAC ARREST
VENTRICULAR FIBRILLATION/PULSELESS VENTRICULAR TACHYCARDIA

APPROVED: Gregory Gilbert,MD EMS Medical Director
 Sam Barnett EMS Administrator

DATE: January 2012

Information Needed:

- See Cardiac Arrest Overview Protocol

Objective Findings:

- Pulseless (check carotid and femoral pulses)
- Apneic
- Confirm ventricular fibrillation or ventricular tachycardia on monitor

Treatment:

- Assess patient and confirm pulselessness (check carotid and femoral pulses)
- Start CPR and assure adequacy of ventilations and compressions
- BLS should use automatic external defibrillator if available and shock as appropriate
- Initiate and continue CPR until defibrillator is ready
- Confirm that patient is pulseless and in ventricular fibrillation or pulseless ventricular tachycardia

Ventricular Fibrillation or Pulseless Ventricular Tachycardia (Witnessed or Unwitnessed)

- CPR until defibrillation is available
- Defibrillate once with biphasic dose (200J) or monophasic dose (360J). If using monophasic defibrillation continue with 360J when indicated throughout the resuscitation.
- Resume CPR for 2 minutes immediately after the shock.
- Standard cardiac arrest care (Compressions, ventilate with 100% oxygen, IV/IO access.)
- Minimize interruptions in chest compressions (<10 seconds unless intubating).
- Check rhythm. If asystole/PEA or pulse is present, go to appropriate protocol.
- Defibrillate with 2nd biphasic dose (300J) or monophasic dose (360J).
- Consider advanced airway. Confirm ventilation with capnography.
- Resume CPR for 2 minutes immediately after the shock.
- Give epinephrine (1:10,000) 1 mg IV/IO, repeat q 3 to 5 minutes
- Defibrillate with 3rd biphasic dose (360J) or monophasic dose (360J)
- Resume CPR for 2 minutes immediately after the shock.

San Mateo County EMS Agency
Adult Treatment Protocols
CARDIAC ARREST

VENTRICULAR FIBRILLATION/PULSELESS VENTRICULAR TACHYARDIA

- For persistent Ventricular Fibrillation, consider Lidocaine 1.0-1.5 mg/kg IV/IO, then 0.5 - 0.75 mg/kg IV/IO, maximum of 3 doses or 3 mg/kg. If patient has suspected tricyclic antidepressant overdose give sodium bicarbonate 1 mEq/kg IV/IO, repeat 0.5 mEq/kg q 10 minutes
- In the setting of renal failure, dialysis, DKA, or potassium ingestion (possible hyperkalemia), give calcium chloride 1 gm IV over one minute then flush and then administer sodium bicarbonate 1 mEq/kg IV
- If pulse is restored but the patient remains hypotensive (SBP<90), administer Dopamine 5 mcg/kg/min IV. If inadequate response, may increase every 5 minutes in 5 mcg/kg/min increments to maintain SBP > 90mmHg. Maximum dose is 20 mcg/kg/min. Consider base physician contact.
- If VT with pulse go to dysrhythmia – wide complex protocol

Precautions and Comments:

- If IO is established and lidocaine is used for discomfort, the maximum dose of lidocaine will include lidocaine treated for discomfort.

SUSPECTED ACUTE CORONARY SYNDROME

APPROVED: Gregory Gilbert,MD EMS Medical Director
Peter D'Souza,MD Assistant Medical Director
Barbara Pletz EMS Administrator

DATE: January 2009

Information Needed:

- Discomfort or pain: OPQRST (Onset, Provocation, Quality, Region, Radiation, Severity, Time)
- Associated symptoms: nausea, vomiting, diaphoresis, dyspnea, dizziness,
- Obtain medical history (other medical problems, including hypertension, diabetes, or stroke)
- Recent use of sildenafil (Viagra[®]) or other erectile dysfunction medications in the last 24 hours
- Treatment should be considered in patients with atypical presentations and symptoms suspicious of acute coronary syndrome

Objective Findings:

- General appearance: level of distress, apprehension, skin color, diaphoresis
- Signs of congestive heart failure (CHF): dependent edema, respiratory distress, distended neck veins
- Chest auscultation
- Pulse oximetry
- Assess discomfort on a 0-10 scale
- Cardiac monitor
- 12 lead ECG if available

Treatment:

- Routine medical care
- Reassure patient and place in position of comfort, supine if patient is hypotensive
- Administer oxygen
- Assess patient: primary, secondary, and history
- Reassess patient, interpretation of ECG rhythm
- Give nitroglycerin (NTG) 0.4 mg sublingual. NTG may be given prior to IV access if SBP>90, may repeat q 5 minutes (If BP drops significantly after one dose or becomes borderline, use extreme caution with repeat doses)
- IV access
- Give 324 mg Aspirin (four 81 mg tablets) PO (chew) (unless known allergy to Aspirin)

- If discomfort persists, Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate and prior to each repeat dose, the patient's pain and vital signs should be reassessed. The patient must have a SBP >90 mmHg, respirations >12 and be awake to report pain.
- If dysrhythmia is present, see DYSRHYTHMIA Protocol
- If hypotension develops, consider fluid challenge in the presence of clear lung sounds of 250-1000 ml NS
- If hypotension persists, Dopamine 5 mcg/kg/min IV. If inadequate response, may titrate every 5 minutes in 5 mcg/kg/min increments to maintain SBP > 90mmHg. Maximum dose is 20 mcg/kg/min. Consider base physician contact

Precaution and Comments:

- Suspicion of angina is based on patient history. Be alert to patients likely to present with atypical symptoms or "silent acute myocardial infarctions": women, elderly, people with diabetes, and cigarette smokers.
- Angina may present with only back, shoulder or arm pain. Particularly in the elderly, it may present only with shortness of breath or generalized "ill" feelings. Other presentations of angina may be syncope, altered level of consciousness, dyspnea, weakness, etc.
- Constant monitoring of patient is essential
- Consider other potential causes of chest pain: pulmonary embolus, pneumonia, pericarditis, aortic dissection, and pneumothorax
- Consider rapid transport to appropriate receiving facility. Keep scene time to a minimum
- For patients who have evidence of a ST segment MI (STEMI) based on the machine reading of "...acute MI suspected..." contact the intended receiving hospital as soon as possible and state that the patient is being transported with a STEMI
- If the paramedic identifies ST segment changes that are not recorded by the EKG machine, or if ST segment changes were present initially and resolved prior to the full 12 lead, this should be reported to the receiving hospital as soon as possible.
- Do not administer nitroglycerin to patients who have taken any sildenafil (Viagra[®]) or other erectile dysfunction medications within the last 24 hours
- BLS providers may assist patients with taking their own NTG (SL tab or SL spray) if SBP >100, q 5 minutes to a maximum of three doses

DECOMPRESSION ILLNESS (Dysbarism)

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Length of time patient submerged (total dive time)
- Number of dives made
- Duration of and time since descent/ascent (total surface interval)
- Were decompression dives made and at what interval?
- Depth of deepest submersion and depth of last dive
- Any loss of consciousness
- Temperature of the water
- Mechanism of injury suggestive of head/neck injury
- Did the diver perform an emergency ascent? If so, from what depth?
- Was the dive made with compressed air or mixed gases?
- Was there any air flight in last 24 hours?

Objective Findings:

- Joint pain (location)
- Pulmonary exam: rales or signs of pulmonary edema, respiratory distress
- Neurologic exam: monitor continuously for evolution of focal deficits
- Cardiac rhythm
- Resolution of symptoms with O₂

Treatment:

- Routine medical care
- 100% oxygen by non-rebreather mask
- Place patient in left lateral position, have suction ready
- Immediate transport to appropriate local hospital
- IV access, treat for dehydration

For joint pain:

- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patients pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.

Precautions and Comments:

- Shock position is contraindicated (this position does not affect circulatory system, emboli, and it may increase cerebral edema)
- Keep patient supine/left lateral recumbent position if possible to reduce risk of cerebral air embolism
- Focal deficits and neurologic changes indicate need for rapid transport to a hyperbaric chamber after stabilization at a local emergency department
- Low altitude, rapid air medical evacuation if necessary to the nearest decompression chamber
- Rapid ascent or breath-holding during ascent may cause central air embolism or ruptured tympanic membrane(s)
- Be alert for recurring hypoxia
- O₂ may resolve symptoms but is not a substitute for definitive care
- As much as 50% of dive injuries occur at depths not needing recompression
- Dysbarism may also occur in workers conducting operations in a pressurized air environment, e.g. bridge caisson workers. Consult on-scene work supervisors
- DAN (Divers Alert Network) Diving Emergency Hotline 919-684-9111 (24 hours/day)

DYSRHYTHMIAS: OVERVIEW

APPROVED: Gregory Gilbert, MD EMS Medical Director
Sam Barnett EMS Administrator

DATE: January 2012

Information Needed:

- Presenting symptoms: time of onset; gradual or sudden
- Associated symptoms: Discomfort or pain: OPQRST (Onset, Provocation, Quality, Region, Radiation, Severity, Time)
palpitations, dizziness, syncope, dyspnea, nausea, vomiting, fever, cough
- Medical history: dysrhythmias, cardiac disease, stress, drug abuse, diabetes mellitus, renal failure, pacemaker, AICD

Objective Findings:

- Signs of shock
- Signs of hypoxemia
- Pulse Oximetry
- Cardiac rhythm (on monitor and compared with pulse)
- 12 lead EKG

Treatment:

- Routine medical care
- Oxygen as indicated
- Continued reassessment of vital signs and signs of perfusion
- IV access
- Refer to specific Dysrhythmia protocol
- If dysrhythmia resolves and chest pain continues, refer to Chest Discomfort protocol
- Continued cardiac monitoring throughout transport to the ED
- In the setting of renal failure, dialysis, DKA, or potassium ingestion (possible hyperkalemia), give **calcium chloride** 1 gm IV/IO over one minute **then flush** and then administer **sodium bicarbonate** 1 mEq/kg IV/IO

Precautions and Comments:

- The asymptomatic patient with adequate perfusion may not require anti-dysrhythmic treatment
- Record and label with patient's name on cardiac rhythm strip of initial findings and all changes observed and provide a copy of the labeled rhythm strip to the receiving hospital
- Nitroglycerine and other medication patches should be removed prior to cardioversion, defibrillation, or transcutaneous pacing
- Consider a non-cardiac cause as a source of the dysrhythmia, e.g. drugs or medication

DYSRHYTHMIAS SYMPTOMATIC BRADYCARDIA

APPROVED: Gregory Gilbert, EMS Medical Director
Sam Barnett, EMS Administrator

DATE: January 2012

Information needed:

See Dysrhythmia: Overview Protocol

- The definition of “symptomatic bradycardia” is a medical patient with a pulse rate of <50 bpm and any one or more of the following
 - SBP less than 90
 - Altered mental status
 - Pulmonary edema
 - Ischemic chest pain unrelieved by nitroglycerin or with associated hypotension

Treatment:

- Routine medical care
- If the patient is asymptomatic, no treatment of the bradycardia may be warranted
- 12 Lead EKG
- Assess vital signs and perform secondary survey
- If the patient is asymptomatic, but the heart rate is less than 50 bpm, establish a saline lock or an IV of NS TKO
- If the patient is symptomatic, establish an IV/IO of NS and administer atropine 0.5 mg IV/IO, may repeat q 3-5 minutes to a maximum dose of 3 mg
- For symptomatic patients combined with one or more of the following conditions, if available, go directly to transcutaneous pacing (TCP)
 - An IV cannot be established
 - Atropine is ineffective
 - If type II 2nd degree AV block or 3rd degree block is noted
 - The patient is status–post heart transplant
- Transcutaneous Pacing (TCP)
 - For anxiety, consider midazolam (Versed[®]) 1-2 mg IV/IO. Monitor and observe respirations.
 - For pain control during transcutaneous pacing, consider morphine sulfate 2-5 mg slow IV push as needed for discomfort. May repeat in 2-5 mg increments q 5 min to a max of 20 mg, provided patient has SBP >90. If unable to establish an IV 2-5 mg of morphine sulfate may be administered IM/IO. May repeat in 2-5 mg increments q 10 min to max of 20 mg of morphine sulfate
- If the heart rate normalizes (>80 BPM) but hypotension persists:

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DYSRHYTHMIAS: SYMPTOMATIC BRADYCARDIA

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- Administer fluid challenge 250-1,000 ml NS in incremental doses in the presence of clear lung sounds; titrate to a SBP of >90 mg
- If patient remains hypotensive (SBP<90), administer dopamine 5 mcg/kg/min IV. If inadequate response, may increase every 5 minutes in 5 mcg/kg/min increments to maintain SBP > 90mmHg. Maximum dose is 20 mcg/kg/min. Consider base physician contact.
- If no capture, then dopamine 10 mcg/kg/min

Precautions and Comments:

- If utilizing TCP, verify mechanical capture (via palpable femoral pulses) and patient tolerance.
- Utilize midazolam and morphine as needed for anxiety and pain control, but use caution in the hypotensive patient
- Patients with chest pain of ischemic origin may not respond to a trial dose of atropine. If transcutaneous pacing is available, it is not necessary to give a full trial of a total of 3 mg of atropine before attempting TCP

DYSRHYTHMIAS: NARROW-COMPLEX TACHYCARDIA

APPROVED: Gregory Gilbert, MD EMS Medical Director
Sam Barnett EMS Administrator

DATE: January 2012

Information Needed:

- See Dysrhythmias: Overview Protocol

Objective Findings:

- Level of consciousness
- Blood pressure
- Evidence of congestive heart failure (CHF)
- Supraventricular tachycardia is defined as a ventricular rate of >150 BPM with no visible P waves

Stable

- Normal mental status and/or hemodynamically stable

Treatment:

- High flow oxygen
- Re-assess vital signs and mental status
- 12 Lead EKG
- Consider vagal maneuvers (Valsalva, cough, or blowing into a glove or syringe)
- Adenosine 6 mg rapid IV flushed with 10-20 ml NS rapid IV push
- If dysrhythmia persists, repeat adenosine 12 mg rapid IV push flushed with 10-20 ml

Unstable

- Signs of poor perfusion
- Decreased level of consciousness (ALOC)
- SBP < 90
- CHF (rales)
- Ischemic chest discomfort

Treatment:

- High flow oxygen or BVM as needed
- Shock position
- Re-assessment of vital signs and mental status
- 12 lead EKG
- Synchronized biphasic cardioversion at 50 J - 100 J. If cardioversion unsuccessful, repeat at 100J, 200J, 300J , 360J using escalating doses.

San Mateo County EMS Agency
Adult Treatment Protocols

DYSRHYTHMIAS: NARROW-COMPLEX TACHYCARDIA

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- If conscious midazolam (Versed®) 1-2 mg IV/IO, may repeat every 5 minutes, up to a maximum of 10 mg IV/IO
- Consider adenosine if cardioversion is unsuccessful (see dosage/route from “Stable”)
- If dysrhythmia persists, repeat adenosine 12 mg rapid IV push flushed with 10-20 ml NS (18 mg total)

Precautions and Comments:

- A narrow QRS complex is defined as less than 0.12 seconds
- If the rate is less than 150 BPM, consider sinus tachycardia. Sinus tachycardia is most likely secondary to some other factor such as hypoxia, hypovolemia, pain, fever, etc.
- Adenosine administration is associated with flushing, dyspnea, and chest pain. While this may resolve within 1-2 minutes in most affected patients, these symptoms may be alarming and patients should be advised accordingly
- Vagal maneuvers may be useful if not already tried by the patient prior to arrival. Such maneuvers may be tried in stable patients while the IV is being placed and the adenosine injection prepared. Acceptable vagal maneuvers would be Valsalva, cough, or blowing into a glove or syringe
- Be prepared to maintain airway, oxygenation, and ventilation
- Adenosine is relatively contraindicated in patients with a history of asthma/bronchospasm. Consider base physician contact
- Use half of the usual dose of adenosine in patients taking dipyridamole (Persantine®) or carbamazepine (Tegretol®)
- Double dose of adenosine in patients taking theophylline
- Other etiologies should be strongly considered in the presence of a possible SVT in elderly patients with no prior similar history

DYSRHYTHMIAS: WIDE-COMPLEX TACHYCARDIA WITH A PULSE

APPROVED: Gregory Gilbert, MD EMS Medical Director
Sam Barnett EMS Administrator

DATE: January 2012

Information Needed:

See Dysrhythmias Overview Protocol

Objective Findings:

Stable

- No signs of poor perfusion
- Normal mental status

Treatment:

- Routine Medical Care
- See Dysrhythmias: Overview Protocol
- IV access
- 12 lead EKG
- Only if the patient has a history of SVT and the rhythm is regular, consider adenosine 6 mg rapid IV flushed by 10-20 cc NS, may repeat with 12 mg rapid IV bolus in 2-3 minutes.

Unstable

- Ischemic Chest Discomfort
- Altered Mental Status (AMS)
- Signs of poor perfusion (systolic blood pressure <90 mm Hg, poor skin signs)

Treatment:

- Routine Medical Care
- See Dysrhythmias: Overview Protocol
- IV access
- 12 lead EKG
- Synchronized biphasic cardioversion at 100J, may repeat if cardioversion unsuccessful at 200J, 300J, 360J using escalating doses.
 - Consider midazolam (Versed®) 1-2 mg IV/IO
- In the setting of renal failure, dialysis, DKA, or potassium ingestion (possible hyperkalemia), give **calcium chloride** 1 gm IV/IO over one minute **then flush** and then administer **sodium bicarbonate** 1 mEq/kg IV/IO

Precautions and Comments:

- A widened QRS complex is defined as greater than or equal to 0.12 seconds

- A wide complex tachycardia is most often ventricular in origin but may be supraventricular tachycardia with aberrant conduction; if unsure as to what the rhythm is, treat the patient as if he were in ventricular tachycardia

HYPERTHERMIA

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Patient activity level
- Medications: tranquilizers, alcohol, diuretics, antidepressants (especially tricyclic antidepressants, rave drugs), etc.
- Associated symptoms: chest pain, cramps, headache, orthostatic symptoms, nausea, weakness
- Air temperature and humidity; presence of excessive clothing

Objective Findings:

Heat Cramps

- Temperature- Usually normal
- Mental Status- Alert
- Skins signs- Sweaty, may be warm or cool to touch
- Neuro exam- Normal except for muscle cramps (usually legs and abdomen)

Treatment:

- Routine medical care
- Take temperature
- Remove excess clothing
- Move patient to cool area
- Consider cool/cold liquids PO as tolerated
- Oxygen as indicated

Heat Exhaustion

- Temperature- Normal to slight elevation
- Mental status- Alert to slight confusion
- Skins signs- Pallor, sweaty,
- Neuro exam- No loss of control of extremities, but feels very weak, with preservation of normal neuro function

Treatment:

- Routine medical care
- Note patient's temperature if possible
- Remove excess clothing
- Move patient to cool area
- Consider cool/cold liquids PO as tolerated
- Cardiac monitor
- IV access, consider a fluid challenge of 250 to 1000 ml

- Oxygen as indicated

Heat Stroke

- Temperature- Core temperature 104.0°F or greater
- Mental status- Altered (can range from extreme agitation to obtunded/comatose)
- Skins signs- Usually flushed, hot; may or may not be diaphoretic if exercise-induced
- Neuro exam- At risk for persistent seizures

Treatment:

- Routine medical care
- Take patients temperature.
- Remove excess clothing
- Move patient to cool area
- Ice packs to pulse points (neck, axillae, groin)
- Wet patient and maximize external ventilation (consider opening windows of the ambulance)
- Cardiac monitor
- IV access
- Pulse oximetry
- Oxygen as indicated
- If hypotensive (SBP<90 or signs of poor perfusion), fluid challenge of 250-1000 ml NS. If SBP remains <90 continue fluid resuscitation. Titrate to SBP of 90 or symptoms of improved perfusion. Do not exceed 2 liters total
- Continue cooling measures during transport
- See Altered Mental Status/Seizure Protocols as needed

Precautions and Comments:

- Those at great risk of hyperthermia are the elderly, individuals in endurance athletic events, and patients on medications which impair the body's ability to regulate heat (e.g. beta blockers, tricyclic antidepressants)
- Be aware that heat exhaustion may progress to heat stroke
- Do not place towels or blankets on the patient as they may increase core temperature
- Do not use ice water or cold water to cool patient due to potential vasoconstriction and induction of shivering
- Be alert for signs of occult trauma, e.g. falls, and institute appropriate treatment if suspected

HYPOTHERMIA

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Length of exposure
- Air temperature, water temperature, wind velocity
- Was patient wet or dry?
- History and time of change in mental status
- Medical history: trauma, alcohol, tranquilizers, medical problems (e.g. diabetes)

Objective Findings:

- Altered Mental Status
- Shivering
- Note patient's temperature if possible
- Evidence of local injury: blanching, blistering, erythema of extremities, ears, nose

Treatment:

- Routine Medical Care
- Spinal precautions as necessary
- Remove all wet clothing: dry patient, cover with blankets to prevent further heat loss
- Maintain a warm environment
- IV access
- Cardiac monitoring
- Oxygen as indicated
- For pain from isolated frostbite, consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments q 5 minutes or more up to 20 mg.
 - If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments q 10 minutes to a max of 20 mg.
 - Prior to the administration of morphine sulfate, and prior to each repeat dose, the patients pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain..

Precautions and Comments:

- May need prolonged observation to detect pulse and respirations
- Presenting temperature is less important than cardiovascular status; place patient on cardiac monitor first

- Bradycardia is normal and should not be treated. Even very slow rates may be sufficient for metabolic demand
- CPR is indicated for asystole and ventricular fibrillation, although defibrillation and other treatments may not be effective until the patient is rewarmed. Consider a trial of CPR, defibrillation, advanced airway and cardiotoxic drugs. If no response, continue chest compressions and ventilation and transport patient
- Hypothermic patients should not be determined “dead” until rewarmed or determined dead by other criteria other than undetectable pulse and respiration
- Heat packs with temperatures greater than 110° F should not be used to rewarm patient because of risk of burning skin
- Use extreme caution when moving the patient. Excessive movement of the patient and intubation have been known to precipitate ventricular fibrillation
- Frost bite: do not rub or apply hot packs in the field situation. Avoid thaw and refreeze
- Be aware that wet clothing may not always feel wet to the touch in a very cold environment
- Patients who have stopped shivering may be profoundly hypothermic

NAUSEA AND VOMITING

APPROVED: Gregory Gilbert, MD
Sam Barnett

EMS Medical Director
EMS Administrator

DATE: JANUARY 2012

Indications:

- Patients that present or develop nausea and/or vomiting before or during transport to the hospital provided they have no contraindications.

Information Needed:

- Discomfort or condition: OPQRST (Onset, Provocation, Quality, Radiation, Region, Severity, Timing)
- Associated symptoms: Fever and/or chills, passing flatus, abdominal pain, chest pain, diarrhea, dizziness, light headedness, headache, diaphoresis, or flank pain.
- Gastrointestinal: Time and description of last meal or any other suspicious ingestions, description of vomit if any, history of similar episodes in the past and time of last bowel movement.
- Neurologic: Presence of a headache or trauma to the head. If dizziness is present, characterization as lightheaded or vertiginous, time when these symptoms started.
- Cardiologic: Presence of chest pain and diaphoresis, consider a cardiac etiology.
- Urologic: difficulty, pain, burning, frequency, and description. Consider kidney stone or infection of the urologic system.
- Gynecologic: Last menstrual period and possibility of pregnancy.
- Oncologic: History of recent chemo or radiation therapy.
- Medication history: Develops nausea/vomiting when given certain medications like narcotics. Antibiotics, alcohol, toxin ingestion or exposure are other things to inquire about.
- Medical history: surgery, related diagnosis (eg, small bowel obstructions, benign positional vertigo, pancreatitis, head injury, kidney stones, diabetes, cardiac disease, etc.) medications (if any), any sick contacts or others with similar symptoms, and any remedies attempted.

Objective Findings:

- General appearance: severity of nausea/vomiting, skin color, diaphoresis
- Vital signs
- Consider 12 lead EKG
- Resolution of symptoms with treatment

Treatment:

- Position of comfort
- Routine medical care
- Consider Ondansetron (Zofran) 4mg ODT (Oral Dissolving Tablet). May repeat every 15 minutes to a total of 12 mg.
- Consider IV access and fluids

Contraindications:

- Avoid in patients with known sensitivity to Ondansetron (Zofran) or other serotonin antagonists (eg. Granisetron (Kytril), Dolasetron (Anzemet), Palonosetron (Aloxi).
- Do not use in patients taking Apomorphine (Apokyn, Ixense, Spontane, Uprima) – injectable drugs for Parkinson’s Disease, or rarely for erectile dysfunction.
- Do not use in patients known to have Phenylketonurics (contains phenylalanine)

Precautions and Comments:

- If other symptoms exist, refer to those treatment protocols after Ondansetron (Zofran) is given.
- Ondansetron (Zofran) is safe in pregnancy and breast feeding mothers.
- Can be administered for motion sickness.
- Can be used in patients who develop nausea from narcotics.
- Do NOT attempt to push the ODT through the foil backing. With dry hands, moisture on hands can cause unintended disintegration of the medication, PEEL OFF the foil backing from 1 blister and GENTLY remove the tablet. IMMEDIATELY place the ONDANSETRON (ZOFRAN) ODT on top of the tongue where it will dissolve in seconds, the patient’s saliva is all that is required. No additional liquid is needed.
- Although unlikely, side effects include headache, anaphylaxis, rash, flushing, prolonged QT, dizziness, diarrhea, tachycardia, sedation, or hypotension. Exclude other causes first.

NEAR-DROWNING

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Description and temperature of fluid in which submerged
- Length of time submerged
- Depth and mechanism of injury
- Possibility of alcohol or other drugs/medications involved

Objective Findings:

- Evidence of head and/or neck trauma
- Neurologic status: monitor on a continuous basis
- Respiratory: rales or signs of pulmonary edema, respiratory distress

Treatment:

- Routine Medical Care
- Oxygen as indicated
- Pulse oximetry
- Stabilize spine prior to removing patient from water if there is any suggestion of neck injury
- If other trauma is suspected, refer to the appropriate Trauma protocol
- If hypothermic, see Hypothermia Protocol
- If dysbarism is suspected, see Decompression Illness protocol
- Wet clothing should be removed
- Advanced airway intervention, as necessary
- Cardiac monitor
- Consider IV access
- Consider CPAP

Precautions and Comments:

- Beware of neck injuries; collar and backboard can be applied in the water
- Be prepared to manage vomiting. Patient on spine board should be prepared for log-rolling
- All near drownings or submersions less than an hour should be transported.
- Any patient can deteriorate rapidly
- If the patient is hypothermic, defibrillation may be unsuccessful until the patient is warmed
- Alcohol/drugs may interfere with respiratory drive and/or cardiac rhythm
- Ensure that trained water rescuers are on scene if necessary

OBSTETRICAL/GYNECOLOGICAL EMERGENCIES/CHILDBIRTH

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Vaginal Bleeding

Subjective Findings:

- Abdominal Pain
- Estimate Blood Loss
 - Duration of bleeding
 - Quality of bleeding
 - Number of pads per hour
- Last menstrual period
- For known pregnancy – How many weeks/months?
- Estimated due date

Objective Findings:

- Blood Pressure
- Vaginal bleeding
 - with possible products of conception: Collect and transport with the patient
- Observe for signs of shock

Treatment:

- Consider second IV access
- If hypotensive (SBP < 90 or signs of poor perfusion), fluid challenge of 250-1000 ml NS IV. If SBP remains < 90 continue fluid resuscitation. Titrate to SBP of 90 or symptoms of improved perfusion
- Keep NPO
- Place pad or large dressing over vaginal opening if bleeding
- Save and transport all tissue or fetal remains
- If pregnant and over 20 weeks, transport to facility with OB capabilities and don't encourage delivery

Pre-eclampsia or Eclampsia

Objective Findings:

- Hypertension (BP > 140/90, or SBP > 30 mm Hg above baseline, or DBP > 15 mm Hg above baseline)
- Over 20 weeks pregnant
- Altered mental status, blurred vision, headache, or seizures
- Pedal edema

Treatment:

- High flow oxygen
- IV access
- Minimize stimulation (lights, noise, other stressors)

- Left lateral decubitus position
- For seizures, midazolam (Versed®) 1-2 mg IV or IM, may repeat every 5 minutes, up to a maximum of 10 mg

Childbirth

Information Needed:

- Estimated due date, last menstrual period
- Anticipated problems (multiple fetuses, premature delivery, placenta previa, lack of prenatal care, use of narcotics or stimulants, etc.)
- Gravida/para
- Onset of regular contractions
- Rupture of membranes, color of fluids, time of rupture
- Frequency and duration of contractions
- Urge to bear down or have bowel movement

Objective Findings:

Observe perineal area for:

- Fluid or bleeding
- Crowning (check during contraction)
- Abnormal presentation (breech, extremity, cord)

Treatment:

- Routine medical care
- Oxygen as indicated
- If birth is not imminent, place patient in left lateral position
- IV access when appropriate

Normal Delivery

Treatment:

- Assist with delivery
- Clean, preferably sterile technique
- Control and guide delivery of baby's head and body
- Check for nuchal cord - slide over head if possible: If tight, double clamp and cut, unwind, then deliver baby quickly
- Keep the baby at or below the level of the mother until the cord is clamped
- Suction mouth, then nares
- Double clamp and cut cord
- Dry and wrap infant for warmth (especially the head); if possible place with the mother for shared body heat
- Note time of delivery
- Assess infant's status, respirations and pulse rate (APGAR if possible)
- Evaluate mother post delivery for excessive bleeding

Post-partum hemorrhage

Treatment:

- Fundal massage
- Fluid challenge, 250-1000 ml Normal Saline

Breech Delivery

Treatment:

- Provide airway with gloved hand for baby if needed
- If unable to deliver or delivery is not imminent, place patient in left lateral Trendelenberg position and transport rapidly
- In the setting of a limb presentation, do not pull on the delivered extremity

Prolapsed Cord

Treatment:

- Left lateral Trendelenberg position and elevate hips when possible
- If the cord is pulseless, manually displace presenting part above the cord
- Avoid manipulation of the cord, cover with a moist sterile dressing, and try to keep cord warm by keeping it close to the patient's body
- Rapid transport

Precautions and Comments:

- Ectopic pregnancy should be considered in all women of childbearing age with either abdominal pain or vaginal bleeding.
- Eclampsia can occur up to a week after delivery
- The first priority in childbirth is assisting the mother with delivery of the child
- The primary enemy of a newborn is hypothermia and can occur within minutes
- Consider early tracheal suctioning after delivery of the infant with evidence of meconium
- Do not pull on the cord
- Do not delay transport for delivery of placenta. If placenta delivers, then place it in a plastic bag for transport with the mother
- If hemorrhage is present prior to delivery in a patient who is near term, consider emergencies such as placental abruption, placenta previa, and uterine rupture. Treat with IV fluids (consider a second IV) and rapid transport to an appropriate hospital
- Massage fundus after delivery of placenta

**PATIENT ASSESSMENT
ROUTINE MEDICAL CARE
PRIMARY AND SECONDARY SURVEY**

APPROVED: Gregory Gilbert, EMS Medical Director
 Sam Barnett, EMS Administrator

DATE: January 2012

The purpose of the primary survey (see page 3 for Secondary Format) is to identify and immediately correct life-threatening problems.

Scene Size-Up/Global Assessment

- Recognize hazards, ensure safety of scene, and secure a safe area for treatment
- Apply appropriate universal body substance isolation precautions
- Recognize hazards to patient and yourself and protect from further injury
- Identify number of patients and resources needed
 - Call for EMS, fire and police backup
 - Initiate Multicasualty Incident Protocol as needed
- Observe position of patient
- Determine mechanism of injury
- Plan strategy to protect evidence at potential crime scene

General Impression:

- Remain global and check for life threatening conditions
- Determine chief complaint or mechanism of injury
- Determine mental status; orientation to person, place, time, and event

Airway:

- Ensure open airway. (see Respiratory Distress Protocol as needed)
- Protect spine from unnecessary movement in patients at risk for spinal injury
- Look for evidence of other upper airway problems and potential obstructions
 - Vomitus
 - Bleeding
 - Loose or missing teeth
 - Dentures
 - Facial trauma
- Utilize any appropriate adjuncts (OPA or NPA) as indicated to maintain airway

Breathing:

- Look, listen and feel; assess ventilation and oxygenation
- Expose chest and observe chest wall movement if necessary
- Determine approximate rate and depth; assess character and quality

- Reassess mental status
- Interventions for inadequate ventilation and/or oxygenation:
 - Supplementary oxygen
 - Bag-Valve Mask
 - Intubation (endotracheal or nasal with confirmation of correct placement) after initial ventilation, if indicated
 - Note: Defibrillation should not be delayed for advanced airway procedures
- Assess for other life-threatening respiratory problems and treat as needed

Circulation:

- Check for pulse and begin CPR if necessary
- Note: CPR should be performed until ready for defibrillation
- Control life threatening hemorrhage with direct pressure
- Palpate radial pulse if appropriate
 - Determine absence or presence
 - Assess general quality (strong/weak)
 - Identify rate (slow, normal, or fast)
 - Regularity
- Assess skin for signs of hypoperfusion or hypoxia (capillary refill)
- Reassess mental status for signs of hypoperfusion
- Treat hypoperfusion if appropriate

Level of Consciousness and Disabilities:

- Determine need for c-spine stabilization
- Determine Glasgow Coma Scale without delay

Expose, Examine, and Evaluate:

- In a situation with suspected life-threatening trauma mechanism, a Rapid Trauma Assessment should be performed (10 minute scene time is the goal)
 - Expose and examine head, neck, and extremities
 - Treat any newly discovered life-threatening wounds as appropriate and begin transport in the potentially unstable or critical patient

Secondary Survey

The secondary survey is the systematic assessment and complaint-focused, relevant physical examination of the patient. The secondary survey may be done concurrently with the patient history and should be performed after:

- The primary survey and initial treatment and stabilization of life-threatening airway, breathing and circulation difficulties
- Spinal immobilization as needed
- Beginning transport in the potentially unstable or critical patient
- A Rapid Trauma Assessment in the case of significant trauma
- Investigation of the chief complaint and associated complaints, signs or symptoms
- An initial set of vital signs
 - Pulse
 - Blood pressure
 - Respiration
 - Lung sounds
 - Cardiac rhythm/monitor (if indicated)
 - Consider orthostatic vital signs to assess volume status
 - Pulse oximetry (if indicated)
 - Assess for pain or discomfort. Use a 0-10 scale to rate and document the pain

Give initial treatment including oxygen, ventilate if indicated, control hemorrhage if needed, institute basic wound/fracture care, and establish IV access if indicated/capable.

The above set of assessment/treatments is referred to in these protocols as “Routine Medical Care”. This care should be provided to all patients regardless of presenting complaint. The purpose of the secondary survey is to identify problems that may not be immediately life or limb threatening but could increase patient morbidity and mortality. Exposure of the patient for examination may be reduced or modified as indicated due to environmental factors.

History:

Optimally should be obtained directly from the patient: if language, culture, age-related, disability barriers or patient condition interferes, consult family members, significant others, scene bystanders or first responders. Check for advanced directives, medical alert bracelets and prescription bottles as appropriate. Be aware of the patient’s environment and issues such as domestic violence, child or elder abuse or neglect. If you are concerned, bring this to the attention of the receiving physician or nurse and file the appropriate report.

- Obtain chief complaint
- Allergies

- Medications
- Past medical history
- Ascertain recent medical history, admission to hospitals, reasons given, etc.
- Mechanism of injury
- See “Information Needed” section of each protocol for history relevant to specific patient complaints

Head and Face:

- Observe and palpate skull (anterior and posterior) for signs of trauma (contusions, abrasions, deformity, crepitus, or lacerations)
- Check eyes for: equality and responsiveness of pupils, movement and size of pupils, foreign bodies, discoloration, contact lenses, prosthetic eyes
- Check nose and ears for foreign bodies, fluid, or blood
- Recheck mouth for potential airway obstructions (swelling, dentures, loose or avulsed teeth, vomitus, malocclusion, absent gag reflex) and odors, altered voice or speech patterns, and evidence of dehydration

Neck:

- Observe and palpate for signs of trauma, jugular venous distention, use of neck muscles for respiration, tracheal shift or deviation, cervical spine tenderness, stoma, and medical information medallions

Chest:

- Observe and palpate for signs of trauma, implanted devices (AICD or pacemaker), medication patches, chest wall movement, asymmetry, retractions and accessory muscle use
- Have a patient take a deep breath if possible and observe and palpate for signs of discomfort, asymmetry, and air leak from any wounds
- Auscultate breath sounds bilaterally

Abdomen:

- Observe and palpate for signs of trauma, scars, diaphragmatic breathing and distention
- Palpation should occur in all four quadrants taking special note of tenderness, masses and rigidity

Pelvis/Genito-urinary:

- Observe and palpate for signs of trauma or asymmetry, incontinence, priapism, blood at urinary meatus, or presence of any other abnormalities
- Gently palpate lateral pelvic rims and symphysis pubis for tenderness, crepitus, or instability
- Palpate bilateral femoral pulses when necessary

Shoulders and Upper Extremities:

- Observe and palpate for signs of trauma, asymmetry, skin color, capillary refill, edema, medical information bracelets, track marks, and equality of distal pulses
- Assess sensory and motor function as indicated

Lower Extremities:

- Observe and palpate for signs of trauma, asymmetry, skin color, capillary refill, track marks, edema, and equality of distal pulses
- Assess sensory and motor function as indicated

Back:

- Observe and palpate for trauma, asymmetry, spinal tenderness, and sacral edema

Precautions and Comments:

- Observation and palpation can be done while gathering patient's history
- A systematic approach will enable the rescuer to be rapid and thorough and not miss subtle findings that may become life-threatening
- Minimize scene time (goal is under 10 minutes for all trauma patients) for critical trauma or medical patients; conduct secondary survey en route to the hospital.
- The Secondary Survey should ONLY be interrupted if the patient experiences airway, breathing, or circulatory deterioration requiring immediate intervention. Complete the examination before treating the other identified problems
- Reassessment of vital signs and other observations may be necessary, particularly in critical or rapidly changing patients. Changes and trends observed in the field are essential data to be documented and communicated to the receiving facility staff
- Prehospital medical personnel (paramedics and EMTs) can assist patient with self-administration of own medication if appropriate

POISONING AND OVERDOSE

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Surroundings and safety: check for syringes, container, gas cylinders, etc.
- Note odors in house or surroundings
- For medication ingestions: note medication(s), dosage(s), number remaining and date of prescription(s), and bring container(s) with patient
- For other poisoning and exposures; if possible, note identifying information, warning labels, or numbers on packaging
- Duration of illness: onset and progression of their present state, antecedent symptoms such as headache, seizures, confusion, etc.
- History of event: ingested substances, drugs, alcohol, toxic exposures, suicidal intention, and the work environment
- Past medical history, psychiatric problems, suicidal ideation
- If possible, corroborate information with family members or responsible bystander
- Refer to HazMat Policy as appropriate

Objective Findings:

- Breath odor
- Needle tracks
- Medic Alert tags/bracelet/medallions
- Cardiac rhythm
- Blood glucose level for patients with AMS
- Pulse oximetry
- Vital signs
- Skin appearance, color, temperature
- Pupil size
- Lung sounds and airway secretions

General Treatment:

- Primary Survey, ensure protective position or need for spinal precautions
- Routine Medical Care
- Ensure ABCs, oxygenation, ventilation, and suction as needed
- Oxygen as indicated. Assist ventilations with BVM if needed
- Consider IV/IO access
- Activated charcoal (50 g) for possible recent ingestions if patient is alert with intact airway reflexes

- Caustic or hydrocarbon (lye or gasoline) ingestions are contraindications to activated charcoal; use with caution in tricyclic antidepressants or other medications that can cause seizures when overdosed

Unknown Substance:

- Consider IV/IO access
- Naloxone 1-2 mg IV/IO or IM for patients with the following: pinpoint pupils, inadequate ventilation, and a decreased mental status. Repeat naloxone as needed
- If hypoglycemia is suspected or determined (<80 mg/dL) see Altered Mental Status protocol
 - D₅₀W 25 g IV/IO, may repeat as indicated
 - Consider **glucose paste** or other oral glucose administration if patient is able to maintain his airway and swallow the solution without difficulty
 - Glucagon 1mg IM if IV access is not immediately available. May repeat once after 10 minutes if blood glucose <80 mg/dL
- If hypotensive (SBP<90 or signs of poor perfusion), fluid challenge of 250-1000 ml NS. If SBP remains <90 continue fluid resuscitation. Titrate to SBP of 90 or symptoms of improved perfusion
- Activated charcoal 50 g orally for patients able to maintain their own airway
 - Caustic or hydrocarbon ingestions are contraindications to activated charcoal
- Continuously monitor vital signs and cardiac rhythm during transport

Opiates:

- Airway management
- Naloxone 1-2 mg IV/IO or IM for patients with the following: pinpoint pupils, inadequate ventilation, and a decreased mental status. Repeat naloxone as needed

Antipsychotics with Extrapyrmidal (Dystonic) Reaction:

- Routine medical care
- Diphenhydramine 25-50 mg IV, IO, or IM

Organophosphates:

- Consider HazMat Precautions
- Atropine 2 mg IV, IO, or IM: repeat q 2-5 minutes, until SLUDGE symptoms (increased salivation, lacrimation, urination, diaphoresis/diarrhea, gastric hypermotility/vomiting and miosis) subside
- Consider early receiving hospital contact to allow for hazmat preparation

Tricyclic Antidepressants:

- IV access
- If intubated, hyperventilate with 100% oxygen
- Sodium bicarbonate 1 mEq/kg IV/IO, for tachycardia, hypotension, seizure, and/or QRS widening >0.10 seconds. May repeat with 0.5 mg/kg as needed q10 minutes
- For ventricular dysrhythmias, follow appropriate protocol
- For seizures, follow AMS/Seizure Protocol

Calcium Channel Blocker Toxicity:

- Routine medical care
- Ensure ABC's, oxygenation, ventilation and suction as needed
- IV access, give fluid challenge if indicated
- Activated charcoal 50 g orally for patients able to maintain their own airway
- In the setting of bradycardia and hypotension, administer calcium chloride 1 g IV/IO q 20 minutes slow push
- Calcium chloride causes major tissue damage if extravasation occurs; use extra caution that the IV line is patent, properly located, and secured.

Beta-Blocker Toxicity:

- Routine medical care
- Ensure ABC's, oxygenation, ventilation and suction as needed.
- IV/IO access with a bolus of NS
- Activated charcoal 50 g for patients able to maintain their own airway
- In the setting of bradycardia and hypotension caused by a beta blocker, administer Glucagon 1-5 mg IV/IO q 20 minutes

Nerve Gas Exposure

- Routine medical care
- Ensure ABCs, oxygenation, ventilation and suction as needed
- Administer auto-injectors of 2-PAM and atropine to patients with possible exposure of a nerve agent (e.g., Sarin, Soman, Tabun, Vx) and have significant signs and symptoms
- The best injection site is the lateral (outside) thigh muscle several inches below the hip bone. It is important that the injection be given into a large muscle
- Indications for auto-injection of nerve gas antidote
 - Signs and symptoms (Mnemonic SLUDGE)
 - S**alivation (watering mouth)
 - L**acrimation (eyes tearing)
 - U**rination
 - D**efecation
 - G**astrointestinal pain & gas

Emesis (vomiting)

- Administer 2 PAM first, then atropine. If symptoms persist, another atropine auto-injection can be given in 10-15 minutes

Precautions and Comments:

- Base hospital contact is encouraged after treating patients exhibiting calcium channel blocker, beta-blocker, or tricyclic antidepressant toxicity due to the complexity of these calls
- In suspected opiate overdoses, avoid endotracheal intubation until the patient has received naloxone and BVM UNLESS the patient has no pulse
- Significantly higher doses of naloxone may be needed for treatment of overdoses with synthetic opioid compounds such as meperidine (Demerol[®]), pentazocine (Talwin[®]), methadone, and codeine
- Consider titrating naloxone to achieve adequate respiratory effort and avoid a withdrawal reaction or combativeness
- Avoid administration of naloxone in narcotic-dependent comfort care patients (hospice, end-stage terminal illness or DNR patients); Base Hospital contact is encouraged
- Patients with TCA overdoses may experience rapid depression of mental status, sudden seizures, or worsening of vital signs. Attentive monitoring of cardiac rhythm, vital signs, and mental status are essential in these patients. Use extreme caution if considering activated charcoal (not recommended)
- Activated charcoal is ineffective for iron overdoses
- Caustic ingestions are usually caused by alkali (e.g. lye or Draino[®]) or acids
- Hydrocarbons include gasoline, kerosene, turpentine, Pine-Sol[®], etc.
- Consider all environmental poisonings Hazardous Materials incidents and exercise appropriate caution
- Whenever possible, bring suspected ingested substances with you to the receiving facility
- Consider contacting the California Poison Control System for additional information or advice (1-800-222-1222 [public] or 1-800-411-8080/1-800-876-4766 [Health Care])

RESPIRATORY DISTRESS

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- History: fever, sputum production, medications (bronchodilators, diuretics) asthma, COPD, exposures (allergens, toxins, fire/smoke), trauma (blunt/penetrating)
- Recent use of sildenafil (Viagra®) or other erectile dysfunction medications
- Symptoms: chest pain, shortness of breath, cough, itching

Objective Findings:

- Respiratory rate, rhythm, and pattern
- Breath sounds
- Heart rate and rhythm
- Pulse oximetry, initially and after interventions
- End tidal CO₂ if available
- Cough
- Rash, urticaria
- Work or effort of breathing
- Blood pressure
- Skins signs, perfusion
- Fever
- Mental status
- Evidence of trauma

Treatment:

- Assess ABC's, secure a patent airway, measure pulse oximetry, and administer high flow oxygen via non-rebreather mask or BVM, suction as needed

Bronchospasm/ Wheezing/Asthma/COPD

- History of asthma or COPD.
- For mild - moderate distress, inhaled albuterol 2.5 - 5 mg via nebulizer, repeat as necessary until there is improvement.
- For severe distress with any of the following: cyanosis, accessory muscle use, inability to speak >2 words, decreasing level of consciousness and no response to inhaled albuterol, consider epinephrine (1:1,000) 0.3 mg IM in the thigh. Epinephrine should only be given if the patient has no known history of coronary artery disease or stroke. Use with extreme caution in patients over 35 years of age.

- Attempt endotracheal intubation only if the patient exhibits progressive signs and symptoms of respiratory failure.

Congestive Heart Failure (hypertension, tachycardia, JVD, wheezing, edema, rales)

- Nitroglycerin 0.4 mg SL, repeat every 3-5 minutes if SBP remains >90. IV is not required prior to NTG administration. Continue nitroglycerin administration throughout the duration of the call, if SBP >90.
- IV access
- Consider morphine sulfate when nitroglycerine is contraindicated or after 3 nitroglycerin doses if there is discomfort suggestive of cardiac distress.
- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments every 5 minutes or more up to 10 mg.
- If unable to establish an IV up to 5 mg of morphine sulfate may be administered IM. May repeat in up to 5 mg increments every 10 minutes to a max of 10 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patient's pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.
- If hypotensive with SBP <90 (cardiogenic shock), administer Dopamine 5 mcg/kg/min IV infusion. If inadequate response, may titrate every 5 minutes in 5 mcg/kg/min increments to maintain SBP > 90mmHg. Maximum dose is 20 mcg/kg/min. Consider base physician contact
- Consider albuterol 2.5 - 5 mg via nebulizer for significant wheezing
- Continuous Positive Airway Pressure (CPAP) may be considered if tolerated and available for patients in moderate or severe respiratory distress (may use albuterol with CPAP)
- Attempt endotracheal intubation if patient exhibits progressive signs and symptoms of respiratory failure

Upper Airway Obstruction

- Relieve obstruction (position, suction, Heimlich maneuver, abdominal thrusts), visualization and removal with Magill Forceps, Endotracheal Tube (ET) as needed

Severe Allergic Reaction/Anaphylaxis (itching, rash, wheezing)

(See Allergic Reaction Protocol)

Precautions and Comments:

- Supplemental oxygen should not be withheld in COPD patients, but it may decrease respiratory rate.
- Do not administer nitroglycerin to patients who have taken sildenafil (Viagra®) or other erectile dysfunction medications within the last 48 hours.
- Unless contraindicated, always administer at least 3 doses of nitroglycerine prior to administration of morphine.

- Morphine is to be used with caution for patients with congestive heart failure in pulmonary edema and the maximum dose is 10 mg. Respiratory effort as well as pulse oximetry should be monitored carefully.
- Epinephrine 1:1000 is administered by the intramuscular route for respiratory distress. To provide a potent dose, it should be administered in the thigh and used in patients 35 and under without history of CAD or stroke.
- The ETs placement and patency must be maintained at all times. Confirm ET position (reassess and document) with any patient transfer
- Rapid deterioration or decreased breath sounds have several causes. These include: tube dislodgement into the esophagus, tube migration into right main stem bronchus, secretions in the tube, pneumothorax. Confirm by direct visualization and CO₂ detector. Consider reintubation.

SNAKEBITE

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Type of snake, if known and location found
- Appearance of snake, shape of pupil, presence of stripes or rattle, size of snake
- Time of bite
- Prior first aid by patient or friends
- Symptoms: local pain or swelling, metallic taste in mouth, hypotension, coma, bleeding

Objective Findings:

- One or more punctures wounds, or horseshoe set of teeth marks
- For pit-vipers (*Crotalines*), there is a spectrum of envenomation from non-envenomation to serious envenomation

Non-envenomated:

- No discoloration around puncture marks
- Little or no pain after a few minutes

Treatment:

- Safety first; do not attempt to capture snake and do not handle an apparently dead snake or decapitated snake head with your hands
- If transporting the snake, be certain that it is in a closed solid container
- Remove rings or other jewelry which might constrict circulation later
- Routine Medical Care
- Transport all suspected patients with envenomations for medical evaluations

Serious Envenomation:

- Dark discoloration around punctures within 5 minutes
- Marked edema formation
- Severe pain within a short time
- Altered mental status
- Oozing of hemolyzed blood from punctures, possible formation of fluid blebs on skin
- Fasciculation
- Hypotension
- Marked tachycardia
- Definite metallic taste

Treatment:

- Safety first; do not attempt to capture snake
- Remove rings or other jewelry which might constrict circulation later
- Routine Medical Care
- Monitor EKG
- Transport all suspected envenomations for medical evaluations
- Document distal pulse
- Immobilize bitten part with splint, etc.
- Consider IV access in the unaffected extremity
- Fluid challenge 250-1000 ml NS for hypotension
- Consider morphine sulfate 2 - 5 mg slow IVP for discomfort. May repeat morphine in 2-5 mg increments every 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of MS may be administered IM. May repeat in up to 5 mg increments every 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate, and prior to each repeat dose, the patient's pain and vital signs should be reassessed. The patient must have a SBP>90 mmHg, respirations>12, and awake to report pain.

Precautions and Comments:

- Do not incise envenomations
- If the snake is dead, bring it in for positive identification in a closed solid container. Avoid the fangs because they are capable of envenomation even when dead. If alive, do not try to capture
- Ice applied directly to skin surfaces can cause serious tissue damage and should not be used
- All so-called "pet" snakes should be identified
- Exotic poisonous snakes such as those in zoos have different signs and symptoms than those of the pit vipers. Zoos and legal exotic snake collectors are required to have a starter supply of antivenom on hand for each type of snake. Bring the antivenom with the patient to the hospital
- Bites from coral snakes, *elapids* related to cobras, usually do not have any early symptoms, thus all bites are considered envenomated (coral snakes are not indigenous to California)
- Early notification of the receiving hospital is recommended

STROKE

APPROVED: Gregory Gilbert, MD EMS Medical Director
Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Exact time of onset of symptoms (time last seen at baseline), last time patient was awake, and baseline neurologic problems
- Check surroundings for syringes, insulin, medication bottles, e.g. anticoagulants, antihypertensives, antiplatelets, nitroglycerin preparations, evidence of mechanical fall or recent seizure
- Abrupt change in mental status, altered mental status, altered speech, change in gait, change in behavior, confusion, and focal neurological findings
- Preceding symptoms of headache, seizures, confusion, gait disturbance, mechanical falls
- Medical history: hypertension, transient ischemic attacks (TIA's) or unexplained syncope, coronary artery disease, vascular disease, high cholesterol, diabetes, smoking

Objective Findings:

- Level of consciousness and neurological assessment (eg. Cincinnati Stroke Scale or other County approved assessment)
- Airway assessment
- Facial asymmetry/droop, inability to close eye
- Pupil size and reactivity, conjugate gaze, and symmetry of extra-ocular muscles
- Prolapse of tongue and noisy abnormal respiratory pattern if comatose
- Dysarthria or aphasia
- Ataxia
- Unilateral weakness of one or both extremities
- Loss of sensation of any part of the body
- Obtain monitor strip to evaluate and document cardiac rhythm
- Blood glucose
- Temperature

Treatment:

- Minimize scene time with rapid transport if symptoms have been present for 7 hours or less
- Transport with head elevated unless spinal immobilization is indicated
- Improve airway with NPA or OPA. Consider intubation if GCS < 8 and no gag reflex
- Oxygen as indicated

- Consider IV/IO
- Hospital notification of a possible stroke patient
- Avoid hyperglycemia. Glucose administration is not indicated unless there is documented hypoglycemia (blood sugar < 80 mg/dL)
- Hypertension does not need to be treated

Precautions and Comments :

Cincinnati Stroke Scale:

Facial Droop (the patient shows teeth or smiles)

Normal: both sides of face move equally

Abnormal: One side of face does not move as well as the other

Arm Drift (the patient closes their eyes and extends both arms straight out, palms up, for 10 seconds)

Normal: Both arms move the same, or both arms do not move at all

Abnormal: One arm either does not move, or one arm drifts down compared to the other

Speech (the patient repeats "The sky is blue in California.")

Normal: the patient says correct words with no slurring of words

Abnormal: The patient slurs words, says the wrong words, or is unable to speak

TRAUMA EVALUATION AND MANAGEMENT ADULT AND PEDIATRIC PATIENTS

APPROVED: Gregory Gilbert, MD EMS Medical Director
 Louise Rogers Interim EMS Administrator

DATE: February 2013

Information Needed:

- Make sure scene is safe
- Number of patients/victims
- Mechanism of injury. Suspect non-accidental injury when physical findings are inconsistent with the history
- Modifying factors: extremes of age (<5 or >65), drugs, alcohol, pregnancy, medications, diseases
- Safety equipment used

General Assessment

The general assessment of all trauma patients should include but is not limited to the following:

- Respiratory status
 - For pediatric patients: work of breathing - nasal flaring, retractions, grunting
- Circulatory status- capillary refill, central and peripheral pulses, skin signs
- Neurologic status using an appropriate GCS scale
- Pain assessment
- Determination if Major Trauma Victim criteria are met

Penetrating Trauma and Assault:

- Type(s) of weapon(s) used, caliber and distance from weapon
- Length, description, angle, and depth of penetration for blades and other objects
- Patient complaints
- Initial level of consciousness and position
- Patient movement and treatment since injury

Falls:

- Cause or precipitating factors
 - Mechanical e.g., tripped, slipped, pushed or jumped
 - Syncope e.g., fainted, dizzy, weak, loss of consciousness, etc
- Height and areas of impact
- Surface fallen upon
- Patient complaints
- Initial level of consciousness and position
- Patient movement and treatment since injury

Vehicle Collisions:

- Vehicle telemetry data, estimated speed, forces, and trajectories
- Type of vehicle
- Type of impact (head-on, rollover, end-over-end, T-bone, auto-pedestrian, etc.)
- Vehicle damage (passenger space intrusion, windshield, and steering wheel, etc.)
- Protective devices (airbags, lap and/or shoulder belt, child seats, helmet, etc.) and damage sustained
- Patient complaints
- Initial level of consciousness and location in vehicle
- Patient movement and treatment since injury
- Extrication time

Treatment:

- Airway with spinal immobilization if indicated
- High flow oxygen, BVM ventilation, or intubation if indicated. Maintain in line stabilization of neck when intubating patients with suspected c-spine injuries
- Assess circulatory status (pulses, skin signs)
- Control external bleeding with direct pressure
- Identify and treat life threatening conditions
- Do not delay transport to perform procedures on scene (perform enroute)
- If patient is unstable or meets Major Trauma Victim criteria, treat (IV/IO therapy, the secondary survey, and treatment) en route.
- IV/IO access with large bore catheter with extension tubing (saline lock) and if hypotensive give fluids titrated to a SBP of >90
- If adult patient remains hypotensive or becomes unstable, place a second large bore IV (en route)
- Secondary survey
- Splint suspected fractures and bandage open wounds
- Cardiac monitor and pulse oximetry
- Consider pain control for moderate to severe pain if there is no evidence of head injury (GCS <15), or no signs and symptoms of hypoperfusion.
- Consider morphine sulfate 2 - 5 mg slow IVP/IO for discomfort. May repeat morphine in 2-5 mg increments every 5 minutes or more up to 20 mg.
- If unable to establish an IV up to 5 mg of Morphine Sulfate may be administered IM. May repeat in up to 5 mg increments every 10 minutes to a max of 20 mg.
- Prior to the administration of morphine sulfate and prior to each repeat dose, the patient's pain and vital signs should be reassessed. The patient must have a SBP >90 mmHg, respirations >12 and be awake to report pain.

- For pediatric patients:
 - Determine patient's length-based weight utilizing the Broselow Tape. If patient's estimated weight is 5 kg or less (GRAY Color Zone), Base Physician contact is required for administration of Morphine Sulfate.
 - Establish vascular access IV/IO
 - For signs and symptoms of hypovolemia give 20 ml/kg fluid bolus of normal saline. Reassess, may repeat twice as indicated. Contact trauma center for additional fluid orders.
 - Administer Morphine Sulfate 0.1 mg/kg slow IVP/IO (max single dose=3.5 mg). May repeat once in 5 minutes provided patient has SBP>90 and no signs of hypoperfusion
 - If unable to establish IV, administer Morphine Sulfate 0.1 mg/kg IM (max single dose=3.5 mg). May repeat once in 20 minutes provided patients has SBP > 90 and no signs of hypoperfusion
 - Have naloxone readily available to reverse any respiratory depression that may occur.
 - Reassess pain intensity after each Morphine Sulfate administration, and document using 0-10 scale.
 - If additional pain medication is indicated, contact Trauma Base Physician

Special Trauma Circumstances:

Chest and Abdominal Trauma

- Treatment as described above
- For open chest wounds with an air leak, place a three sided occlusive dressing
- Cover eviscerations with moist sterile saline gauze to prevent further contamination or drying
- Immobilize impaled objects in place to prevent further movement
- If pregnant >5 months gestation, place in the left lateral position; if transporting in c-spine precautions, tilt the spine board to the left
 - Consider aggressive fluid resuscitation because pregnant patients can mask symptoms of shock and fetal distress
- For suspected tension pneumothorax (identified by severe respiratory distress in combination with absent breath sounds, tracheal deviation, and hypotension), perform needle pleural decompression

Extremity Trauma

- Evaluate and treat extremity trauma only after initial stabilization
- Monitor extremity for deformity, open wounds, swelling, shortening and/or rotation
- Check pulses, sensation, movement, and color of extremity

- Control any external bleeding with direct pressure
- Splint injured extremity in the position found unless precluded by extrication considerations and/or patient comfort
- Elevate extremity and apply cold packs
- Cover open wounds with sterile dressings
- If the extremity is pulseless, attempt to place it in normal anatomic position to restore circulation by gentle in-line traction
- If initial repositioning does not restore circulation, DO NOT manipulate further
- If amputated, wrap part in a moist normal saline sterile dressing, place in sealed plastic bag, and place on top of ice or cold pack
- For partial amputation, avoid ice pack and treat as a fracture/dislocation

Head, Neck and Facial Trauma

- Obtain Glasgow Coma Score (GCS)
- If unresponsive with significant head injury and age appropriate GCS <9, bag-valve mask ventilate or intubate as appropriate
- Check for blood or fluid from nose or ears
- For head trauma, elevate head of spine board 15-20 degrees
- Monitor for airway obstruction
- Orally intubate when indicated while maintaining spinal immobilization
- In the absence of significant mid-face trauma, the head injured patient may be nasally intubated if oral intubation or Supraglottic Airway Device is unsuccessful and BVM is inadequate.
 - Supraglottic Airway Device is contraindicated for pediatric patients less than 4 feet (48 inches)
- If eye is injured, cover both eyes with dressings. Avoid pressure to eye for any patients with suspected ruptured globe or penetration
- Keep avulsed teeth in saline soaked gauze and transport with patient

Traumatic Cardiac Arrest

- This requires all of the following
 - Physical signs of trauma and/or blood loss
 - GCS= 3. Use the modified Glasgow Coma Scale for infants and children
 - No respiratory effort
 - No palpable pulses
- Consider pleural decompression for suspected thoracic trauma
- If the patient meets all of the above criteria, determination of death in the field, otherwise initiate rapid transport to trauma center
- Notify coroner

Crush Injury Syndrome

This should be suspected in patients with an extensive crush injury (more than one hand or foot) for greater than one hour. Once the compression is released,

cellular toxins and potassium may be released into the body. These treatments are utilized to minimize these toxic effects.

- Cardiac Monitor
- IV/IO access
- Albuterol 5 mg via nebulizer, may repeat 2-3 doses, most effective when used close to the release of compression.
- Fluid challenge 250-1000 ml Normal Saline.
 - For pediatric patients: administer Normal Saline fluid bolus. Reassess and may repeat twice as indicated. Use Broselow Tape and San Mateo County Pediatric Reference Card to determine fluid volumes.
 - Pain Management as appropriate
- Sodium bicarbonate 1 mEq/kg IV/IO push.
 - For pediatric patients: use Broselow Tape and San Mateo County Pediatric Reference Card to determine dosages
- For suspected hyperkalemia (peaked T waves, widened QRS) consider calcium chloride 1 gm slowly IVP/IO.
 - For pediatric patients: use Broselow Tape and San Mateo County Pediatric Reference Card to determine dosages

Precautions and Comments:

- Reassessment of critical patients should occur at least every 5 minutes. Vital signs and other reassessment information should be documented
- An unsafe scene may warrant transport despite low potential for survival
- Preserve the scene of the crime as much as possible
- Remember reporting requirements for suspected non-accidental injury
- Chest injuries significant enough to cause respiratory distress are commonly associated with significant internal blood loss. Reassess frequently for signs and symptoms of hypovolemia
- Significant intrathoracic or intra-abdominal injury may occur without any external signs of injury, particularly in children or the elderly or in the presence of airbag deployment. Consider the mechanism of injury and the forces involved and be highly suspicious of occult trauma.
- Shock in children may be subtle and difficult to recognize. The only signs of compensated shock that a pediatric patient may display is tachycardia and vasoconstriction. In decompensated shock, the pediatric patient can no longer maintain the compensatory mechanisms and perfusion is profoundly affected. If not reversed decompensated shock will lead to cardio-pulmonary failure.
- The Modified Glasgow Coma Scale for infants and children should be utilized to determine neurologic status. If the patient is intubated, unconscious, or preverbal, the most important part of the scale to note is the best motor response.

- Utilize the Broselow Tape and San Mateo County Pediatric Reference Card for determination of drug dosages, fluid volumes, defibrillation/cardioversion joules and appropriate equipment sizes.
- Pay special attention to keeping all trauma patients warm.
- Provide emotional support as appropriate. Contact Public Safety Communication for grief support referral critical incident stress management.