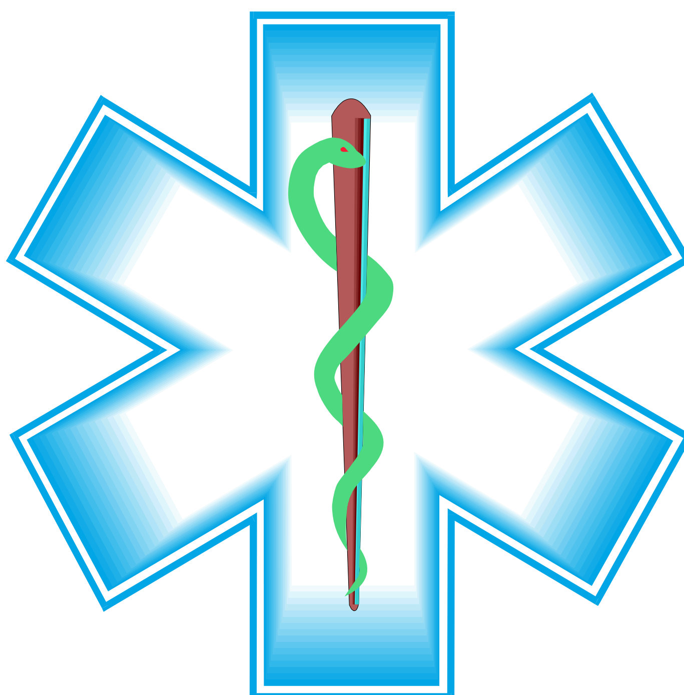
TUOLUMNE COUNTY
EMERGENCY MEDICAL SERVICES AGENCY

PREHOSPITAL CARE
TREATMENT GUIDELINES



Revised
March 24, 2010

Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

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Tuolumne County Emergency Medical Services Agency

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines
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INTRODUCTION

These GUIDELINES and procedures define the prehospital treatment standards for the Tuolumne County Emergency Medical Services System. This document is divided into four major sections: General Procedures, Adult Treatment GUIDELINES, Pediatric Treatment GUIDELINES and an Appendix containing a medication and procedure index, adult and pediatric medication drip charts and policies specific to patient care.

The General Procedures section consists of policy statements and information regarding certain medications and procedures included in the Adult and Pediatric Treatment GUIDELINES. Included in this section are standard procedures for performing cervical spine immobilization, endotracheal intubation, pulse oximetry, vascular access, fluid administration, and utilization of MAST and initiation of patient transport.

The Adult and Pediatric Treatment GUIDELINES outline the specific treatment procedures for adult and pediatric patients. The Pediatric Treatment GUIDELINES are written for patients newborn to age 14 years and the Adult Treatment GUIDELINES are written for patients 15 years of age and older.

Each treatment protocol consists of a table. To the right side of the table, there are five boxes any of which may be marked with an “X.” The “X” indicates which certification/ licensure levels are required to perform the procedure or administer any medication. Each of the five boxes are labeled with a letter corresponding to a certification/licensure level. At the bottom of each treatment guideline is a provider key identifying the certification/licensure levels. The sequence of procedures are a guide; if the prehospital care provider determines that it is the best interest of the patient, they may alter the sequence.

In the event that paramedics cannot make base hospital contact or if the clinical condition of the patient is such that a delay in treatment may jeopardize the patient, a paramedic may perform treatments listed in this section without a base hospital order or a base hospital physician order as an **ALS without Base Hospital Contact Procedure**. Paramedics must document on an **ALS without Base Hospital Contact Report Form** each instance where a procedure or medication requiring a **Base Hospital Order** or a **Base Hospital Physician Order** was performed or administered without an order.

Base Hospital Physicians may order any medication or procedure within the paramedic scope of practice for any patient condition regardless of the treatment GUIDELINES. These orders are known as "**Base Hospital Physician Orders**" and physicians must issue these orders directly to paramedics via radio or telephone communication. MICNs may not relay a "**Base Physician Order**." Each "**Base Hospital Physician Order**" must be documented on the Prehospital Care Report.

In order to facilitate the best possible delivery of prehospital medical care, paramedics have the right to speak directly to a Base Hospital Physician on any call.

GENERAL PROCEDURES

Cervical Spine Immobilization:

While an aggressive approach is mandated by the severe consequences of untreated spinal injuries, there is substantial medical evidence that prolonged rigid immobilization can have adverse consequences on respiration and jugular venous flow, particularly in the elderly.

Cervical spine immobilization or C-spine is listed in each adult and pediatric trauma protocol except for isolated burn and extremity injuries, unless indicated for another reason. Paramedics should perform full spinal immobilization for all trauma patients or suspected trauma patients who exhibit one or more of the following conditions:

1. Have cervical or upper 1/3 thoracic spinal tenderness or pain, pain with neck motion, distal numbness, tingling, weakness or paralysis;
2. Have an altered mental status;
3 Are under the influence of intoxicating medications, alcohol or other drugs (even if the patient is alert and oriented);
4. Have another distracting (painful or emotional) condition; or
5. Have any other condition that in the paramedic's judgment is reducing pain perception.

For fully awake, oriented patients without other distracting conditions, who are not under the influence of intoxicants and that do not have a neck or upper thoracic spinal pain or tenderness or distal signs of spinal nerve injury (e.g. tingling), c-spine immobilization is not required.

The following statements apply to all C-spine cases:

- The application of a cervical collar, by itself, does not constitute adequate immobilization for the conditions requiring C-spine immobilization.

- Immobilization of the head without concurrent immobilization of the trunk is insufficient, since neck motion may occur if the trunk slide on the backboard but the head is restrained.

- Non-rigid cervical collars only create a false sense of security and are not acceptable for the immobilization of prehospital patients.

Additionally, paramedics may discontinue C-spine immobilization initiated by basic life support or first response personnel, if in the opinion of the paramedic C-spine immobilization is not warranted. The paramedic is required to document on the patient care record each instance of discontinuing C-spine immobilization.

Intubation:

Oral endotracheal intubation, stomal endotracheal intubation and naso-tracheal intubation are **Standing Orders** in all adult patients for whom intubation is indicated. Oral endotracheal intubation and stomal endotracheal intubation are **Standing Orders** in all pediatric patients for whom intubation is indicated.
NOTE: Naso-tracheal intubation is contraindicated in all pediatric patients.

Indications: Apnea or ineffective respirations; loss of protective airway reflexes; compromised airway or threatened airway compromise.

Contraindications: Naso-tracheal intubation is contraindicated in patients with severe mid-face injuries and in all pediatric patients.

Usage: Paramedics should not attempt intubation more than three (3) times without consulting a Base Hospital Physician. An attempt to intubate is defined as an attempt at passing the endotracheal tube and does not include instances of visualization and suctioning only.

- Naloxone should be administered before intubating a symptomatic suspected narcotic overdose.
- An attempt for intubation must not interrupt ventilations for more than 30 seconds. (No longer than a paramedic can hold his or her breath.)
- For pediatric patients refer to the endotracheal tube size chart or Braslow tape for determining the appropriate ET tube size and type. Generally in pediatric patients the diameter of the patient’s little finger corresponds to the diameter of the appropriate tube size. Use uncuffed tubes in patients < 6 years of age.
- Do not hyper-extend the head of pediatric patients.
- Auscultate breath sounds, both lung and epigastric sounds, to confirm tube placement. Adjust tube depth to ensure equal bilateral breath sounds.
- Capnography should be considered as an adjunct to confirm correct placement of an endotracheal tube on all intubated patients, except those patients in cardiac arrest.
- Use a bite block or oral airway to prevent jaw spasms from occluding the tube.
- Report centimeter marks on tube at teeth.
- Tape or otherwise secure all endotracheal tubes and bite blocks.

Pulse Oximetry:

The pulse oximetry measures the differences in absorption of light waves by oxygen-saturated vs. non-saturated hemoglobin to determine what percent of hemoglobin is carrying oxygen. It does not measure the actual amount of oxygen carried by the blood. (Tissue oxygen delivery is proportional to the quantity of blood circulated per unit of time as well as the percent oxygen saturation. When there is insufficient hemoglobin [i.e., anemia] or diminished circulation, blood may be 100% saturated, but still not carry enough total oxygen for tissue needs.)

Indications Monitoring any patient at risk for hypoxemia from any cause including the administration of medications (such as morphine and diazepam) that can cause respiratory depression and procedures (such as endotracheal intubation and airway suctioning) during which hypoxia may be worsened.

Interpretation

- >95% = Normal
- 91-94% = Mild Hypoxemia
- 86-90% = Moderate Hypoxemia (90% O_2 Sat. ~ PO_2 _60_{Torr})
- <86% = Severe Hypoxemia
- (Accuracy below 80% is not reliable)

Potential Sources of Error

- Movement of the sensor or its cord ("check sensor" alerts or falsely triggered alarm settings)
- Exposure of sensor to outside source of bright light (optical interference)
- Use of BP cuff on same extremity (inability to sense)
- Low circulatory flow, such as cardiac arrest, hypothermia, shock (inability to sense)
- Black, blue or green nail polish (inability to sense)
- Finger-print dye (inability to sense)
- Carbon monoxide toxicity (falsely elevated readings)
- Severe anemia (inability to sense; overestimation of oxygenation)
- Hemoglobin disorders such as sickle cell disease, methemoglobinemia, sulfhemoglobinemia
- Patients receiving blood transfusions

Pulse CO-Oximetry:

The pulse co-oximetry measures the differences in absorption of light waves, the wavelength is different from the wavelength used in pulse oximetry, by carbon monoxide-saturated vs. non-saturated hemoglobin to determine what percent of hemoglobin is carrying carbon monoxide. It does not measure the actual amount of carbon monoxide carried by the blood.

Indications Monitoring any patient at risk for carbon monoxide poisoning, respiratory distress, and unexplained weakness, headaches, and/or nausea.

Interpretation

- SpCO 0-3% = Normal
- 3-12% = Mild carbon monoxide poisoning
- 12-25% = Moderate carbon monoxide poisoning
- <25% = Severe carbon monoxide poisoning

Potential Sources of Error

- Movement of the sensor or its cord ("check sensor" alerts or falsely triggered alarm settings)
- Exposure of sensor to outside source of bright light (optical interference)
- Use of BP cuff on same extremity (inability to sense)
- Low circulatory flow, such as cardiac arrest, hypothermia, shock (inability to sense)
- Black, blue or green nail polish (inability to sense)
- Finger-print dye (inability to sense)
- Severe anemia (inability to sense; overestimation of oxygenation)
- Hemoglobin disorders such as sickle cell disease, methemoglobinemia, sulfhemoglobinemia)

Vascular Access:

Intravenous access using aseptic technique is a Standing Order for all adult and pediatric patients when an IV is indicated by protocol.

- Peripheral IV placement is the preferred choice in all patients.
- External Jugular IV placement is indicated in adult patients when no other peripheral IV or IO can be established and the patient requires fluid administration or access for IV medications. Generally, external jugular IV lines are established in unconscious patients, but may be used in conscious patients.
- Intra osseous Access (IO) is the preferred choice in pediatric patients when a peripheral IV cannot be established and the patient requires fluid administration or access for IV medications. Intra osseous access is also indicated for adult patients in extremis, when no other IV route can be obtained. Administration of fluids under pressure or flushing the Intraosseous Infusion catheter can cause severe pain in the conscious patient. If the patient is experiencing pain from the administration of fluids under pressure, Paramedics may administer 2% Lidocaine (preservative free) slowly through the Intraosseous Infusion catheter
    A. Adult dose 20–40 mg slow push
    B. Pediatric dose 0.5 mg/kg to a maximum of 40 mg slow push

  Pre-existing Intravenous Access may be used if the patient has an indwelling IV catheter with an external port and a peripheral IV or IO cannot be established and the patient is in extremis. A pre-existing intravenous access should only be used in patients requiring fluid therapy or IV medications. Paramedics should consult with a Base Hospital MICN or Physician if they are at all unfamiliar with the type of indwelling catheter the patient has in place. Sterile technique must be followed when using a pre-existing vascular access.

Fluid administration:

The standard IV fluid for all patients is normal saline.

Adult Fluid Rates, unless otherwise indicated by treatment GUIDELINES:

- For adult patients requiring medications but not fluid therapy maintain IV rate at TKO.
- For adult patients in traumatic arrest or who require rapid volume replacement two large bore IV lines should be established and run wide open until a systolic blood pressure range of ≥90 is obtained or until a total of 2 liters of fluid is infused. Consult with a base hospital physician once the systolic blood pressure range of ≥90 is obtained or 2 liters of fluid is infused.
- For adult patients requiring fluid challenge run IV wide open until 250 ml of fluid is infused, then return rate to TKO. Reassess the patient's vital signs and lung sounds after each 250 ml bolus. Repeat fluid challenge of 250 ml until a systolic blood pressure range of ≥90 is obtained or until a total of 1 liter of fluid is infused. Consult with a base hospital physician once the systolic blood pressure range of ≥ 90 is obtained or 1 liter of fluid is infused.
- If signs of pulmonary edema develop during IV fluid administration: slow IV rate to TKO and contact a base hospital physician for fluid orders.

Pediatric Fluid rates are listed on each pediatric treatment protocol for the conditions listed.

Pneumatic Anti-shock Garment or MAST:

The efficacy of Pneumatic Anti-shock Garments has been debated in the medical literature since their invention by the U.S. Army Medical Command in the 1960's. Even though MAST use has fallen out of favor in the urban areas of California, they continue to have valid application in Tuolumne County due to the potential for extended transport times from our wilderness areas and the frequent occurrence of traumatic pelvic fractures, especially the crushing injuries suffered by injured rock climbers.

Primary Indications: Adult patients with traumatic arrest; suspected pelvic fracture and intra abdominal bleeding, especially suspected acute aortic aneurysm.

Secondary indications: Adult patients with lower extremity fractures.

Contraindications: Thoracic trauma and respiratory distress, rales, pregnancy, patients less than 14 years of age.

Precautions: Use with caution for patients with suspected head injuries.

Usage: MAST may be applied to any patient for whom it is indicated.

STANDING ORDERS: Inflation of leg chambers for use in splinting lower extremities for adult patients.

BASE HOSPITAL ORDERS: Inflation of abdominal chambers for use in splinting pelvic fractures or inflation of leg or chambers for any condition other than splinting the lower extremities for adult patients.

BASE PHYSICIAN ORDER Inflation of the abdominal chamber for any condition other than splinting of the pelvis for adult patients.

Adverse Reactions:

- Respiratory compromise or vomiting may result from inflation of the abdominal compartment; titrate down per **Base Hospital Order**.
- If patient develops rales, rapidly deflate with **Base Hospital Order**.
- If patient becomes hypertensive pressure may be titrated down per **Base Hospital Order.**

Transport:

The majority of the treatment guidelines do not specifically list "transport" in their treatment orders. "Transport" remains listed as a treatment order in Adult Obstetrics and Trauma and most of the Pediatric Guidelines. Generally, prehospital care providers should take steps to minimize their on scene times with all patients. In guidelines where "transport" is not specifically listed paramedics need to initiate transport based on the patient's clinical condition and scene logistics, such as proximity to a hospital and the availability of air transport.

Prehospital care providers should take steps to transport all critically injured trauma patients within ten (10) minutes and most other medical and trauma patients within twenty (20) minutes. Critically injured trauma patients should be transported as "load and go" with paramedics performing the minimum treatment necessary on scene to stabilize and package the patient. Most advanced procedures such as vascular access should be conducted en route with critically injured patients. When transporting critically injured or ill patients, prehospital care providers should notify the receiving facility of their estimated time of arrival (ETA) as-soon-as-possible to allow the hospital time to activate internal trauma teams and other specialized resources.

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VENTRICULAR FIBRILLATION - PULSELESS VENTRICULAR TACHYCARDIA (A01)

V-FIB: Bizarre, rapid, irregular, ineffective rhythm with electrical waveforms varying in size and shape. There is no P wave. QRS complexes absent. V-fib may masquerade in one lead as asystole.

V-TACH: Regular or slightly irregular rhythm. Heart rate 100 to 200. A-V disassociation. QRS complex distorted, wide (> 0.12 seconds) and bizarre.

	F	E	P	B	D
CPR	X	X	X		
ORAL or NASAL PHARYNGEAL AIRWAY	X	X	X		
VENTILATE with BVM and 100% OXYGEN	X	X	X		
DEFIBRILLATE- 200 J (Biphasic) (AED only for FR and EMT-1)	X	X	X		
IV ACCESS TKO- IO OK if unable to gain IV access			X		
INTUBATE- BLS airway OK if airway is patent and Combitube OK if unable to place endotracheal tube			X		
EPINEPHRINE- 1 mg (10cc) of 1:10,000 IV/IO push or 2 mg ET tube. Repeat every 3-5 minutes. (Do not delay the administration due to lack of IV/IO. Administer via ET.)			X		
DEFIBRILLATE- 200 J (Biphasic) (AED only for FR and EMT-1)	X	X	X		
LIDOCAINE-1.5 mg/kg IV/IO push or 3 mg/kg ET tube. Repeat twice after 3-5 minutes.			X		
DEFIBRILLATE- 200 J (Biphasic) (AED only for FR and EMT-1) Repeat after five cycles of compressions	X	X	X		
LIDOCAINE DRIP- Consider Lidocaine drip @ 2-4 mg/minute, if patient converts to a perfusing rhythm following Lidocaine bolus or defibrillation.			X		
SODIUM BICARBONATE- 1 mEq/kg for known or suspected hyperkalemia				X	
CESSATION of RESUSCITATION*- If patient remains in cardiac arrest after two rounds of medications, resuscitative measures have been employed for a minimum of 10 minutes without an improvement in the patient's condition and if no reversible causes are identified.			X		

***Refer to Policy #570.20, Determination of Death in the Prehospital Setting**

Provider Key
- F = First Responder
- E = EMT-1
- P = Paramedic
- B = Base Hospital Order Required
- D = Base Hospital Physician Order Required

PULSELESS ELECTRICAL ACTIVITY (A02)

The absence of a detectable pulse and the presence of some type of electrical activity other than v-fib or v-tach define this group of arrhythmias. The summary term Pulseless Electrical Activity (PEA) incorporates electro mechanical dissociation (EMD) and a heterogeneous group of rhythms that includes pseudo-EMD, idioventricular rhythms, ventricular escape rhythms, post-defibrillation idioventricular rhythms and Brady asystolic rhythms.

	F	E	P	B	D
CPR	X	X	X		
ORAL or NASAL PHARYNGEAL AIRWAY	X	X	X		
VENTILATE with BVM and 100% OXYGEN	X	X	X		
IV ACCESS TKO- IO OK if unable to gain IV access			X		
INTUBATE- BLS airway OK if airway is patent and Combitube OK if unable to place endotracheal tube			X		
EPINEPHRINE- 1 mg (10cc) of 1:10,000 IV/IO push or 2 mg ET tube. Repeat every 3-5 minutes. (Do not delay the administration due to lack of IV/IO. Administer via ET.)			X		
ATROPINE-1 mg IV/IO or 2 mg ET - repeat every 3-5 min. up to a total of 3 mg, if bradycardia (<60 beats/min.) or relative bradycardia. (Do not delay the administration due to lack of IV/IO. Administer via ET.)			X		
DOPAMINE- Drip @ 2-20 ug/kg/minute for hypotensive patient is refractory to IV fluids. Titrate to systolic BP ≥ 90.				X	
SODIUM BICARBONATE- 1 mEq/kg IV/IO for known or suspected hyperkalemia				X	
CALCIUM CHLORIDE- 1000 mg (10 cc of 10% sol.) IV/IO for known or suspected hyperkalemia. **Note**: Use with caution in digitalized patients				X	
CESSATION of RESUSCITATION*- If patient remains in cardiac arrest after two rounds of medications, resuscitative measures have been employed for a minimum of 10 minutes without an improvement in the patient's condition and if no reversible causes are identified.			X		

***Refer to Policy #570.20, Determination of Death in the Prehospital Setting**

CONSIDER CAUSES

- Hypovolemia - volume infusion, 2 liter followed by 250 ml boluses as indicated.
- Cardiac tamponade - volume infusion, 2 liter followed by 250 ml boluses as indicated.
- Hypoxia - provide ventilation.
- Tension pneumothorax - refer to Tension pneumothorax protocol (A24)
- Hypothermia - refer to hypothermia protocol (A62).
- Drug Overdose - refer to Poisoning Protocol (A45)

Provider Key
F = First Responder E = EMT-1
P = Paramedic B = Base Hospital Order Required
D = Base Hospital Physician Order Required

ASYSTOLE (A03)

Asystole represents the total absence of electrical activity in the heart. There is no rhythm, although an occasional P wave may be seen. Heart rate is less than five ectopic beats per minute.

	F	E	P	B	D
CPR	X	X	X		
ORAL or NASAL PHARYNGEAL AIRWAY	X	X	X		
VENTILATE with BVM and 100% OXYGEN	X	X	X		
IV ACCESS TKO- IO OK if unable to gain IV access			X		
INTUBATE- BLS airway OK if airway is patent and Combitube OK if unable to place endotracheal tube			X		
EPINEPHRINE- 1 mg (10cc) of 1:10,000 IV, IO push or 2 mg ET tube. Repeat every 3-5 minutes. (Do not delay the administration due to lack of IV/IO. Administer via ET.)			X		
ATROPINE-1 mg IV, IO or 2 mg ET - repeat every 3-5 min. up to a total of 3 mg, if bradycardia (<60 beats/min.) or relative bradycardia. (Do not delay the administration due to lack of IV/IO. Administer via ET.)			X		
SODIUM BICARBONATE- 1 mEq/kg IV or IO for known or suspected hyperkalemia				X	
CESSATION of RESUSCITATION*- If patient remains in cardiac arrest after two rounds of medications, resuscitative measures have been employed for a minimum of 10 minutes without an improvement in the patient's condition and if no reversible causes are identified.			X		

***Refer to Policy #570.20, Determination of Death in the Prehospital Setting**

NOTE: Asystole should be confirmed by two leads.

CONSIDER CAUSES

- Hypoxia - provide ventilation.
- Hypothermia - refer to hypothermia protocol (A62).
- Drug Overdose - refer to Poisoning Protocol (A45)

Provider Key

F = First Responder
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SYMPTOMATIC BRADYCARDIA (A04)

Bradycardia is characterized by a decrease in the rate of atrial depolarization due to slowing of the sinus node. It may be secondary to sinus node disease, increased parasympathetic tone or drug effects (e.g., digitalis, propranolol or Verapamil.) The rhythm is regular or slightly irregular with the heart rate < 60 beats per minute.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS TKO- If unstable, IO OK if unable to gain IV access			X		
12 LEAD ECG- If patient's condition allows			X		
ATROPINE- 0.5 - 1.0 mg IV or IO push. Repeat every 3-5 minutes for a maximum total dose of 3 mg.			X		
TRANSCUTANEOUS CARDIAC PACING- If patient remains hemodynamically unstable with serious signs and symptoms. DO NOT delay TCP waiting for IV access or for atropine to take effect.			X		
SEDATION-Reassess patient; if needed for discomfort administer 2 mg midazolam and 5 mg morphine IV or IO. Repeat doses may be administered, as needed, in 2 mg increments not to exceed a total of 10 mg midazolam and 20 mg morphine			X		
DOPAMINE- Drip @ 2-20 ug/kg/minute for hypotensive patient is refractory to IV fluids. Titrate to systolic BP ≥ 90.				X	

CONSIDER CAUSES

- Hypoxia - provide ventilation.
- Hypothermia - refer to hypothermia protocol (A62).
- Drug Overdose - refer to Poisoning Protocol (A45)

Provider Key

F = First Responder
E = EMT-1
P = Paramedic
B = Base Hospital Order Required
D = Base Hospital Physician Order Required

WIDE COMPLEX TACHYCARDIA OF UNCERTAIN TYPE with PULSES (A05)

Wide complex tachyarrhythmia in which V-tach and SVT cannot be distinguished.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS TKO- If unstable, IO OK if unable to gain IV access			X		
12 LEAD ECG- If patient's condition allows			X		

UNSTABLE, heart rate > 150 beats/minute with serious signs or symptoms related to tachycardia.	F	E	P	B	D
MIDAZOLAM - 2 mg slow IV or IO push or 2mg deep IM. Do not delay cardioversion if the patient's clinical condition is critical, Cardiovert without sedation.			X		
CARDIOVERT- Synchronized at 100 J., 200 J., 300 J., 360 J. Reduce power by half for digitalized patient. If delays in synchronization occur and the patient's clinical condition is critical, go to immediate unsynchronized shocks.			X		

BORDERLINE, heart rate < 150 with serious signs and symptoms or > 150 without serious signs or symptoms.	F	E	P	B	D
LIDOCAINE- 1.5 mg/kg IV or IO push. If patient does not convert re-bolus with lidocaine 0.75 mg/kg IV push. Repeat every 5 - 10 minute for a maximum total of 3 mg/kg.			X		
LIDOCAINE DRIP- If rhythm converts with lidocaine, start a lidocaine IV drip at 2-4 mg per minute.			X		
ADENOSINE- 6 mg, rapid IV push, over 1 - 3 seconds. If patient does not convert repeat adenosine with 12 mg, rapid IV push over 1 - 3 seconds. If the patient does not convert a third administration of 12 mg may be administered in 1 - 2 minutes. Each administration shall be followed a 5-10 cc bolus of normal saline.			X		

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

VENTRICULAR TACHYCARDIA WITH PULSES (A06)

A regular or slightly irregular rhythm. Heart rate 100 to 200. A-V disassociation. QRS complex distorted, wide (> 0.12 seconds) and bizarre appearance.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS TKO- If unstable, IO OK if unable to gain IV access			X		

UNSTABLE, heart rate > 150 beats/minute with serious signs or symptoms related to tachycardia.	F	E	P	B	D
MIDAZOLAM - 2 mg slow IV or I/O push or 2mg deep IM. Do not delay cardioversion if the patient's clinical condition is critical, Cardiovert without sedation.			X		
CARDIOVERT- Synchronized at 100 J., 200 J., 300 J., 360 J. Reduce power by half for digitalized patient. If delays in synchronization occur and the patient's clinical condition is critical, go to immediate unsynchronized shocks.			X		
LIDOCAINE- 1.5 mg/kg IV or IO push. If patient does not convert re-bolus with lidocaine 0.75 mg/kg IV push. Repeat every 5 - 10 minute for a maximum total of 3 mg/kg.			X		
LIDOCAINE DRIP- If rhythm converts with lidocaine, start a lidocaine IV drip at 2-4 mg per minute.			X		
CARDIOVERT- if rhythm does not convert with lidocaine, synchronized cardiovert between lidocaine boluses at the 360J			X		

BORDERLINE, heart rate < 150 with serious signs and symptoms or > 150 without serious signs or symptoms.	F	E	P	B	D
LIDOCAINE- 1.5 mg/kg IV or I/O push. If patient does not convert re-bolus with lidocaine 0.75 mg/kg IV push. Repeat every 5 - 10 minute for a maximum total of 3 mg/kg.			X		
LIDOCAINE DRIP- If rhythm converts with lidocaine, start a lidocaine IV drip at 2-4 mg per minute.			X		

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PAROXYSMAL SUPRA VENTRICULAR TACHYCARDIA (PSVT) (A07)

Usually a regular rhythm. Heart rate ranges 140 to 220. P waves absent or abnormal. The QRS complex normal or narrow (QRS < 0.12). PSVT has a sudden onset.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS TKO- If unstable, IO OK if unable to gain IV access			X		
12 LEAD ECG- If patient's condition allows			X		

UNSTABLE, heart rate > 150 beats/minute with serious signs or symptoms related to tachycardia.	F	E	P	B	D
MIDAZOLAM - 2 mg slow IV or IO push or 2mg deep IM. Do not delay cardioversion if the patient's clinical condition is critical, Cardiovert without sedation.			X		
CARDIOVERT- Synchronized at 50 J., 100 J., 200 J., 300 J., 360 J. Reduce power by half for digitalized patient. If delays in synchronization occur and the patient's clinical condition is critical, go to immediate unsynchronized shocks.			X		

BORDERLINE, heart rate < 150 with serious signs and symptoms or > 150 without serious signs or symptoms.	F	E	P	B	D
VALSALVA'S MANEUVER			X		
ADENOSINE- 6 mg, rapid IV or IO push, over 1 - 3 seconds. If patient does not convert repeat adenosine with 12 mg, rapid IV push over 1 - 3 seconds. If the patient does not convert a third administration of 12 mg may be administered in 1 - 2 minutes. Each administration shall be followed a 10 cc bolus of normal saline.			X		
CALCIUM CHLORIDE- 500 - 1000 mg slow IV or IO push. Use with caution in digitalized patients				X	
VERAPAMIL- 5 mg slow IV or IO push, may repeat in 15 minutes at 10 mg slow IV push				X	
LIDOCAINE- 1.5 mg/kg IV or IO push for Wide Complex (≥ 0.12 sec.)				X	

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ATRIAL FIBRILLATION - ATRIAL FLUTTER (A08)

Atrial Fib: The rhythm is irregularly irregular. Atrial rate 350 to 600 but as a rule cannot be counted. Ventricular rate between 160 and 180 but may be much slower if patient is digitalized. Fibrillatory waves may be coarse or fine. QRS complex usually normal. Some patients may alternate between atrial fib. and atrial flutter.

Atrial Flutter: Atrial rhythm regular. Ventricular rhythm may be regular or irregular if variable block is present. Ventricular rate 140 to 160, but may be slower if the patient is digitalized. QRS complex usually normal and may follow every second, third or fourth flutter wave. Some patients may alternate between atrial fib. and atrial flutter.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS TKO- If unstable, IO OK if unable to gain IV access			X		
12 LEAD ECG*- If patient's condition allows			X		

UNSTABLE, heart rate > 150 beats/minute with serious signs or symptoms related to tachycardia.	F	E	P	B	D
MIDAZOLAM - 2 mg slow IV or I/O push or 2mg deep IM. Do not delay cardioversion if the patient's clinical condition is critical, Cardiovert without sedation.			X		
CARDIOVERT- Synchronized at 100 J., 200 J., 300 J., 360 J. Reduce power by half for digitalized patient. If delays in synchronization occur and the patient's clinical condition is critical, go to immediate unsynchronized shocks.			X		

BORDERLINE, heart rate < 150 with serious signs and symptoms or > 150 without serious signs or symptoms.	F	E	P	B	D
OBSERVE	X	X	X		
CALCIUM CHLORIDE- 500 - 1000 mg slow IV or I/O push. Use with caution in digitalized patients				X	
VERAPAMIL- 5 mg slow IV or I/O push, may repeat in 15 minutes at 10 mg slow IV push				X	

*** If 12 Lead ECG interprets an S-T Elevation Myocardial Infarction (STEMI), refer to Policy 531.20 for patient destination.**

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CORONARY ISCHEMIC CHEST DISCOMFORT (A09)

Characterized by: substernal chest pain; chest or epigastric discomfort, heaviness, squeezing, burning or tightness; pain radiating or isolated to jaw, shoulders, arms or back; nausea; diaphoresis; dizziness; dyspnea; anxiety; or back pain. Patient may have history of coronary artery disease.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		
ASPIRIN- 325mg PO					
IV ACCESS TKO- If unstable, IO OK if unable to gain IV access			X		
12 LEAD ECG*- If patient's condition allows			X		
NITROGLYCERIN- 1/150 (0.4 mg) sublingual, (if systolic BP > 90 mm Hg.) to relieve pain. May repeat every 5 min. with a maximum of 3 doses in 20 minutes. ***Nitroglycerine shall not be given to patients who have taken PDE-5 inhibitors (SILDENAFIL, CIALIS, VIAGRA or equivalent) within 48 hours, start treatment with Morphine Sulfate.***			X		
MORPHINE- 2-5 mg increments slow IV or IO, (if systolic BP > 90 mm Hg.) to relieve pain. May repeat as needed not to exceed 20 mg per 30 minutes			X		
LIDOCAINE- 1.5 mg/kg IV or IO push for the treatment of escalating ventricular ectopy, repeat in 5 minute at 0.75 mg/kg if ectopy returns.			X		

*** If 12 Lead ECG interprets an S-T Elevation Myocardial Infarction (STEMI), refer to Policy 531.20 for patient destination.**

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AIRWAY OBSTRUCTION - STRIDOR (A21)

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN- As appropriate	X	X	X		
ECG MONITOR	X	X	X		

STABLE	F	E	P	B	D
IV ACCESS TKO			X		

SEVERE OBSTRUCTION - unable to cough or speak	F	E	P	B	D
CONSIDER CAUSE- FOREIGN BODY OBSTRUCTION:					
ABDOMINAL THRUSTS	X	X	X		
FINGER SWEEP	X	X	X		
LARYNGOSCOPY AND MANUAL REMOVAL (Magill Forceps)			X		
CONSIDER CAUSE- CROUP/EPIGLOTITIS:					
POSITION OF COMFORT, CONSIDER HUMIDIFIED OR NEBULIZED OXYGEN WITH THE HIGHEST FLOW RATE TOLERATED	X	X	X		
AVOID VISUALIZATION OF THROAT UNLESS TRACHEAL INTUBATION REQUIRED			X		
CONSIDER CAUSE-TRAUMA:					
SUCTION:	X	X	X		
INTUBATE:			X		
ANAPHYLAXIS: REFER TO ALLERGIC REACTION PROTOCOL (A43)	X	X	X		
NEEDLE CRICOTHYROTOMY: Large bore cannula followed by 50-psi transtracheal oxygen ventilation.			X		

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CHRONIC OBSTRUCTIVE PULMONARY DISEASE ASTHMA - BRONCHO SPASM (A22)

COPD: History may include: emphysema, bronchitis, heavy smoking, recent cold, chronic dyspnea, inhalers.

Physical findings may include: increased anteroposterior diameter of the chest, purse-lip breathing, wheezing, rhonchi, prolonged expiratory phase of respiration, and use of accessory muscles to breathe.

ASTHMA: History may include: acute episodic dyspnea, allergies, cold or flu may have preceded attack.

Physical findings may include: wheezing, hyper resonance, if broncho spasm severe breath sounds may be diminished.

Medications may include: inhalers, pseudoephedrine, theophylline, actifed.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
MAY ASSIST PATIENT ADMINISTER THEIR OWN INHALER		X	X		
ALBUTEROL: 2-10 inhalations via metered dose inhaler or via nebulizer using unit dose vial. If patient intubated, administer dose through aerosol holding chamber. Repeat as needed.			X		
IV ACCESS: TKO			X		
EPINEPHRINE*: 0.01 mg/kg (0.01 cc/kg) of 1:1000 subcutaneously. (max. 0.5 mg/dose). May repeat in 20 min.			X		
C-PAP			X		

*** Use caution in the presence of coronary artery disease or history of hypertension.**

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ACUTE PULMONARY EDEMA (A23)

History may include: an older patient, heart problems (hypertension, congestive heart failure) dyspnea worse when lying down (orthopnea), symptoms of acute MI, takes "water pills," sudden weight gain, cough with watery sputum.

Medications may include: digoxin, lanoxin, digitoxin, chlorothiazide, furosemide, hydrochlorothiazide, bumetanide.

Physical findings may include: rales, distended neck veins, pedal or presacral edema.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR: Treat rhythm as appropriate.	X	X	X		
POSITION: Sitting (as tolerated.)					
IV ACCESS: TKO			X		
NITROGLYCERINE*: 1/150 (0.4 mg) sublingual, (if systolic BP > 90 mm Hg.) May repeat every 3 - 5 min. with a maximum of 3 doses in 20 minutes, until respiratory distress alleviated, severe headache develops or systolic BP drops below 100. **Contact the Base Hospital for additional nitroglycerin orders.**			X		
C-PAP: As indicated			X		
MORPHINE: 2-5 mg increments slow IV, (if systolic BP > 90 mm Hg). May repeat as needed not to exceed 20 mg. per 30 minutes.			X		
FUROSEMIDE**: 20-80 mg IV over 3 - 5 minutes.			X		
DOPAMINE: Drip @ 2-20 ug/kg/minute for hypotensive patients. Titrate to systolic BP $\geq$ 90.					X

***Nitroglycerine shall not be given to patients who have taken PDE-5 inhibitors (SILDENAFIL, CIALIS, VIAGRA or equivalent) within the last 48 hours, start treatment with Morphine Sulfate**

**** If no prior diuretic use - start with 20 mg.**

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TENSION PNEUMOTHORAX (A24)

Physical signs may include: decreased breath sounds, increased resonance on side of collapsed lung, tracheal deviation, asymmetrical chest motion and crepitus.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate, be prepared to support ventilations with appropriate airway adjuncts	X	X	X		
ECG MONITOR: Treat rhythm as appropriate.	X	X	X		
NEEDLE THORACOSTOMY: On affected side or sides at 2nd and 3rd intercostal space. Repeat if suspected catheter occlusion.			X		
INTUBATION: If needed. Ventilate with bag-valve with 100% oxygen.			X		
IV ACCESS: TKO- If unstable, IO OK if unable to gain IV access			X		
OBSERVE: Continue to monitor for signs of a recurrence of a tension pneumothorax.	X	X	X		

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ALTERED LEVEL OF CONSCIOUSNESS (A31)

Characterized by a Glasgow coma score of < 15, mental confusion, unconsciousness.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: TKO			X		
DRAW BLOOD SAMPLE: Test for glucose			X		
DEXTROSE: If blood glucose < 75 mg/dL. 25 – 50 gms IV push			X		
GLUCAGON: 1 unit IM - if no IV access			X		
NALOXONE: 1 - 2 mg IV/IN/IM or 2 - 4 mg ET, for respiratory depression, if narcotic overdose is suspected, (i.e. pin-point pupils, respiratory depression, track marks, drug paraphernalia, history of narcotic use, etc.). May repeat in 2 mg increments to a total of 10 mg. Larger doses may be required to reverse the effects of Darvon and other synthetic narcotics.			X		

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ACUTE CEREBROVASCULAR ACCIDENT (A32)

Characterized by weakness or paralysis on one side of the body/face, slurred speech, speech difficulty, difficulty with balance, inability to understand, difficulty in naming objects, confusion, difficulty swallowing, headache, visual disturbances (double vision, blindness, paralysis of extra-ocular muscles).

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: TKO			X		
DRAW BLOOD SAMPLE: Test for glucose			X		
CONSIDER					
DEXTROSE: If blood glucose < 75 mg/dL. 25 – 50 gms IV push			X		
GLUCAGON: 1 unit IM - if no IV access			X		
HYPERTENSION PROTOCOL A44	X	X	X	X	X

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STATUS SEIZURES (A33)

An actively seizing patient who has been seizing for more than ten minutes or an actively seizing patient with recurrent seizures, with no reawakening in between seizures.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: TKO/IO			X		
MIDAZOLAM: 1-2 mg slow IV/IO repeated every 3 minutes push or 2 mg deep IM, repeated every 10 minutes to control status seizure. Repeat doses up to a maximum total dose of 10 mg.			X		
POSITION: Place on left side, if pregnant			X		
DRAW BLOOD SAMPLE: Test for glucose			X		
CONSIDER					
ECLAMPSIA: Refer to Hypertension Protocol A44	X	X	X	X	X
DEXTROSE: If blood glucose < 75 mg/dL. 25 – 50 gms IV push			X		
GLUCAGON: 1 unit IM - if no IV access			X		

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NON-TRAUMATIC SHOCK/HYPOTENSION (A41)

History may include: GI bleeding, vomiting, diarrhea, allergic reaction, septicemia, anti-hypertensive O.D.

Physical signs may be due to circulatory insufficiency (collapsed peripheral/neck veins, confusion, cyanosis, disorientation, thready pulse) and compensatory or sympathetic nervous and adrenergic compensation mechanism (pale, cold, clammy, mottled skin, rapid respirations, anxiety). Signs of compensation may be absent in the elderly or patients taking beta-blocker or alpha-blocker medications.

NOTE: a decreased blood pressure is a late sign of shock.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR			X		
IV/IO ACCESS: 2 large bore cannula. If the patient has a systolic BP < 90 administer 250 cc fluid boluses as indicted. Maximum fluid 2 liters without a base hospital order. Reassess the patient after each bolus.			X		
POSITION: Place on left side, if pregnant	X	X	X		
DOPAMINE: Drip @ 2-20 ug/kg/minute for hypotensive patient is refractory to IV fluids. Titrate to systolic BP of ≥ 90				X	

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HYPOGLYCEMIA - DIABETIC KETOACIDOSIS (A42)

Blood sugar testing is the only accurate method to determine if a patient is hypoglycemic or hyperglycemic.

Hypoglycemia: Blood glucose < 75 mg/dL. Characterized by: ALOC, seizures, combativeness, psychosis, disorientation, diaphoresis, shaking.

Diabetic ketoacidosis: Often triggered by an underlying infection. Characterized by: massive thirst and urination, confusion, dehydration, deep and rapid respirations, nausea, vomiting, fruity odor on breath, missed insulin dose.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
DRAW BLOOD SAMPLE: Test for glucose			X		

HYPOGLYCEMIA	F	E	P	B	D
IV ACCESS: TKO- If unstable, IO OK if unable to gain IV access			X		
DEXTROSE: If blood glucose < 75 mg/dL. 25 – 50 gms IV push			X		
GLUCAGON: 1 unit IM - if no IV access			X		
CONSIDER: Administering an oral glucose solution in patients who are awake and have an intact gag reflex.	X	X	X		

DIABETIC KETOACIDOSIS	F	E	P	B	D
IV ACCESS: Administer 500 cc fluid boluses up to a total of 2 liters. Reassess the patient after each bolus administration			X		

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ALLERGIC REACTION (A43)

	F	E	P	B	D
REMOVE ALLERGEN: If feasible (i.e. bee stinger) and apply ice to site.	X	X	X		
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR			X		

MILD or MODERATE REACTION (Rash, Swelling, Wheezing)	F	E	P	B	D
IV ACCESS: TKO			X		
ALBUTEROL: 2-10 inhalations via metered dose inhaler or via nebulizer using 1 unit dose, for respiratory distress. If patient intubated, administer dose through aerosol holding chamber. Repeat as needed.			X		
DIPHENHYDRAMINE: 25-50 mg. IV push or IM if IV access not promptly available.			X		
EPINEPHRINE: 0.01 mg/kg subcutaneously of 1:1000 (maximum dose 0.4 mg).			X		

SEVERE REACTION (Hypotension, severe respiratory depression, oral swelling, altered mental status, chest tightness)	F	E	P	B	D
IV/IO ACCESS: 2 large bore cannula. Administer 250 cc fluid boluses as indicated. Reassess the patient after each bolus administration.- If unstable, IO OK if unable to gain IV access			X		
EPINEPHRINE: 2 - 10 ug/min/IV drip				X	
DOPAMINE: Drip @ 2-20 ug/kg/minute for hypotensive patient Is refractory to IV fluids. Titrate to systolic BP $\geq$ 90.				X	
CONSIDER					
EPINEPHRINE: 0.1 mg of 1:10,000 slow IV push, if BP < 80 and the patient is in extremis due to inadequate ventilatory exchange. May repeat every 1 - 2 minutes, if there is an inadequate response to treatment.			X		
NEEDLE CRICOTHYROTOMY: With large bore cannula followed by 50-psi transtracheal oxygen ventilation.			X		

NOTE: The order in which medications are administered to allergic reaction patients is discretionary

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HYPERTENSION (A44)

Malignant Hypertension: BP > 220 systolic or > 120 diastolic when accompanied by signs of serious organ damage such as: coronary ischemic discomfort, pulmonary edema, severe headache, vomiting, altered mental status, seizures, hematuria and generalized edema.

Pre-Eclampsia: Pregnancy (usually > 20 weeks), BP > 140/110, confusion, headache, tremor, visual disturbances, epigastric pain, coma or diastolic BP > 100 even in the absence of other findings. Patients progress to eclampsia upon the initiation of seizure activity.

Dissecting Aneurysm: Rupture along arterial wall evidenced by chest, back, and/or abdominal pain, loss of peripheral pulses, interference with heart, brain or spinal cord function depending on involved vessels. May occur in the absence of hypertension but reduction of BP is needed to reduce the extent of the tear.

	F	E	P	B	D
ASSESSMENT	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV/IO ACCESS: If unstable, IO OK if unable to gain IV access			X		
CONSIDER					
· Coronary Ischemic Chest Discomfort - refer to Protocol (A09). · Pregnancy - If seizing refer to Seizure protocol (A33) · Pulmonary Edema - refer to Pulmonary Edema Protocol (A23). · Acute Cerebrovascular Accident - refer to CVA Protocol (A32)	X	X	X		

Caution should be exercised in stroke victims, especially patients with long-standing high blood pressure. Rapid blood-pressure reduction in some of these cases can actually aggravate brain circulatory insufficiency.

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CAUSTICS –CORROSIVES (A51)

Alkalis: sodium hydroxide (caustic soda), drain cleaners, potassium hydroxide, ammonium hydroxide (fertilizers), lithium hydroxide (photographic chemicals, alkaline batteries), calcium hydroxide (lime).

Acids: hydrofluoric acid (which may have a delayed onset of symptoms); sulfuric acid (battery acid) and hydrochloric acid. Oxidizers: bleach, potassium permanganate.

	F	E	P	B	D
PROTECT FROM CONTAMINATION	X	X	X		
DECON: Per decontamination policy	X	X	X		
ASSESSMENT	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
OXYGEN*: As appropriate	X	X	X		
DO NOT INDUCE VOMITING	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
REFER TO: Burn (A83) and Traumatic Shock (A84) Guidelines as needed	X	X	X		

*** Use oxygen with caution near any hazardous materials**

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CARBON MONOXIDE (A52)

Carbon monoxide is an odorless, colorless, tasteless toxic gas. Carbon monoxide poisoning is easily misdiagnosed as flu-like symptoms, fatigue or other general complaints. Common sources of carbon monoxide include motor vehicles, structure and wild-land fires, gas-powered machines operating in closed spaces, improperly functioning wood burning stoves, heaters or furnaces and industrial sites. Untreated carbon monoxide may result in short and long-term health consequences.

	F	E	P	B	D
REMOVE PATIENT & RESPONDERS FROM SUSPECTED CARBON MONOXIDE SOURCE	X	X	X		
ASSESSMENT*: Pulse CO-Oximetry	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
REFER TO: Burn (A83) and Traumatic Shock (A84) Guidelines as needed	X	X	X		
CONSIDER*: Referral to hyperbaric facility if SpCO is >25% or SpCO is > 15% in pregnant female.					X

*** Determine carboxyhemoglobin level if possible. Based on reading:**

If patient measures SpCO 0-3% - No further evaluation of SpCO needed

If patient measures SpCO > 3% - Reassess

SpCO > 12% or SpCO < 12% - With symptoms of CO poisoning- Treat with 100% oxygen and transport

Altered LOC or Neurological impairment or SpCO > 25%; or No Altered LOC and SpCO > 25%; or SpCO is > 15% in pregnant female.
- Treat with 100% oxygen, base Physician contact for referral to hyperbaric facility

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ORGANOPHOSPHATES (A53)

Organophosphate poisonings may cause bronchospasm, an increase in pulmonary and nasal secretions, constricted pupils, vomiting, diarrhea, urinary incontinence, diaphoresis and cardiac dysrhythmias including both bradycardia and AV blocks.

Remember the most spectacular signs by the following mnemonic: (**S**alivation, **L**acrimation, **U**rination, **D**efecation, **G**astric upset and **E**mesis - **SLUDGE**.)

Another useful mnemonics are, "**MUDDLES**:" **M**iosis, **U**rination, **D**efecation, **D**iaphoresis, **L**acrimation, **E**mesis, **S**alivation; and "**THE KILLER BEES**": **B**ronchorrhea and **B**radycardia.

	F	E	P	B	D
PROTECT FROM CONTAMINATION	X	X	X		
DECON: Per decontamination policy	X	X	X		
ASSESSMENT	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
OXYGEN: As appropriate	X	X	X		
DO NOT INDUCE VOMITING	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
CONSIDER ATROPINE: 2- 5mg increments slow IVP or 2mg IM or 4 mg ET. Repeat every 5 minutes as needed to control secretions, bradycardia bronchorrhea, and dysrhythmia.			X		
CONSIDER MIDAZOLAM: 1-2 mg slow IVP or 2mg IM to control status seizure. Repeat doses Up to a maximum total of 10 mg			X		
CONSIDER ACTIVATED CHARCOAL: 50 gms. PO or Via NG tube if patient is alert or intubated.			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated and oral ingestion has occurred within 30- 60minutes				X	

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

PETROLEUM DISTILLATES (A54)

	F	E	P	B	D
PROTECT FROM CONTAMINATION	X	X	X		
DECON: Per decontamination policy	X	X	X		
ASSESSMENT	X	X	X		
OXYGEN*: As appropriate	X	X	X		
DO NOT INDUCE VOMITING	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
CONSIDER ACTIVATED CHARCOAL: 50 gms. PO or Via NG tube if patient is alert or intubated.				X	
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated.				X	

***Use with caution in the presence of flammable substances.**

NOTE: Avoid the use of epinephrine in petroleum distillate ingestions unless indicated for cardiac dysrhythmia

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

BETA BLOCKER (A55)

	F	E	P	B	D
ASSESSMENT: For serious signs and symptoms related to bradycardia or myocardial depression: systolic BP < 90, coronary type pain/discomfort, respiratory distress, pulmonary congestion, circulatory shock, CNS depression. If systolic BP <90 and HR <60 with serious signs and symptoms	X	X	X		
OXYGEN: As appropriate	X	X	X		
DO NOT INDUCE VOMITING	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
CONSIDER ACTIVATED CHARCOAL: 50 gms. PO or Via NG tube if patient is alert or intubated and oral ingestion has occurred within 30- 60minutes			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated			X		
ATROPINE: 2- 5mg increments slow IVP or 2mg IM or 4 mg ET. Repeat every 5 minutes as needed.			X		
DRAW BLOOD SAMPLE: Test glucose level to determine baseline			X		
DEXTROSE: 25-50 gms IVP regardless of glucose level			X		
GLUCAGON: 1 unit IM if IV not available			X		
MIDAZOLAM: 1-2 mg slow IVP or 2mg IM to control status seizure. Repeat doses Up to a maximum total of 10 mg			X		
GLUCAGON: 1 unit diluted with 4ml IV fluid IV Repeat every minute as needed				X	
EPINEPHRINE: 2 - 10 ug per minute IV drip.				X	
DOPAMINE: Drip @ 2-20 ug/kg/minute for Hypotensive patient's refractory to IV fluids. Titrate to systolic BP ≥ 90.				X	

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

CALCIUM CHANNEL BLOCKER (A56)

	F	E	P	B	D
ASSESSMENT: For serious signs and symptoms related to bradycardia or myocardial depression: systolic BP < 90, coronary type pain/discomfort, respiratory distress, pulmonary congestion, circulatory shock, CNS depression. If systolic BP <90 and HR <60 with serious signs and symptoms	X	X	X		
OXYGEN: As appropriate	X	X	X		
DO NOT INDUCE VOMITING	X	X	X		
ECG MONITOR	X	X	X		
IV/IO ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
CONSIDER ACTIVATED CHARCOAL: 50 gms. PO or Via NG tube if patient is alert or intubated and oral ingestion has occurred within 30- 60minutes			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated			X		
CALCIUM CHLORIDE*: 100 mg slow IV push. If systolic BP <90 and HR <60 with serious signs and symptoms. (REPEAT DOSES REQUIRE A BASE HOSPITAL ORDER)			X		
ATROPINE: 0.5mg increments slow IVP or 2mg IM or 4 mg ET. Repeat every 3 - 5 minutes as needed. Maximum total dose of 3 mg.			X		
DRAW BLOOD SAMPLE: Test glucose level to determine baseline			X		
CALCIUM CHLORIDE* : 100 - 200 mg IV, repeat doses				X	
EPINEPHRINE: 2 - 10 ug per minute IV drip.				X	
DOPAMINE: Drip @ 2-20 ug/kg/minute for Hypotensive patient's refractory to IV fluids. Titrate to systolic BP ≥ 90.				X	

*** Use with caution in digitalized patients**

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CYCLIC ANTIDEPRESSANTS (A57)

	F	E	P	B	D
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS*: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
ACTIVATED CHARCOAL: 50 gms. PO or Via NG tube if patient is alert or intubated			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated			X		
SODIUM BICARBONATE: 1 mEq. /kg slow IV push for cardiac dysrhythmia or QRS complex wider than 0.10 sec Repeat as necessary.			X		
MIDAZOLAM:** 1-2 mg slow IVP or 2mg IM to control status seizure. Repeat doses Up to a maximum total of 10 mg			X		
SODIUM BICARBONATE: Drip at 100 mEq./1000 ml for cardiac dysrhythmia or QRS complex wider than 0.10 sec.				X	
EPINEPHRINE: 2 - 10 ug per minute IV drip.				X	

***Administer fluid boluses with caution due to the high incidence of pulmonary edema in cyclic overdose patients.**

****Most cyclic overdose seizures are short in duration and do not require the administration midazolam**

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DYSTONIC REACTIONS TO PHENOTHIAZINES (A58)

	F	E	P	B	D
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
ACTIVATED CHARCOAL: 50 gms. PO or Via NG tube if patient is alert or intubated **(FOR OVERDOSES ONLY)**			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated **(FOR OVERDOSES ONLY)**			X		
DIPHENHYDRAMINE: 25 - 50 mg IV push titrated to relief of signs and symptoms or IM if IV access not promptly available. **(FOR DYSTONIC REACTIONS ONLY)**			X		

NOTE: Phenothiazine reactions may occur at normal dosing levels and the induction of vomiting is not recommended.

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

NARCOTICS – SEDATIVES (A59)

	F	E	P	B	D
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
NALOXONE: 1 - 2 mg IV/IN*/IM; may repeat in 2 mg increments to a total of 10 mg. Only after two IV/IN/IM administrations; 2 - 4 mg ET**, for respiratory depression, may repeat in 2 mg increments to a total of 10 mg. Larger doses may be required to reverse the effects of Darvon and other synthetic narcotics.					
ACTIVATED CHARCOAL: 25-50 gms. PO or Via NG tube if patient is alert or intubated **(FOR OVERDOSE VIA INGESTION ONLY)**			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents - only if patient is alert or intubated and oral ingestion has occurred with 30-60 minutes.			X		

*CONTRAINDICATION

Epistaxsis
Complete mucosal blockage of both nostrils
Nasal trauma
Any recognizable septal abnormalities
Retropharyngeal lacerations/ dissections

PROCEDURE

With medication in syringe attach atomizer (do not lubricate tip).
Stabilizing the head, place applicator in nares & briskly compress the syringe plunger.

No more than 1cc is to be administered per nares/per administration.

SPECIAL CONSIDERATION

Be attentive to excessive oral secretions, vomiting, and inadequate tidal volume

**** Strongly consider maximizing naloxone doses prior to attempting endotracheal intubation, if narcotic overdose is suspected**

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

Stings/Bites/Envenomation (A61)

	F	E	P	B	D
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
IDENTIFY CAUSE: If feasible and safe to do so have animal transported for identification purposes.	X	X	X		
A. Bee/Wasp sting: Remove (scrape away) stinger. Cold packs may be applied to relieve pain. **B. Spider bite - Scorpion sting:** Remove stinger. Cold packs may be applied to relieve pain. **C. Snake envenomation:** Avoid movement of the affected extremity, keeping extremity at or below heart level. **DO NOT APPLY ICE**. Monitor distal pulses. Circle any swelling around bite marks with a pen and note time. Additionally measure the circumference of the extremity proximal to the bite and note time. This measurement can be used as a baseline for determining the progress of swelling	X	X	X		
CALCIUM CHLORIDE*: 8 mg/kg (not to exceed 500 mg) IV for known or suspected black widow spider bite to relieve muscle cramping.				X	

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

HYPOTHERMIA - FROSTBITE (A62)

Patients with severe hypothermia may appear dead (absent pulse, respiration, and fixed pupils) but still have cardiac electrical activity

	F	E	P	B	D
Moderate Hypothermia (92°-95° F. / 33°-35° C.) **Severe Hypothermia (Core temp < 92° F. / < 33° C.)**					
WARMING MEASURES: Remove wet clothing and cover patient with warm dry blankets.	X	X	X		
USE EXTREME CAUTION WHEN MOVING PATIENT	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR:	X	X	X		
IV ACCESS: Rate as indicated, Avoid cold IV Solution- If unstable, IO OK if unable to gain IV access			X		
DRAW BLOOD SAMPLE: Test for glucose.			X		
DEXTROSE: 25 - 50 gm IV push - if blood glucose < 75 mg/dL. (GLUCAGON 1 unit IM - if no IV access).			X		
NALOXONE: 1 - 2 mg IV/IM or 2 - 4 mg ET, for respiratory depression, if narcotic overdose is suspected, (i.e. pin-point pupils, respiratory depression, track marks, drug paraphernalia, history of narcotic use, etc.). May repeat in 2 mg increments to a total of 10 mg.			X		
FROSTBITE (skin is white, numb or burning, soft to touch and does not re-color with touch)					
EVALUATE: For hypothermia - treat as necessary.	X	X	X		
WARMING MEASURES: Move patient to warm environment and wrap affected extremity with thick, warmed blankets or clothing. **DO NOT RUB AFFECTED EXTREMITY AND AVOID CHEMICAL HEAT PACKS.**	X	X	X		
IV ACCESS: Rate as indicated,- If unstable, IO OK if unable to gain IV access. Avoid cold IV Solution			X		
MORPHINE: 2-5 mg increments slow IV, **(if systolic BP > 90 mm Hg.)** May repeat as needed not to exceed 20 mg. per 30 minutes.			X		

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

HEAT ILLNESS (A63)

Cramps/Exhaustion: Muscle cramping, exhaustion, flu-like symptoms, normal or slightly elevated body temperature. Syncope and an altered level of consciousness may occur.

Stroke: Altered level of consciousness and elevated body temperature (usually 104 F. or 40 C.), tachycardia and hypotension.

	F	E	P	B	D
Heat Cramps - Heat Exhaustion					
COOLING MEASURES: Place patient in a cool environment.	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR:	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
Heat Stroke					
COOLING MEASURES: Remove clothing and splash or sponge patient with water. Place cool packs on neck and in maxilla and inguinal areas. Promote cooling by fanning.	X	X	X		
IV ACCESS: If unstable, IO OK if unable to gain IV access. If the patient has a systolic BP < 90 administer 250 cc fluid boluses as indicated. Reassess the patient after each bolus administration.			X		
DRAW BLOOD SAMPLE: Test for glucose			X		
DEXTROSE: 25 - 50 gms IV push - if blood glucose < 75 mg/dL. (GLUCAGON 1 unit IM - if no IV access).			X		
CONSIDER ADMINISTERING ORAL GLUCOSE SOLUTION: in patients who are awake and have an intact gag reflex.	X	X	X		
MIDAZOLAM: 1-2 mg slow IV push or 2 mg deep IM to control status seizure. Repeat doses up to a maximum total dose of 10 mg.			X		
DOPAMINE: Drip @ 2-20 ug/kg/minute for hypotensive patients refractory to IV fluids. Titrate to systolic BP ≥ 90				X	

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NEAR DROWNING (A64)

Drowning or near drowning patients may also have significant head, neck, and back injuries; strongly consider spinal immobilization when a history of jumping, diving into the water exists, or the history is unclear. History of alcohol and/or drug use is common.

CONTINUOUS MONITORING OF PULSE OXIMETRY AND RESPIRATORY STATUS IS CRITICAL.

	F	E	P	B	D
C-SPINE PRECAUTIONS: As appropriate	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR:	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
C-PAP: As indicated			X		
FUROSEMIDE: 20-80 mg IV over 3 - 5 minutes				X	
DOPAMINE: Drip @ 2-20 ug/kg/minute for hypotensive patients refractory to IV fluids. Titrate to systolic BP ≥ 90				X	

Patient may be hypothermic, refer to HYPOTHERMIA - FROSTBITE (A62)

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

CHILDBIRTH (A71)

	F	E	P	B	D
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR: As appropriate	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		
TRANSPORT: Mother placed on left side, if time permits	X	X	X		
DELIVER NEWBORN: If no time for transport proceed with delivery. As head delivers, gently suction newborn's mouth and nose keeping the head dependent. Use hand to prevent explosive delivery. If cord is wrapped around neck and cannot be slipped over the newborn's head, double clamp and cut between clamps. Complete delivery of newborn's body. Dry newborn and keep warm, place newborn on mother's abdomen or breast. Allow cord to stop pulsating, then clamp and cut 6-8 inches from newborn. Cover newborn with blanket.	X	X	X		
ASSESS NEWBORN: Assess APGAR score at 1 & 5 minutes	X	X	X		
MASSAGE FUNDUS: Following delivery of placenta	X	X	X		
OXYTOCIN*: 10-20 units/1000 ml IV infused at a max rate of 250 ml per hour or 10 units IM for profuse postpartum bleeding following delivery of the placenta and all twins, triplets, etc.			X		
Breech Presentation					
DELIVER NEWBORN: For a buttocks presentation, allow newborn to deliver to the waist without active assistance (support only.) Use hand to prevent explosive delivery. When legs and buttocks are delivered, the head can be assisted out. If the head does not deliver with 4-6 minutes, insert gloved hand into vagina, palm towards baby's face and cord between fingers, and create an airway. (CONSULT BASE PHYSICIAN if possible)	X	X	X		
TRANSPORT: Stat, while retaining airway for newborn if head undelivered	X	X	X		
Prolapsed Cord					
POSITION: Place the mother in shock position with her hips elevated on pillows, or knee chest position	X	X	X		
PROTECT CORD: Insert gloved hand into vagina and gently push the presenting part off the cord. Cover exposed portion of cord with saline soaked gauze. Do not try to push cord back in	X	X	X		
TRANSPORT: Stat, while retaining 1 & 2 above	X	X	X		

*** The administration of oxytocin prior to delivery can cause fetal death.**

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NAUSEA (A82)

The purpose of this protocol is to assist patients who have uncontrollable nausea with extended transport times and/or patients who have nausea from the administration of narcotics.

	F	E	P	B	D
ASSESSMENT:	X	X	X		
OXYGEN: As appropriate	X	X	X		
ECG MONITOR: As appropriate	X	X	X		
IV ACCESS: Rate as indicated			X		
DYPHENHYDRAMINE*: 25 mg IV/IM, may be repeated once, to a maximum of 50 mg				X	

*** PRECAUTIONS FOR USE:**
- Renal disease
- Cardiac disease
- Asthma
- Hypertension
- Pregnancy
- Lactation
- Seizure

*** USE WITH CAUTION IN PATIENTS WITH:**
- Increased CNS depression
- Barbiturates, opiates, hypnotics, tricyclic antidepressants, and alcohol.
- Increased effects of MAOI's

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BURNS (A83)*

	F	E	P	B	D
MOVE PATIENT: To a safe environment, if necessary	X	X	X		
STOP BURNING PROCESS: **Chemical Burns:** Brush off dry chemicals and flush with copious amounts of water. Consult container label for decontamination instructions and transport label with patient. **Tar Burns:** Cool with water and transport; do not attempt to remove tar. **Thermal Burns:** Cool with water for up to 5 minutes to stop the burning process. Avoid prolonged cool water usage due to risks of hypothermia and local cold injury.	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: 10-15 L. /min. via non-rebreathing mask, start at 2 L by cannula if patient has a history of COPD. Be prepared to support ventilations with appropriate airway adjuncts. If intubated, ventilate with bag-valve with 100% oxygen.	X	X	X		
INTUBATE: If facial or oral swelling and respiratory depression present. Especially if the patient has a history of smoke exposure in a confined space			X		
ECG MONITOR: As appropriate	X	X	X		
IV ACCESS: Rate as indicated. If unstable, IO OK if unable to gain IV access			X		
DRESS BURNS: Thermal Burns with >20% body surface area, cover with dry dressing and keep patient warm. Thermal Burns with <20% body surface area, cool with saline soaks.	X	X	X		

PAIN MANAGEMENT: Refer to A 91 PAIN MANAGEMENT TRAUMA

**** Use trauma transport criteria.***

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

TRAUMATIC SHOCK (A84)

	F	E	P	B	D
SECURE AIRWAY: As appropriate while maintaining c-spine. **(Consider intubating while en route, Paramedic Only)**	X	X	X		
OXYGEN: 10-15 L. /min. via non-rebreathing mask. Be prepared to support ventilations with appropriate airway adjuncts. If intubated, ventilate with bag-valve with 100% oxygen	X	X	X		
ASSESSMENT:	X	X	X		
C-SPINE: If indicated	X	X	X		
CONTROL OBVIOUS BLEEDING			X		
POSITION: If patient is >six months pregnant place patient in left lateral decubitus position. If spinal immobilization is indicated tilt spine board 30°, left lateral	X	X	X		
TRANSPORT: Per trauma triage protocol	X	X	X		
ECG MONITOR: As appropriate			X		
IV/IO ACCESS: Attempt at least 2 large bore cannula. Administer fluid boluses as indicated to a BP range of ≥90. Reassess the patient after each bolus administration. **Contact base for fluid orders if suspected uncontrolled hemorrhage or if blood pressure cannot be maintained after 2 liters have been infused.**			X		
DRESS & SPLINT: As needed	X	X	X		
NEEDLE THORACOSTOMY: For tension pneumothorax at 2nd or 3rd intercostal space			X		
MAST: Inflation of leg chambers for use other than splinting lower extremities or inflation of abdominal chamber for splinting pelvis in patients without thoracic trauma, respiratory distress or rales			X		
MAST: Inflation of abdominal chamber for any condition other than splinting the pelvis in patients without thoracic trauma, respiratory distress or rales					X

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Prehospital Care Treatment Guidelines

TRAUMATIC ARREST (A85)

	F	E	P	B	D
CPR: Continue as appropriate. Do not delay transport, keeping CPR interruption to a minimum.	X	X	X		
SECURE AIRWAY: As appropriate while maintaining c-spine. **(Consider intubating while en route, Paramedic Only)**	X	X	X		
ECG MONITOR: Assess rhythm. **Complete Traumatic Arrest Protocol before referring to cardiac GUIDELINES.**	X	X	X		
C-SPINE: If indicated	X	X	X		
CONTROL OBVIOUS BLEEDING	X	X	X		
POSITION: If patient is >six months pregnant place patient in left lateral decubitus position. If spinal immobilization is indicated tilt spine board 30°, left lateral	X	X	X		
TRANSPORT: Immediate transport to definitive care is the best treatment for traumatic arrest patients	X	X	X		
OXYGEN: Ventilate with bag-valve with 100% oxygen	X	X	X		
IV/IO ACCESS: Attempt at least 2 large bore cannula. *Contact base for fluid orders after 2 liters have been infused.*			X		
DRESS & SPLINT: As needed	X	X	X		
NEEDLE THORACOSTOMY: For tension pneumothorax at 2nd or 3rd intercostal space			X		
MAST: Inflation of leg chambers for use other than splinting lower extremities or inflation of abdominal chamber for splinting pelvis in patients without thoracic trauma, respiratory distress or rales			X		
MAST: Inflation of abdominal chamber for any condition other than splinting the pelvis in patients without thoracic trauma, respiratory distress or rales					X
CESSATION of RESUSCITATION*- If patient remains in cardiac arrest after resuscitative measures have been employed for a minimum of 10 minutes without an improvement in the patient's condition and if no reversible causes are identified.			X		

***Refer to Policy #570.20, Determination of Death in the Prehospital Setting**

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

HEAD - NECK - FACIAL TRAUMA (A86)

	F	E	P	B	D
SECURE AIRWAY: As appropriate while maintaining c-spine. Avoid nasotracheal intubation in patients with severe mid-face injuries.	X	X	X		
C-SPINE: If indicated	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: Rate as indicated. If patient is unconscious or has focal neurologic deficit administer 10-15 L. /min. via non-rebreathing mask or intubate and hyperventilate by bag-valve with 100% oxygen.	X	X	X		
POSITION: Place head injured patients in reverse Trendelenburg (elevate the head of the backboard 15-20°), if patient exhibits no signs of shock. If patient is >six months pregnant place patient in left lateral decubitus position. If spinal immobilization is indicated tilt spine board 30°, left lateral.			X		
TRANSPORT: Per trauma triage protocol	X	X	X		
DRESS & SPLINT: As needed	X	X	X		
ECG MONITOR: As appropriate	X	X	X		
IV ACCESS: Rate as indicated- If unstable, IO OK if unable to gain IV access			X		

Refer to A 91 PAIN MANAGEMENT TRAUMA

CONSIDERATIONS:

Avulsed Tooth - replace tooth in socket (if age appropriate) or place tooth in milk, normal saline, saline soaked gauze or a commercially available "tooth saver."

Eye Injuries - Stabilize or dress eye in place with saline soaked gauze or use cup or eye shield. Avoid applying direct pressure to eye and do not attempt to replace partially torn globe.

Impaled Object - immobilize and leave in place. Remove object upon Base Physician order or it interferes with CPR or if the object is impaled in the face, cheek or neck and is compromising ventilation.

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CHEST TRAUMA (A87)

	F	E	P	B	D
SECURE AIRWAY: As appropriate while maintaining c-spine. Consider intubating while en route, if indicated. **(Paramedic Only)**	X	X	X		
C-SPINE: If indicated	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: Rate as indicated. If patient is unconscious or has focal neurologic deficit administer 10-15 L. /min. via non-rebreathing mask or intubate and hyperventilate by bag-valve with 100% oxygen.	X	X	X		
POSITION: If patient is >six months pregnant place patient in left lateral decubitus position. If spinal immobilization is indicated tilt spine board 30°, left lateral.			X		
TRANSPORT: Per trauma triage protocol	X	X	X		
DRESS & SPLINT: As needed	X	X	X		
ECG MONITOR: As appropriate	X	X	X		
IV ACCESS: Rate as indicated			X		

Refer to A 91 PAIN MANAGEMENT TRAUMA

CONSIDER:

Impaled Object: Immobilize and leave in place. Remove object upon Base Physician order or if object interferes with CPR.

Flail Chest: Stabilize chest, observe for tension pneumothorax. Consider assisted ventilation.

Open Chest Wound: Cover wound with occlusive dressing. If patient is being artificially ventilated dress wound loosely, (do not seal). Continuously re-evaluate patient for the development of a tension pneumothorax.

Tension Pneumothorax: Relieve the tension pneumothorax by performing a needle thoracostomy or by removing the occlusive dressing covering an open chest wound. Refer to the Pneumothorax Protocol (A 24).

Cardiac Tamponade: If the patient has a systolic BP < 90, administer 250 cc fluid boluses as indicated. Reassess the patient after each bolus administration. Refer to the Traumatic Shock and/or Traumatic Arrest Protocol(s) (A 84 & A 85).

Cardiac Contusion: Monitor for dysrhythmia. Refer to Cardiac GUIDELINES.

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

ABDOMINAL TRAUMA (A88)

	F	E	P	B	D
SECURE AIRWAY: As appropriate while maintaining c-spine. Consider intubating while en route, if indicated. **(Paramedic Only)**	X	X	X		
C-SPINE: If indicated	X	X	X		
ASSESSMENT:	X	X	X		
OXYGEN: Rate as indicated. If patient is unconscious or has focal neurologic deficit administer 10-15 L. /min. via non-rebreathing mask or intubate and hyperventilate by bag-valve with 100% oxygen.	X	X	X		
POSITION: If patient is >six months pregnant place patient in left lateral decubitus position. If spinal immobilization is indicated tilt spine board 30°, left lateral.			X		
TRANSPORT: Per trauma triage protocol	X	X	X		
DRESS & SPLINT: As needed	X	X	X		
ECG MONITOR: As appropriate.	X	X	X		
IV ACCESS: Rate as indicated. If unstable, IO OK if unable to gain IV access If the patient has a systolic BP < 90, administer 250 cc fluid boluses as indicated. Reassess the patient after each bolus administration.			X		

Refer to A 91 PAIN MANAGEMENT TRAUMA

CONSIDERATIONS:

Impaled Object - immobilize and leave in place. Remove object upon Base Physician order or if object interferes with CPR.

Eviscerating Trauma - Cover eviscerated bowels and organ with saline soaked gauze. **Do not attempt to replace bowels or organs into the abdominal cavity.**

Genital Injuries - Cover genitalia with saline soaked gauze. If necessary apply direct pressure to control bleeding.

Treat genital amputation the same as extremity amputation, refer to Extremity Trauma Protocol (A89).

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Prehospital Care Treatment Guidelines

EXTREMITY TRAUMA (A89)

	F	E	P	B	D
SECURE AIRWAY: As appropriate while maintaining c-spine.	X	X	X		
C-SPINE: If indicated	X	X	X		
ASSESSMENT:	X	X	X		
DRESS & SPLINT*: • Splint dislocations in position found. • Return injured extremities (non-dislocations) to anatomic position as resistance and pain allows. • Check neuro-vascular status prior to and after each extremity manipulation. • Control bleeding with direct pressure. • Cover exposed bone with saline soaked gauze. • Grossly angulated long bone fractures may be reduced with gentle unidirectional traction for splinting. • In cases involving major multi-system trauma, consider "splinting the whole body" by strapping the patient to a back board, rather than splinting each individually extremity.	X	X	X		
OXYGEN: Rate as indicated. If patient is unconscious or has focal neurologic deficit administer 10-15 L. /min. via non-rebreathing mask or intubate and hyperventilate by bag-valve with 100% oxygen.	X	X	X		
POSITION: If patient is >six months pregnant place patient in left lateral decubitus position. If spinal immobilization is indicated tilt spine board 30°, left lateral.			X		
TRANSPORT: Per trauma triage protocol	X	X	X		
ECG MONITOR: As appropriate.	X	X	X		
IV ACCESS: Rate as indicated. - If unstable, IO OK if unable to gain IV access If the patient has a systolic BP < 90, administer 250 cc fluid boluses as indicated. Reassess the patient after each bolus administration.			X		

Refer to A 91 PAIN MANAGEMENT TRAUMA

CONSIDERATIONS:

Amputations: If partial amputation, splint in anatomic position and elevate the extremity. Wrap completely amputated parts in saline soaked gauze, place in container or bag. Place container or bag in ice, if possible.
Do not place amputated part directly on ice.

***MAST**: Inflate legs for lower limb amputations

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PAIN MANAGEMENT- TRAUMA (A 91)

Pain is the most frequent symptom experienced by trauma patients. Pain control can reduce the patient's anxiety and discomfort therefore making patient care easier. The patient's severity of pain must be properly assessed in order to provide appropriate relief. This protocol is not intended to totally alleviate pain, but to safely decrease the intensity of the pain without causing physiologic compromise, delaying transport to definitive care or interfering with the patient's diagnostic work up following arrival at the emergency department.

	F	E	P	B	D
Assessment	X	X	X		
Pulse Oximetry- Do Not withhold oxygen if pulse ox is unavailable			X		
OXYGEN- As appropriate	X	X	X		
MONITOR	X	X	X		
Treat arrhythmias as appropriate.			X		
IV ACCESS- Rate as indicated (IO if in extremis)			X		
MORPHINE- Titrate in 2mg to 5mg increments, every 3-5 minutes, to patient's pain up to a maximum of 60 mg (if systolic BP remains above 90mmhg). If no I.V. access available 5-10 mg I.M. May repeat in 20 min, up to 20 mg maximum.			X		
MIDAZOLAM- 0.5 to 1 mg increments titrated to patient's pain or spasm up to 5mg. If no I.V. assess available 2-10 mg I.M. 10 mg maximum			X		
WATCH CLOSELY FOR - Respiratory depression - Vomiting - Hypotension - Slurred speech - Allergic reaction					
USE WITH CAUTION IN PATIENTS WITH - Head trauma - Decreased respirations - Altered mental status - Blood pressures < 90mmhg systolic - Patients with ETOH intoxication - Elderly patients with longer circulatory times					

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PAIN MANAGEMENT- MEDICAL (A 92)

Pain common symptom experienced by patients. Pain control can reduce the patient's anxiety and discomfort therefore making patient care easier. The patient's severity of pain must be properly assessed in order to provide appropriate relief. This protocol is not intended to totally alleviate pain, but to safely decrease the intensity of the pain without causing physiologic compromise, delaying transport to definitive care or interfering with the patient's diagnostic work up following arrival at the emergency department. If the patient is complaining of chest pain, use **CORONARY ISCHEMIC CHEST DISCOMFORT (A09) GUIDELINE**

	F	E	P	B	D
Assessment	X	X	X		
Pulse Oximetry- Do Not withhold oxygen if pulse ox is unavailable			X		
OXYGEN- As appropriate	X	X	X		
MONITOR	X	X	X		
Treat arrhythmias as appropriate.			X		
IV ACCESS- Rate as indicated (IO if in extremis)			X		
MORPHINE- Titrate in 1mg to 4mg increments, every 3-5 minutes, to patient's pain up to a maximum of 60 mg (if systolic BP remains above 90mmhg). If no I.V. access available 5-10 mg I.M. May repeat in 20 min, up to 20 mg maximum.			X		
MIDAZOLAM- 0.5 to 1 mg increments titrated to patient's pain up to 3mg. If no I.V. assess available 2-8 mg I.M. 8 mg maximum					X

WATCH CLOSELY FOR

- Respiratory depression
- Vomiting
- Hypotension
- Slurred speech
- Allergic reaction

USE WITH CAUTION IN PATIENTS WITH

- Head trauma
- Decreased respirations
- Altered mental status
- Blood pressures < 90mmhg systolic
- Patients with ETOH intoxication
- Elderly patients with longer circulatory times

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PEDIATRIC TREATMENT PROTOCOLS GENERAL PRIMARY SURVEY (P01)

1. Evaluate airway and protective airway reflexes. Identify signs of airway obstruction and respiratory distress, including: cyanosis; stridor; drooling; nasal flaring; choking; grunting; intercostal retractions; absent breath sounds; bradycardia; apnea or bradypnea and; tachypnea.
2. Basic airway and/spinal immobilization PRN Open airway, using suction, jaw thrust and chin lift, (and/or head tilt if no suspected spinal trauma). Consider oral pharyngeal airway. If c-spine trauma suspected, immobilize neck with cervical immobilization device.
3. Oxygen. Nasopharyngeal or oral pharyngeal airway, mask, or oxygen blow-by, as tolerated, with child in position of comfort.
4. Assist Ventilation PRN. Use chest rise as indicator of adequate ventilation. If chest rise is inadequate, consider: repositioning the airway; foreign body in airway and; inadequate bag volume or pop-off valve. Rescue breathing includes two initial, slow breaths (1-1½ sec) then rate of 20 breaths/minute for infant or child.
5. Evaluate circulation. Assess perfusion using: heart rate; skin signs; capillary refill; mental status; quality of pulse and; blood pressure. Compression rate is 120/minute for newborns, 100/minute for infants and children with 5:1 compression: ventilation ratio. Depth is ½ - 1 inch for infant and 1 - 1½ inch for child.
6. Establish level of responsiveness.
7. Do environmental assessment including consideration of intentional injury.
8. Document infant position, potential causes airway obstruction, and possibility of a SIDS death.
9. Determine appropriate treatment protocol.

PEDIATRIC MEASUREMENTS - VITAL SIGNS - RECOMMENDED ET TUBE AND BLADE SIZES

AGE	cm length	Weight (kg) (50th %tile)	Avg. Sys BP	Pulse/ Minute	Resp/ Minute	ET Tube Size	Blade size
Premie	0-53 cm	< 2.5	-	> 120	-	2.5-3 (uncuffed)	0
Term/NB	54-58 cm	2.5-4	60-70	> 120	30-50	3-3.5 (uncuffed)	1
3 mo	59-65 cm	6	70-80	80-160	30-50	3-3.5 (uncuffed)	1
6 mo	66-74 cm	7	80-100	80-160	30-50	3.5-4 (uncuffed)	1
1 year	75-86 cm	10	80-100	80-160	24-40	4-4.5 (uncuffed)	1
2 year	75-86 cm	12	94	80-130	24-32	4.5 (uncuffed)	2
4 year	87-99 cm	16	98	80-120	22-28	5.0 (either)	2
6 year	100-113 cm	20	102	70-115	22-28	5.5 (either)	2
8 year	114-132 cm	25	106	70-110	20-24	6.0 (either)	2
10 year	133-158 cm	34	110	70-110	20-24	6.5 (either)	2
12 year	159-189 cm	41	114	65-110	16-22	7.0 (cuffed)	3

Formulas for Systolic BP:
50th percentile BP for age over 2----->Systolic BP=90+(2x age in yrs)
Lower BP Limit ----->Systolic BP=70+(2x age in yrs)

NEWBORN RESUSCITATION (P10)

Patients less than 24 hours of age.

	F	E	P	B	D
SUCTION: Position airway. Suction mouth and nasopharynx with bulb syringe.	X	X	X		
WARM: Dry and keep warm with thermal blanket or dry towel. Stimulate by drying vigorously including the head and back.	X	X	X		
CLAMP and CUT CORD: Leaving at least 2 inches of cord remaining.	X	X	X		
ASSESS: Evaluate breathing and heart rate. Perform APGAR score 1 and 5 minutes after delivery if time allows. Do not delay resuscitative measures to score patient.	X	X	X		
HEART RATE > 100					
ASSESS COLOR: If peripheral cyanosis present administer 100% oxygen via blow-by or mask.	X	X	X		
REASSESS: Heart rate and respirations every 60 sec. while en route	X	X	X		
HEART RATE 80 - 100					
OXYGEN: 100% via mask	X	X	X		
STIMULATE:	X	X	X		
REASSESS: If heart rate < 100 after 30 seconds of oxygen and stimulation, begin assisted ventilation with 100% oxygen via bag-valve mask, 40 - 60 breaths per minute.	X	X	X		
REASSESS: Heart rate and respirations every 30 sec. while en route.	X	X	X		
HEART RATE 60 - 80					
CPR: If no increase in heart rate following ventilations, start compressions 120 per minute. If patient's heart rate is increasing continue ventilations without compressions for an additional 30 seconds.	X	X	X		
INTUBATE: If compressions and ventilations fail to increase patient's heart rate. Ventilate with 100% oxygen via BVM.			X		
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO or 0.03 mg/kg of 1:10,000 ET, if heart fails to increase above 80.			X		
REASSESS: Heart rate and respirations every 30 sec. while en route.	X	X	X		
HEART RATE ≤ 60					
OXYGEN: Assist ventilations with 100% oxygen via bag-valve mask with 40 - 60 breaths per minute.	X	X	X		
CPR: 120 compressions per minute.	X	X	X		
INTUBATE: If no improvement in patient condition. Administer 100% oxygen via bag-valve mask with 40 - 60 breaths per minute.			X		
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO or 0.03 mg/kg of 1:10,000 ET, if heart fails to increase above 80.			X		
REASSESS: Heart rate and respirations every 30 sec. while en route.	X	X	X		

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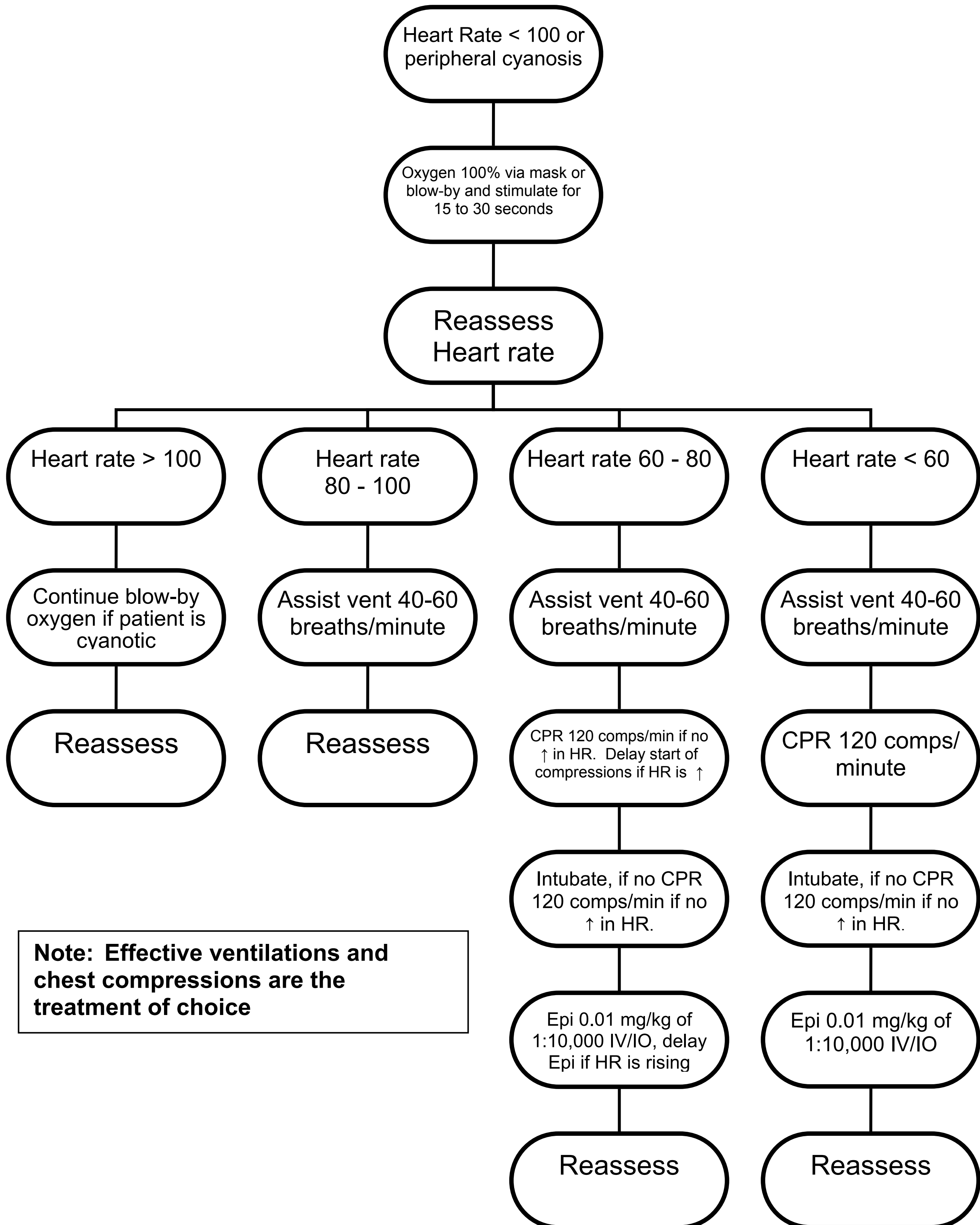
Prehospital Care Treatment Guidelines

NEWBORN RESUSCITATION ALGORITHM SUMMARY



VENTRICULAR FIBRILLATION - PULSELESS VENTRICULAR TACHYCARDIA (P11)

V-FIB: Bizarre, rapid, irregular, ineffective rhythm with electrical waveforms varying in size and shape. There is no P wave. QRS complexes absent.

V-TACH: Regular or slightly irregular rhythm. Heart rate 100 to 200. A-V disassociation. QRS complex distorted, wide (> 0.12 seconds) and bizarre.

	F	E	P	B	D
CPR: Continue as appropriate.	X	X	X		
DEFIBRILLATE: 1 time @ 2 joules/kg. Assess rhythm.	X	X	X		
INTUBATE: Ventilate with bag-valve 100% oxygen.			X		
TRANSPORT	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing.			X		
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO push or 0.1 mg/kg of 1:1000 via ET tube. Repeat every 3-5 minutes. Maximum of 1mg per administration			X		
DEFIBRILLATE: 1 time @ 4 joules/kg. Assess rhythm.	X	X	X		
LIDOCAINE: 1 mg/kg IV/IO or 2 mg/kg ET. Repeat every 3-5 minutes up to a total dose of 100 mg			X		
DEFIBRILLATE: 1 time @ 4 joules/kg. Assess rhythm.	X	X	X		

During CPR

- Push Hard and Fast (100/min)
- Ensure full Chest recoil
- Minimize interruptions in chest compressions
- One cycle of CPR: 15 compressions then 2 breaths; 5 cycles = 1 – 2 min
- Avoid hyperventilation
- After advanced airway placement, no longer use CPR “cycles”, give continuous chest compressions
- Consider
    - *Hypovolemia*
    - *Hypoxia*
    - *Acidosis*
    - *Hypo or hyperkalemia*
    - *Hypoglycemia*
    - *Hypothermia*
    - *Toxins*
    - *Cardiac tamponade*
    - *Tension pneumothorax*

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PULSELESS ELECTRICAL ACTIVITY (PEA)
(P12)

The absence of a detectable pulse and the presence of some type of electrical activity other than v-fib or v-tach define this group of arrhythmias. The summary term Pulseless Electrical Activity (PEA) incorporates electromechanical dissociation (EMD) and a heterogonous group of rhythms that includes pseudo-EMD, idioventricular rhythms, ventricular escape rhythms, post-defibrillation idioventricular rhythms and bradycardia asystolic rhythms.

	F	E	P	B	D
CPR: Continue as appropriate.	X	X	X		
INTUBATE: Ventilate with bag-valve 100% oxygen.			X		
TRANSPORT:	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing.			X		
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO push or 0.1 mg/kg of 1:1000 via ET tube. Repeat every 3-5 minutes. Maximum of 1mg per administration			X		
FLUID: Administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration.			X		
DOPAMINE: 2-20 ug/kg/minute for suspected cardiogenic and distributive shock refractory to fluid therapy. Refer to Pediatric Dopamine chart.				X	

During CPR

- Push Hard and Fast (100/min)
- Ensure full Chest recoil
- Minimize interruptions in chest compressions
- One cycle of CPR: 15 compressions then 2 breaths; 5 cycles = 1 – 2 min
- Avoid hyperventilation
- After advanced airway placement, no longer use CPR “cycles”, give continuous chest compressions
- Consider
  - *Hypovolemia*
  - *Hypoxia*
  - *Acidosis*
  - *Hypo or hyperkalemia*
  - *Hypoglycemia*
  - *Hypothermia*
  - *Toxins*
  - *Cardiac tamponade*
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ASYSTOLE (P13)

Asystole represents the total absence of electrical activity in the heart. There is no rhythm, although an occasional P wave may be seen. Heart rate is less than five ectopic beats per minute. Asystole should be confirmed in at least two EKG leads.

	F	E	P	B	D
CPR: Continue as appropriate.	X	X	X		
INTUBATE: Ventilate with bag-valve 100% oxygen.			X		
TRANSPORT:	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing.			X		
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO push or 0.1 mg/kg of 1:1000 via ET tube. Repeat every 3-5 minutes. Maximum of 1mg per administration			X		
ATROPINE: 0.02 mg/kg via IV/IO or 0.04 mg/kg ET. May be repeated once. Minimum dose of 0.1 mg. Maximum single dose 0.5 mg				X	
DECLARATION OF DEATH: If patient remains in asystole for ten (10) minutes after intubation and initial medications, if no reversible causes are identified.					X

During CPR

- Push Hard and Fast (100/min)
- Ensure full Chest recoil
- Minimize interruptions in chest compressions
- One cycle of CPR: 15 compressions then 2 breaths; 5 cycles = 1 – 2 min
- Avoid hyperventilation
- After advanced airway placement, no longer use CPR “cycles”, give continuous chest compressions
- Consider
  - *Hypovolemia*
  - *Hypoxia*
  - *Acidosis*
  - *Hypo or hyperkalem*
  - *Hypoglycemia*
  - *Hypothermia*
  - *Toxins*
  - *Cardiac tamponade*
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BRADYCARDIA (P14)

Bradycardia is characterized by a decrease in the rate of atrial depolarization due to slowing of the sinus node. The rhythm is regular or slightly irregular. Heart rate ranges from < 80 beats per minute in infants (< 1 year of age) and < 60 beats per minute in children (1 year to 12 years of age). QRS complexes are normal, each proceeded by a P wave.

NOTE: Most bradycardia in children is due to hypoxia.

	F	E	P	B	D
ASSESS: Signs of poor perfusion or respiratory distress (delayed capillary refill, diminished distal pulses, cool extremities, ALOC)	X	X	X		
CONSIDER CPR: if Heart rate: < 80 beats per minute in infants (< 1 year of age); < 60 beats per minute in children (1 to 12 years of age).	X	X	X		
MONITOR:	X	X	X		
OXYGEN: 100% by non-re-breather mask or blow-by.	X	X	X		
CONSIDER INTUBATION: if patient has depressed respirations, respiratory distress or apnea			X		
TRANSPORT:	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing.			X		
FLUID BOLUS: 20 ml/kg, as needed. Reassess after each bolus administration.			X		
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO push or 0.1 mg/kg of 1:1000 via ET tube. Repeat every 3-5 minutes. Maximum of 1mg per administration			X		
ATROPINE: 0.02 mg/kg via IV/IO or 0.04 mg/kg ET. May be repeated once. Minimum dose of 0.1 mg. Maximum single dose 0.5 mg.			X		

During CPR

- Push Hard and Fast (100/min)
- Ensure full Chest recoil
- Minimize interruptions in chest compressions
- One cycle of CPR: 15 compressions then 2 breaths; 5 cycles = 1 – 2 min
- Avoid hyperventilation
- After advanced airway placement, no longer use CPR “cycles”, give continuous chest compressions
- Consider
  - *Hypovolemia*
  - *Hypoxia*
  - *Acidosis*
  - *Hypo or hyperkalemia*
  - *Hypoglycemia*
  - *Hypothermia*
  - *Toxins*
  - *Cardiac tamponade*
  - *Tension pneumothorax*

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TACHYCARDIA with PULSES (P15)

	F	E	P	B	D
ASSESS: Signs of poor perfusion or respiratory distress (delayed capillary refill, diminished distal pulses, cool extremities, ALOC)	X	X	X		
MONITOR:	X	X	X		
OXYGEN: 100% by non-re-breather mask or blow-by.	X	X	X		
CONSIDER INTUBATION: if patient has depressed respirations, respiratory distress or apnea			X		
IV/IO ACCESS: TKO with micro drip tubing.			X		
Sinus Tachycardia (QRS < 0.10 seconds) Heart Rate < 250 beats per minute					
FLUID BOLUS: 20 ml/kg, as needed. Reassess after each bolus administration.			X		
VAGAL MANEUVERS: Consider if child has normal perfusion (Vagal maneuver in infants and young children is ice water to face. In older children, use Valsalva.)			X		
Supraventricular Tachycardia (SVT) Heart Rate > 250 BPM for ages < 2 Heart Rate >180-250 BPM for ages > 2					
SYNCHRONIZED CARDIOVERSION: 0.5 joules/kg, if no response repeat at 1 joule/kg, repeat at 2 joules/kg and repeat at 4 joules/kg.			X		
VAGAL MANEUVERS: Consider if child has normal perfusion (Vagal maneuver in infants and young children is ice water to face. In older children, use Valsalva.)				X	
ADENOSINE: 0.1 mg/kg rapid IV/IO. Maximum dose 6 mg, If patient has poor distal perfusion but is responsive. If no change, repeat in three minutes at 0.2 mg/kg IV/IO. Maximum dose 12 mg.				X	
Ventricular Tachycardia with Pulses (QRS > 0.10 seconds) and Heart Rate > 150 beats per minute					
SYNCHRONIZED CARDIOVERSION: 1 joules/kg, if no response repeat at 2 joules/kg and repeat at 4 joules/kg.			X		
LIDOCAINE: 1 mg/kg IVP or 3 mg/kg ET, up to 100 mg, if perfusion is inadequate. May repeat IV/IO every 5 minutes for a total of 3 mg/kg.				X	

NOTE: 1) Use standard size pediatric paddles/pads for cardioversion for children <10 kg. These should be placed on the anterior chest in a sterna-apical location. If pediatric paddles/pads are not available, use adult paddles/pads placed anterior-posterior on the chest wall.

2) If the defibrillator does not dial down to the indicated energy level, use the lowest setting available.

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AIRWAY OBSTRUCTION BY FOREIGN BODY (P21)

If here is a history of a febrile illness and copious drooling, strongly consider epiglotitis. If the epiglotitis is sufficiently ventilating, transport immediately, avoid visualization of the airway if possibly.

	F	E	P	B	D
ASSESS: Signs of poor perfusion or respiratory distress (delayed capillary refill, diminished distal pulses, cool extremities, ALOC)	X	X	X		
MONITOR:	X	X	X		
OXYGEN: 100% by non-re-breather mask or blow-by.	X	X	X		
CONSCIOUS PATIENT - ABLE TO SPEAK, COUGH OR CRY					
REASSURE PATIENT: Encourage coughing.	X	X	X		
SUCTION: As needed to control secretions	X	X	X		
CONSCIOUS PATIENT - UNABLE TO SPEAK, COUGH OR CRY					
BACK BLOWS & CHEST THRUSTS: For patients < 1 year of age. Alternate back blows and chest thrusts.	X	X	X		
BACK BLOWS & ABD THRUSTS: For patients > 1 year of age. Alternate back blows and Abd thrusts.	X	X	X		
REASSESS: Repeat basic airway maneuvers until obstruction is cleared or the patient becomes unconscious.	X	X	X		
UNCONSCIOUS PATIENT					
BACK BLOWS & CHEST THRUSTS: For patients < 1 year of age. Alternate back blows and chest thrusts.	X	X	X		
BACK BLOWS & ABD THRUSTS: For patients > 1 year of age. Alternate back blows and Abd thrusts	X	X	X		
REASSESS:	X	X	X		
VISUALIZE AIRWAY: Use appropriate size laryngoscope blade and pediatric Magill Forceps			X		
INTUBATE: If object not visible or lodged passed the cords			X		
NEEDLE CRICOTHYROTOMY: followed by transtracheal oxygen ventilation			X		

Refer to Respiratory Distress Protocol (P23).

NOTE: Transport patient immediately to the closest receiving hospital if unable to clear obstruction or otherwise establish an airway. All patients should be transported to a receiving hospital regardless of airway maneuvers.

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RESPIRATORY ARREST (P22)

	F	E	P	B	D
ASSESS:	X	X	X		
POSITION AIRWAY: ABCs, if airway positioning alone returns spontaneous respirations, oxygenate at high flow rate and assist ventilations as necessary.	X	X	X		
SECURE AIRWAY: As appropriate. Ventilate with 100% oxygen via bag-valve mask	X	X	X		
INTUBATION:			X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing.			X		
DRAW BLOOD SAMPLE: Test for glucose. Refer to ALOC protocol (**P31**) if blood sugar < 75 mg/dL.			X		
CONSIDER					
AIRWAY OBSTRUCTION: Refer to Airway Obstructions Protocol **(P21)**.	X	X	X		
NALOXONE: 0.1 mg/kg IV/IO/ET, if mental status and respiratory effort are depressed and the child is not a newborn and there is a strong suspicion of opiate overdose. Maximum single dose 2 mg. Repeat every 5 minutes if a partial response to treatment is noted.			X		

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RESPIRATORY DISTRESS (P23)

Epiglotitis: History of mild upper respiratory infection. occur in patients age 3 to 6, but 25% of all cases occur in children less than 2 years of age. Hx & PE: high fever, sore throat, pain on swallowing, shallow breathing, dyspnea, inspiratory stridor, drooling and a red swollen epiglottis

Asthma: Patient or family history of asthma or reactive airway disease. Indications include: patient age > 1 year, tachypneic with the patient sitting up and leaning forward, unproductive cough, accessory respiratory muscle usage and wheezing (wheezing may not be present if the patient has insufficient air movement.)

Bronchiolitis: Indications include: patient age < 1 year, prominent expiratory wheezing and rales.

Croup: Occurs mostly at night during the fall and winter months. History: Mild cold or other infection. Indications include: Patient age between 6 months and 4 years, harsh - barking cough, inspiratory stridor, nasal flaring and tracheal tugging.

	F	E	P	B	D
ASSESS: Signs of poor perfusion or respiratory distress (delayed capillary refill, diminished distal pulses, cool extremities, ALOC) Observe respirations and auscultate the lungs. **DO NOT VISUALIZE THE AIRWAY OR EXAMINE THE OROPHARYNX.**	X	X	X		
MONITOR:	X	X	X		
OXYGEN: 100% by non-rebreather mask or blow-by.	X	X	X		
EPIGLOTITIS					
POSITION: ***Place patient in position of comfort,*** usually in parents lap or arms. Minimize handling and examination to prevent crying and agitation. ***Avoid laying the patient*** down to prevent the epiglottis from falling and completely obstructing the airway.	X	X	X		
TRANSPORT:	X	X	X		
EPIGLOTITIS - COMPLETE OBSTRUCTION					
VENTILATE: 100% oxygen via bag-valve mask. Attempt high pressure ventilation if unable to ventilate via BVM	X	X	X		
INTUBATE: Ventilate 100% oxygen via bag-valve mask.			X		
NEEDLE CRICOTHYROTOMY: If unable to intubate, followed by transtracheal oxygen ventilation.			X		
ASTHMA - BRONCHIOLITIS - CROUP					
POSITION: ***Place patient in position of comfort,*** usually in parents lap or arms.	X	X	X		
AIRWAY: Support ventilations as necessary	X	X	X		
ALBUTEROL: 1 unit dose for wheezing patients via nebulizer. If patient is intubated administer through aerosol holding chamber.			X		
CONSIDER					
SALINE NEBULIZER: For croup patients.			X		
EPINEPHRINE: 0.01 mg/kg of 1:1000 Sub-Q, for asthma, if patient is not a neonate (max. single dose 0.5 mg). May repeat once for Asthma patients.			X		

Note: Parent should accompany the child to the hospital to ease the child's fears and apprehension.

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ALTERED LEVEL of CONSCIOUSNESS (P31)

Characterized by a Glasgow coma score of < 15, mental confusion, unconsciousness.

	F	E	P	B	D
ASSESS:	X	X	X		
MONITOR:	X	X	X		
OXYGEN: As appropriate	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing			X		
DRAW BLOOD SAMPLE: Test for glucose.			X		
CONSIDER					
ORAL GLUCOSE: for conscious known diabetic with an intact gag reflex, if blood sugar < 75 mg/dL		X	X		
D50: 1 ml/kg IV for patient > 2 years of age, if blood sugar < 75 mg/dL **or** **D25:** 2 ml/kg IV for patients < 2 years of age, if blood sugar < 75 mg/dL			X		
GLUCAGON: 0.05 mg/kg IM (maximum 1.0 mg) if no IV/IO access or delay in access, if blood sugar < 75 mg/dL			X		
NALOXONE: 0.1 mg/kg IV/IO/ET, if mental status and respiratory effort are depressed and the child is not a newborn and there is a strong suspicion of opiate overdose. Maximum single dose 2 mg. Repeat every 5 minutes if a partial response to treatment is noted.			X		
CONSIDER CAUSES					
Shock - refer to Shock Protocol on (P41 or P84). **Toxic Exposure - refer to Poisoning Section (P51 – P57)** **Head Trauma - refer to Head-Neck-Facial Trauma Protocol (P86)**					

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STATUS SEIZURE (P32)

An actively seizing child who has been seizing for more than ten minutes or an actively seizing child with recurrent seizures, with no reawakening in between seizures.

	F	E	P	B	D
ASSESS:	X	X	X		
POSITION: Gently support head of child to avoid injury. Loosen tight fitting clothing	X	X	X		
MONITOR:	X	X	X		
OXYGEN: As appropriate	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing			X		
MIDAZOLAM: 0.1 mg/kg IV/IO/IM maximum single dose of 1 mg to control status seizure.			X		
MIDAZOLAM: Repeat doses require a physician order and may not exceed 5 mg total.					X
DRAW BLOOD SAMPLE: Test for glucose.			X		
CONSIDER					
ORAL GLUCOSE: for conscious known diabetic with an intact gag reflex, if blood sugar < 75 mg/dL		X	X		
D50: 1 ml/kg IV for patient > 2 years of age, if blood sugar < 75 mg/dL **or** **D25:** 2 ml/kg IV for patients < 2 years of age, if blood sugar < 75 mg/dL			X		
GLUCAGON: 0.05 mg/kg IM (maximum 1.0 mg) if no IV/IO access or delay in access, if blood sugar < 75 mg/dL			X		
NALOXONE: 0.1 mg/kg IV/IO/ET, if mental status and respiratory effort are depressed and the child is not a newborn and there is a strong suspicion of opiate overdose. Maximum single dose 2 mg. Repeat every 5 minutes if a partial response to treatment is noted.			X		
CONSIDER CAUSES					
Shock - refer to Shock Protocol on (P41 or P84). **Toxic Exposure - refer to Poisoning Section (P51 – P57)** **Head Trauma - refer to Head-Neck-Facial Trauma Protocol (P86)**					

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NON-TRAUMATIC SHOCK (P41)

History may include: GI bleeding, vomiting, diarrhea, allergic reaction, septicemia.

Physical signs may be due to circulatory insufficiency (collapsed peripheral/neck veins, confusion, cyanosis, disorientation, thready pulse) and compensatory or sympathetic nervous and adrenergic compensation mechanism (pale, cold, clammy, mottled skin, rapid respirations, anxiety).

	F	E	P	B	D
ASSESS:	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
MONITOR:	X	X	X		
OXYGEN: As appropriate	X	X	X		
IV/IO ACCESS:			X		
FLUID BOLUSES: at a rate of 20 ml/kg, as needed. Reassess after each bolus administration.					
DRAW BLOOD SAMPLE: Test for glucose.			X		
CONSIDER					
ORAL GLUCOSE: for conscious known diabetic with an intact gag reflex, if blood sugar < 75 mg/dL		X	X		
D50: 1 ml/kg IV for patient > 2 years of age, if blood sugar < 75 mg/dL **or** **D25:** 2 ml/kg IV for patients < 2 years of age, if blood sugar < 75 mg/dL			X		
GLUCAGON: 0.05 mg/kg IM (maximum 1.0 mg) if no IV/IO access or delay in access, if blood sugar < 75 mg/dL			X		
DOPAMINE: 2-20 ug/kg/minute for suspected cardiogenic and distributive shock refractory to fluid therapy. **Refer to Pediatric Dopamine chart.**			X		
CONSIDER CAUSES					
Cardiogenic - IV fluid boluses. **Hypovolemia - IV fluid boluses.** **Hypoxia - hyperventilate.** **Anaphylaxis - refer to Allergic Reaction Protocol (P42).** **Overdose - refer to Poisoning Section (P51 – P56).**					

NOTE: a decreased blood pressure is a late sign of shock.

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ALLERGIC REACTION - ANAPHYLAXIS (P42)

	F	E	P	B	D
ASSESS:	X	X	X		
REMOVE ALLERGEN: If feasible (i.e. bee stinger) and apply ice to site.	X	X	X		
MONITOR:	X	X	X		
OXYGEN: As appropriate	X	X	X		
IV/IO ACCESS: TKO for mild or moderate reaction. Consider second IV/IO access and 20 ml/kg fluid boluses for patients with hypo-perfusion.			X		
MILD or MODERATE REACTION (rash, swelling, wheezing)					
ALBUTEROL: 1 unit dose via nebulizer, for respiratory distress with wheezing.			X		
EPINEPHRINE: 0.01 mg/kg of 1:1000 Sub-Q with a maximum single dose of 0.5mg. May repeat dose every 20 minutes as needed for respiratory distress or persistent wheezing.			X		
DIPHENHYDRAMINE: 1 mg/kg IV/IO/IM with a maximum dose of 50 mg, for severe itching			X		
SEVERE REACTION (hypotension, severe respiratory depression, oral swelling, altered mental status, chest tightness)					
EPINEPHRINE: 0.01 mg/kg of 1:10,000 IV/IO with a maximum single dose of 0.1 mg. Repeat every 5 minutes as needed for respiratory distress and poor perfusion. (If only access is ET then administer 0.1 mg/kg of 1:1000 ET. If no IV/IO or ET access then administer 0.01 mg/kg of 1:1000 Sub-Q with a maximum single dose of 0.5 mg.)			X		
DIPHENHYDRAMINE: 1 mg/kg IV/IO/IM with a maximum dose of 50 mg, for severe itching.			X		
ALBUTEROL: 1 unit dose via nebulizer, for respiratory distress with wheezing.			X		
INTUBATION: for severe respiratory distress or respiratory arrest due to upper airway edema.			X		
NEEDLE CRICOTHYROTOMY: followed by transtracheal oxygen ventilation.			X		
DOPAMINE: 2-20 ug/kg/minute for suspected cardiogenic and distributive shock refractory to fluid therapy. **Refer to Pediatric Dopamine chart.**				X	

NOTE: The order in which medications are administered to allergic reactions patients is discretionary.

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CAUSTICS and CORROSIVES (P51)

Alkalis: sodium hydroxide (caustic soda), drain cleaners, potassium hydroxide, ammonium hydroxide (fertilizers), lithium hydroxide (photographic chemicals, alkaline batteries), calcium hydroxide (lime).

Acids: hydrofluoric acid (which may have a delayed onset of symptoms); sulfuric acid (battery acid) and hydrochloric acid.

Oxidizers: bleach, potassium permanganate.

	F	E	P	B	D
PROTECT FROM CONTAMINATION:	X	X	X		
DECON: Per decontamination policy	X	X	X		
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
DO NOT INDUCE VOMITING:	X	X	X		
IV/IO ACCESS: Rate as indicated			X		

Refer to Burn (P81) and Traumatic Shock (P82) Guidelines as needed

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CARBON MONOXIDE (P52)

Carbon monoxide is an odorless, colorless, tasteless toxic gas. Carbon monoxide poisoning is easily misdiagnosed as flu-like symptoms, fatigue or other general complaints. Common sources of carbon monoxide include motor vehicles, structure and wild-land fires, gas-powered machines operating in closed spaces, improperly functioning wood burning stoves, heaters or furnaces and industrial sites. Untreated carbon monoxide may result in short and long-term health consequences.

	F	E	P	B	D
REMOVE PATIENT & RESPONDERS FROM SUSPECTED CARBON MONOXIDE SOURCE:	X	X	X		
ASSESS*: Pulse CO-Oximetry, if available	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: Rate as indicated			X		
CONSIDER: Referral to hyperbaric facility if SpCO is >25%					X

Refer to Burn (P83) and Traumatic Shock (P84) Guidelines as needed

* Determine carboxyhemoglobin level if possible. Based on reading:

If patient measures SpCO 0-3% - No further evaluation of SpCO needed

If patient measures SpCO > 3% - Reassess

SpCO > 12% or SpCO < 12% - With symptoms of CO poisoning- Treat with 100% oxygen and transport

Altered LOC or Neurological impairment or SpCO > 25%; or No Altered LOC and SpCO > 25

- Treat with 100% oxygen, base contact for referral to hyperbaric facility

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ORGANOPHOSPHATES (P53)

Organophosphate poisonings may cause bronchospasm, an increase in pulmonary and nasal secretions, constricted pupils, vomiting, diarrhea, urinary incontinence, diaphoresis and cardiac dysrhythmias including both bradycardia and AV blocks.

Remember the most spectacular signs by the following mnemonic: (**S**alivation, **L**acrimation, **U**rination, **D**efecation, **G**astric upset and **E**mesis - **SLUDGE**.)

Another useful mnemonics are, "**MUDDLES**:" **M**iosis, **U**rination, **D**efecation, **D**iaphoresis, **L**acrimation, **E**mesis, **S**alivation; and "**THE KILLER BEES**": **B**ronchorrhea and **B**radycardia.

	F	E	P	B	D
PROTECT FROM CONTAMINATION:	X	X	X		
DECON: Per decontamination policy	X	X	X		
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
DO NOT INDUCE VOMITING:	X	X	X		
IV/IO ACCESS: Rate as indicated			X		
ATROPINE: 0.05 mg/kg increments slow IVP, IM or ET. Repeat every 5 minutes As needed to control Secretions, Bradycardia, Bronchorrhea, Dysrhythmia.			X		
MIDAZOLAM: 0.1 mg/kg IV/IM maximum single dose of 1 mg to control status seizure. ***ONE DOSE ONLY***			X		
MIDAZOLAM: Repeat doses require a physician order and may not exceed 5 mg total.					X
ACTIVATED CHARCOAL: 1g/kg max 50gms. PO or via NG tube if patient is alert or intubated. ***For PO Ingestion Only.***			X		
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated and oral ingestion has occurred within 30- 60 minutes				X	

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PETROLEUM DISTILLATES (P54)

	F	E	P	B	D
PROTECT FROM CONTAMINATION:	X	X	X		
DECON: Per decontamination policy	X	X	X		
ASSESS:	X	X	X		
OXYGEN*: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
DO NOT INDUCE VOMITING:	X	X	X		
IV/IO ACCESS: Rate as indicated			X		
ACTIVATED CHARCOAL: 1g/kg max 50gms. PO or via NG tube if patient is alert or intubated. ***For PO Ingestion Only.***				X	
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated and oral ingestion has occurred within 30- 60 minutes				X	

*** Use oxygen with caution in the presence petroleum distillates.**

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

CYCLIC ANTIDEPRESSANTS (P55)

Cyclic antidepressants include: Amitriptyline (Elavil, Endep, Emitrip, Enovil), Amoxapine (Asendin), Clomipramine (Anafranil), Desipramine (Norpramin, Pertofrane), Doxepin (Adapin, Sinequan), Imipramine (Janimine, Tipramine, Tofranil, Tofranil-PM), Maprotiline (Ludiomil), Nortriptyline (Pamelor, Aventyl), Protriptyline (Vivactil), Trimipramine (Surmontil)

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.			X		
DO NOT INDUCE VOMITING:	X	X	X		
IV/IO ACCESS*: Rate as indicated			X		
ACTIVATED CHARCOAL: 1g/kg max 50gms. PO or via NG tube if patient is alert or intubated.				X	
SODIUM BICARBONATE: 1 mEq. /kg slow IV push for cardiac dysrhythmia or QRS complex wider than 0.10 sec Repeat as necessary. ***Max 2mEq/kg without Base Hospital Order***			X		
SODIUM BICARBONATE: Repeat doses with 1 mEq./kg for cardiac dysrhythmia or QRS complex wider than 0.10 sec.				X	
MIDAZOLAM:** 0.1mg/kg max single dose of 1mg to control status Seizure. Repeat doses up to a maximum total of 5 mg					
NASOGASTRIC TUBE: Lavage and suction gastric contents – only if pt is alert or intubated and oral ingestion has occurred within 30- 60 minutes				X	

***Administer fluid boluses with caution due to the high incidence of pulmonary edema in cyclic overdose patients.**

****Most cyclic overdose seizures are short lived and do not require the administration midazolam**

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DYSTONIC REACTIONS TO PHENOTHIAZINES (P56)

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: Rate as indicated			X		
DIPHENHYDRAMINE: 1mg/kg push titrated to relief of signs and symptoms or IM if IV access not promptly available. Max dose 50mg. ***FOR DYSTONIC REACTION.***			X		
ACTIVATED CHARCOAL: 1g/kg max 50gms. PO or via NG tube if patient is alert or intubated. ***FOR OVERDOSE AND/OR ACCIDENTAL INGESTION.***			X		

NOTE: Phenothiazine reactions may occur at normal dosing levels and the induction of vomiting is not recommended.

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NARCOTICS – SEDATIVES (P57)

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
SECURE AIRWAY*: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: Rate as indicated			X		
NALOXONE: 0.1 mg/kg IV/IO/ET for respiratory depression, max single dose 2mg may repeat every 5 minutes. Larger doses may be required to reverse the effects of Darvon and other synthetic narcotics.			X		

* Perform endotracheal intubation only if absolutely necessary; administration of naloxone may reverse the decreased LOC and respiratory depression associated with narcotic overdose. Naloxone may not be effective on non-narcotic sedatives.

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ENVENOMATION (P61)

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: Rate as indicated			X		
IDENTIFY CAUSE: If feasible and safe to do so have the dead animal transported for identification purposes.	X	X	X		
BEE/WASP STING: Remove (scrape away) stinger. Cold packs may be applied to relieve pain.	X	X	X		
SPIDER BITE - SCORPION STING: Remove stinger. Cold packs may be applied to relieve pain.	X	X	X		
SNAKE ENVENOMATION: Avoid movement of the affected extremity, keeping extremity at or below heart level. ***DO NOT APPLY ICE.*** Monitor distal pulses. Circle any swelling around bite marks with a pen and note time. Additionally measure the circumference of the extremity proximal to the bite and note time. This measurement can be used as a baseline for determining the progress of swelling	X	X	X		

REFER TO PAIN MANAGEMENT POLICY (P 81) AS NEEDED

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Tuolumne County EMS Agency
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HYPOTHERMIA - FROSTBITE (P62)

Patients with severe hypothermia may appear dead (absent pulse, respiration, and fixed pupils) but still have cardiac electrical activity.

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: Rate as indicated. Avoid cold fluids.			X		
Moderate Hypothermia (Core Temp 92°-95° F. / 33°-35° C.)					
WARMING MEASURES: Remove wet clothing and cover patient with warm dry blankets.	X	X	X		
Severe Hypothermia (Core Temp < 92° F. / < 33° C.)					
WARMING MEASURES: Remove wet clothing and cover patient with warm dry blankets.	X	X	X		
DRAW BLOOD SAMPLE: Test for glucose, if blood glucose < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age IV push; **or** **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0mg) if no IV/IO access.			X		
FROSTBITE (skin is white, numb or burning, soft to touch and does not recolor with touch)					
WARMING MEASURES: Move patient to warm environment and wrap affected extremity with thick, warmed blankets or clothing. ***DO NOT RUB AFFECTED EXTREMITY AND AVOID CHEMICAL HEAT PACKS.***	X	X	X		
ACTIVE RE-WARMING: With 105°F water				X	

REFER TO PAIN MANAGEMENT POLICY (P 81)

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HEAT ILLNESS (P63)

Cramps/Exhaustion: Muscle cramping, exhaustion, flu-like symptoms, normal or slightly elevated body temperature. Syncope and an altered level of consciousness may occur.

Stroke: Altered level of consciousness and elevated body temperature (usually 104 F. or 40 C.) often associated with absence of sweating, tachycardia and hypotension.

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.			X		
HEAT CRAMPS - HEAT EXHAUSTION					
COOLING MEASURES: Place patient in a cool environment.	X	X	X		
IV/IO ACCESS: Rate as indicated.			X		
HEAT STROKE					
COOLING MEASURES: Remove clothing and splash or sponge patient with water. Place cool packs on neck and in maxilla and inguinal areas. Promote cooling by fanning.	X	X	X		
IV/IO ACCESS: Administering fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration.			X		
DRAW BLOOD SAMPLE: Test for glucose, if blood glucose < 75 mg/dL: **A. D50**: 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age IV push; **or** **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0mg) if no IV/IO access.			X		
MIDAZOLAM: 0.1 mg/kg IV/IM maximum single dose of 2 mg to control status seizure.			X		
MIDAZOLAM: Repeat doses require a physician order and may not exceed 5 mg total.					X

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PAIN MANAGEMENT (P81)

Pain is the most frequent symptom experienced by patients. Pain control can reduce the patient's anxiety and discomfort therefore making patient care easier. High levels of anxiety may increase pain perception. The patient's severity of pain must be properly assessed in order to provide appropriate relief. This protocol is not intended to totally alleviate pain, but to safely decrease the intensity of the pain without causing physiologic compromise, delaying transport to definitive care or interfering with the patient's diagnostic work up following arrival at the emergency department.

	F	E	P	B	D
ASSESS:	X	X	X		
OXYGEN: As appropriate	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
PULSE OXIMETRY: Maintain adequate oxygenation			X		
IV/IO ACCESS: Rate as indicated.			X		
MORPHINE*: 0.1 mg/kg slow IV up to 10 mg for excruciating pain. May repeat dose every 10-15 minutes up to three times.			X		
MIDAZOLAM:** 0.1 mg/kg slow IV maximum of 2 mg for excruciating pain. May repeat dose two times.				X	

***USE WITH CAUTION IN PATIENTS WITH:**
- Head trauma
- Decreased respirations
- Altered mental status
- Blood pressures < 90mmhg systolic
- Patients with ETOH intoxication

***OBSERVE:** Watch closely for
- Respiratory depression
- Vomiting
- Hypotension
- Slurred speech
- Allergic reaction

**** IF THE PATIENT IS OBESE THE DOSAGE SHOULD BE CALCULATED ON THE PATIENTS' *IDEAL WEIGHT.***

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Tuolumne County EMS Agency
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NAUSEA (P82)

The purpose of this protocol is to assist patients who have uncontrollable nausea with extended transport times and/or patients who have nausea from the administration of narcotics.

	F	E	P	B	D
ASSESS:	**X**	**X**	**X**		
OXYGEN: As appropriate	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
PULSE OXIMETRY: Maintain adequate oxygenation			X		
IV/IO ACCESS: Rate as indicated.			X		
DIPHENHYDRAMINE*: Age 2-6 years 6.25 mg IV/IM to a maximum of 12.5 mg Age 6-12 years 12.5 mg IV/IM to a maximum of 25mg				X	

<u>* Diphenhydramine should not be used on under two (2) years of age.</u>

***USE WITH CAUTION IN PATIENTS WITH:**
- Barbiturates, opiates, hypnotics, tricyclic antidepressants, and alcohol.
- Increased effects of MAOI's
- Increased CNS depression

***OBSERVE:** Watch closely for
- Mouth dryness
- Respiratory depression
- Vomiting
- Hypotension
- Slurred speech
- Allergic reaction

***PRECAUTIONS FOR USE:**
- Renal disease
- Cardiac disease
- Asthma
- Hypertension
- Pregnancy
- Seizure

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Prehospital Care Treatment Guidelines

BURNS (P83)

	F	E	P	B	D
REMOVE PATIENT & RESPONDERS TO A SAFE ENVIRONMENT:	X	X	X		
STOP BURNING PROCESS					
CHEMICAL BURNS: Brush off dry chemicals and flush with copious amounts of water. Consult container label for decontamination instructions. Transport label with patient if possible.	X	X	X		
Tar Burns: Cool with water and transport; do not attempt to remove tar.	X	X	X		
Thermal Burns: Cool with water for up to 5 min to stop the burning process.	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
INTUBATE: If facial or oral swelling or respiratory depression present, especially if the patient has a history of smoke exposure in a confined space.			X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: 2° and 3° burns: 0.5 ml x patient weight in kg x % of burn = the amount of fluid to be administered in the first hour.			X		
DRESS BURNS: Thermal Burns cover with dry dressing and keep patient warm.	X	X	X		

Refer to Pain Management (P81) and Traumatic Shock (P84) Guidelines as needed

Patient Age		**NB**	**NB**	**3 Mo.**	**6 Mo.**	**1 Yr**	**2 Yr**	**4 Yr**	**6 Yr**	**8 Yr**	**10 Yr**	**12 Yr**
Body Length cm		0-53	54-58	59-65	66-74	75-80	81-86	87-99	100-113	114-132	133-158	159-189
Avg. Body Wt in kgs		**2**	**4**	**6**	**7**	**10**	**12**	**16**	**20**	**25**	**34**	**41**
2° & 3° Burn	1%	1	2	3	4	5	6	8	10	13	17	21
	5%	5	10	15	18	25	30	40	50	63	85	103
	10%	10	20	30	35	50	60	80	100	125	170	205
	15%	15	30	45	53	75	90	120	150	188	255	308
	20%	20	40	60	70	100	120	160	200	250	340	410
	25%	25	50	75	88	125	150	200	250	313	425	513
	50%	50	100	150	175	250	300	400	500	625	850	1025
	75%	75	150	225	263	375	450	600	750	938	1275	1538
	Amount of IV/IO fluid in **ml** to be administered in the first hour											

Provider Key

F = First Responder
E = EMT-1
P = Paramedic
B = Base Hospital Order Required
D = Base Hospital Physician Order Required

Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

TRAUMATIC SHOCK (P84)

	F	E	P	B	D
ASSESS:	X	X	X		
SECURE AIRWAY: As appropriate, patient may have respiratory burns	X	X	X		
C-SPINE PRECAUTIONS: as indicated	X	X	X		
CONTROL OBVIOUS BLEEDING:	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
TRANSPORT ASAP: Minimize scene time. Consider air evacuation, per Tuolumne County Trauma Plan.	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: Start two lines and administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. If suspected uncontrolled bleeding maintain systolic BP between 60 and 80 to avoid dilutional fluid administration			X		
DRESS & SPLINT: As needed.	X	X	X		
TRACTION SPLINT: for femur fractures		X	X		
NEEDLE THORACOSTOMY: For tension pneumothorax, on affected side or sides. Perform on both sides if unable to isolate affected side.			X		
DRAW BLOOD SAMPLE: Test for glucose. If blood sugar < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age; **or** **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0 mg) if no IV/IO access.			X		

Refer to Pain Management (P81) Guideline as needed

Provider Key
- F = First Responder
- E = EMT-1
- P = Paramedic
- B = Base Hospital Order Required
- D = Base Hospital Physician Order Required

Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

TRAUMATIC ARREST (P85)

	F	E	P	B	D
ASSESS:	X	X	X		
CPR: Continue as appropriate. Do not delay transport even if CPR has to be interrupted.	X	X	X		
SECURE AIRWAY: Consider using simplest effective method while maintaining c-spine.	X	X	X		
INTUBATION: Consider intubation while en route			X		
C-SPINE PRECAUTIONS: as indicated	X	X	X		
MONITOR: For V-FIB or V-TACH Defibrillate up to 3 times 4 joules /kg. Complete Traumatic Arrest Protocol before referring to cardiac GUIDELINES	X	X	X		
TRANSPORT ASAP: Immediate transport to closest definitive care	X	X	X		
IV/IO ACCESS: Start two lines and administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. If suspected uncontrolled bleeding maintain systolic BP between 60 and 80 to avoid dilutional fluid administration			X		
DRESS & SPLINT: As needed and as time allows	X	X	X		
TRACTION SPLINT: for femur fractures, as needed and as time allows		X	X		
NEEDLE THORACOSTOMY: For tension pneumothorax, on affected side or sides. Perform on both sides if unable to isolate affected side.			X		
DRAW BLOOD SAMPLE: Test for glucose. If blood sugar < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age; **or** **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0 mg) if no IV/IO access.			X		
DECLARATION OF DEATH: If patient remains in an asystolic rhythm after ten (10) minutes of ALS intervention, if no reversible causes are identified.					X

Provider Key

- F = First Responder
- E = EMT-1
- P = Paramedic
- B = Base Hospital Order Required
- D = Base Hospital Physician Order Required

Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

HEAD - NECK - FACIAL TRAUMA (P86)

	F	E	P	B	D
ASSESS:	X	X	X		
SECURE AIRWAY: As appropriate	X	X	X		
INTUBATION: consider intubating enroute			X		
C-SPINE PRECAUTIONS: as indicated	X	X	X		
CONTROL OBVIOUS BLEEDING:	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
POSITION: Place brain injured patients in reverse Trendelenburg (elevate the head of the backboard 15-20°), if patient exhibits no signs of shock.	X	X	X		
TRANSPORT ASAP: Minimize scene time. Consider air evacuation, per Tuolumne County Trauma Plan.	X	X	X		
MONITOR: Treat rhythm as appropriate.			X		
IV/IO ACCESS: TKO with micro drip tubing, for normotensive or hypertensive patients. For hypotensive patients, start two lines and administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. If suspected uncontrolled bleeding maintain systolic BP between 60 and 80 to avoid dilutional fluid administration			X		
DRESS & SPLINT: As needed.	X	X	X		
NEEDLE THORACOSTOMY: For tension pneumothorax, on affected side(s). Perform on both sides if unable to isolate affected side.			X		
DRAW BLOOD SAMPLE: Test for glucose. If blood sugar < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age; **or** **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0 mg) if no IV/IO access.			X		

Refer to Pain Management (P81) Guideline as needed

CONSIDERATIONS
Avulsed Tooth - replace tooth in socket (if age appropriate) or place in saline soaked gauze or in a commercial packaged avulsed tooth kit.

Eye Injuries - Stabilize or dress eye in place with saline soaked gauze. Use cup or eye shield to avoid applying direct pressure to eye and do not attempt to replace partially torn globe.

Impaled Object - - immobilize and leave in place. Remove object upon Base Physician order or it interferes with CPR or if the object is impaled in the face, cheek or neck and is compromising ventilation.

Provider Key
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CHEST TRAUMA (P87)

	F	E	P	B	D
SECURE AIRWAY: As appropriate	X	X	X		
INTUBATION: consider intubating enroute			X		
C-SPINE PRECAUTIONS: as indicated	X	X	X		
CONTROL OBVIOUS BLEEDING:	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
POSITION: Place brain injured patients in reverse Trendelenburg (elevate the head of the backboard 15-20°), if patient exhibits no signs of shock.	X	X	X		
TRANSPORT ASAP: Minimize scene time. Consider air evacuation, per Tuolumne County Trauma Plan.	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing, for normotensive or hypertensive patients. For hypotensive patients, start two lines and administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. If suspected uncontrolled bleeding maintain systolic BP between 60 and 80 to avoid dilutional fluid administration			X		
DRESS & SPLINT: As needed.	X	X	X		
NEEDLE THORACOSTOMY: For tension pneumothorax, on affected side or sides. Perform on both sides if unable to isolate affected side.			X		
DRAW BLOOD SAMPLE: Test for glucose. If blood sugar < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age; **or** **B.** Glucagon: 0.05 mg/kg IM (maximum dose 1.0 mg) if no IV/IO access.			X		

Refer to Pain Management (P81) and Traumatic Shock (P82) Guidelines as needed

CONSIDERATIONS

Impaled Object - Immobilize and leave in place. Remove object upon Base Physician order or if object interferes with CPR.

Flail Chest - Stabilize chest, observe for tension pneumothorax. Consider assisted ventilation.

Open Chest Wound - Cover wound with occlusive dressing. If patient is being artificially ventilated dress wound loosely (do not seal). Continuously re-evaluate patient for the development of a tension pneumothorax.

Tension Pneumothorax - Relieve the tension pneumothorax by performing a needle thoracostomy or by removing the occlusive dressing covering an open chest wound.

Cardiac Tamponade - Administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. Refer to the Traumatic Shock Protocol.

Cardiac Contusion - monitor for dysrrhythmia. Refer to Cardiac GUIDELINES.

Provider Key
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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

ABDOMINAL TRAUMA (P88)

	F	E	P	B	D
SECURE AIRWAY: As appropriate	X	X	X		
INTUBATION: consider intubating enroute			X		
C-SPINE PRECAUTIONS: as indicated	X	X	X		
CONTROL OBVIOUS BLEEDING:	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
TRANSPORT ASAP: Minimize scene time. Consider air evacuation, per Tuolumne County Trauma Plan.	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing, for normotensive or hypertensive patients. For hypotensive patients, start two lines and administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. If suspected uncontrolled bleeding maintain systolic BP between 60 and 80 to avoid dilutional fluid administration			X		
DRESS & SPLINT: As needed.	X	X	X		
DRAW BLOOD SAMPLE: Test for glucose. If blood sugar < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age; or **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0 mg) if no IV/IO access.			X		
MORPHINE: 0.1 mg/kg slow IV for excruciating pain. May repeat dose three times.				X	
MIDAZOLAM: 0.1 mg/kg slow IV maximum of 2 mg for excruciating pain. May repeat dose two times				X	

CONSIDERATIONS

Impaled Object - immobilize and leave in place. Remove object upon Base Physician order or if object interferes with CPR.

Eviscerating Trauma - Cover eviscerated bowels and organ with saline soaked gauze. ***Do not attempt to replace bowels or organs into the abdominal cavity.***

Genital Injuries - Cover genitalia with saline soaked gauze. If necessary apply direct pressure to control bleeding. Treat amputation the same as extremity amputation, **refer to Extremity Trauma Protocol (P89).**

Provider Key

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Tuolumne County EMS Agency
Prehospital Care Treatment Guidelines

EXTREMITY TRAUMA (P89)

	F	E	P	B	D
SECURE AIRWAY: As appropriate	X	X	X		
INTUBATION: consider intubating enroute			X		
C-SPINE PRECAUTIONS: as indicated	X	X	X		
CONTROL OBVIOUS BLEEDING:	X	X	X		
OXYGEN: 15 LPM via non-rebreather mask	X	X	X		
TRANSPORT ASAP: Minimize scene time. Consider air evacuation, per Tuolumne County Trauma Plan.	X	X	X		
MONITOR: Treat rhythm as appropriate.	X	X	X		
IV/IO ACCESS: TKO with micro drip tubing, for normotensive or hypertensive patients. For hypotensive patients, start two lines and administer fluid boluses at a rate of 20 ml/kg, as needed. Reassess the patient after each bolus administration. If suspected uncontrolled bleeding maintain systolic BP between 60 and 80 to avoid dilutional fluid administration			X		
DRESS & SPLINT: as appropriate. • Splint dislocations in position found. • Return injured extremities (non-dislocations) to anatomic position as resistance and pain allows. • Check neuro-vascular status prior to and after each extremity manipulation. • Cover exposed bone with saline soaked gauze, in compound fractures with exposed bone, do not reduce the exposed bone back into the wound. • Grossly angulated, non-compound, long bone fractures may be reduced with gentle unidirectional traction for splinting. In cases involving major multi-system trauma, consider "splinting the whole body" by strapping the patient to a back board, rather than splinting each individually extremity	X	X	X		
TRACTION SPLINT: For femur fracture		X	X		
DRAW BLOOD SAMPLE: Test for glucose. If blood sugar < 75 mg/dL: **A. D50:** 1 ml/kg IV for patient > 2 years of age or D25 2 ml/kg IV for patients < 2 years of age; **or** **B. Glucagon:** 0.05 mg/kg IM (maximum dose 1.0 mg) if no IV/IO access.			X		

Refer to Pain Management (P81) Guideline as needed

CONSIDERATIONS

Amputations - If partial amputation, splint in anatomic position and elevate the extremity. Wrap completely amputated parts in saline soaked gauze, place in container or bag. Place container or bag in ice, if possible.

Provider Key

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APPENDIX

DOPAMINE DRIP CHART FOR ADULTS

FOR A CONCENTRATION OF **1600** µg of DOPAMINE PER MILLILITER SOLUTION
Two 5 ml ampules of Dopamine (200 mg of dopamine per ampule) mixed in 250 ml of NS.

Body Wt lbs	**110**	**121**	**132**	**143**	**154**	**165**	**176**	**187**	**198**	**209**	**220**	**231**	**242**
Body Wt kgs	**50**	**55**	**60**	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**	**105**	**110**
2 µg/min	4	4	5	5	5	6	6	6	7	7	8	8	8
3 µg/min	6	6	7	7	8	9	9	10	10	11	11	12	13
4 µg/min	8	8	9	10	11	11	12	13	14	15	15	16	17
5 µg/min	10	11	11	12	13	14	15	16	17	18	19	20	21
6 µg/min	11	13	14	15	16	17	18	19	21	22	23	24	25
7 µg/min	13	15	16	17	19	20	21	23	24	25	27	28	29
8 µg/min	15	17	18	20	21	23	24	26	28	29	31	32	34
9 µg/min	17	19	21	22	24	26	28	29	31	33	34	36	38
10 µg/min	19	21	23	25	27	29	31	32	34	36	38	40	42
11 µg/min	21	23	25	27	29	32	34	36	38	40	42	44	46
12 µg/min	23	25	28	30	32	34	37	39	41	44	46	48	50
13 µg/min	25	27	30	32	35	37	40	42	45	47	50	52	55
14 µg/min	27	29	32	35	37	40	43	45	48	51	53	56	59
15 µg/min	29	32	34	37	40	43	46	49	52	54	57	60	63
16 µg/min	31	34	37	40	43	46	49	52	55	58	61	64	67
17 µg/min	32	36	39	42	45	49	52	55	58	62	65	68	71
18 µg/min	34	38	41	45	48	52	55	58	62	65	69	72	76
19 µg/min	36	40	44	47	51	54	58	62	65	69	73	76	80
20 µg/min	38	42	46	50	53	57	61	65	69	73	76	80	84

FLOW RATE IN DROPS* PER MINUTE
*Based on a micro drip calibration of 60 drops equal to 1.0 milliliter.

EPINEPHRINE DRIP CHART for ADULTS

FOR A CONCENTRATION OF 4 µg OF EPINEPHRINE PER MILLILITER OF SOLUTION
1 mg of 1:1000 mixed in 250 ml of NS

Dosage = µg/minute*	1 µg	2 µg	3 µg	4 µg	5 µg	6 µg	7 µg	8 µg	9 µg	10 µg
Drops per minute	15	30	45	60	75	90	105	120	135	150

*Based on a micro drip calibration of 60 drops equal to 1.0 milliliter.

LIDOCAINE DRIP CHART for ADULTS

FOR A CONCENTRATION OF 4 mg OF LIDOCAINE PER MILLILITER OF SOLUTION
1 g mixed in 250 ml of NS

Dosage = mg/minute*	1 mg	2 mg	3 mg	4 mg
Drops per minute	15	30	45	60

*Based on a micro drip calibration of 60 drops equal to 1.0 milliliter.

PEDIATRIC MEDICATION CHARTS

DO NOT EXCEED ADULT TOTALS **c = concentration**

	Premie	NB	3 Mos.	6 Mos.	1 Yr	2 Yr	4 Yr	6 Yr	8 Yr	10 Yr	12 Yr
Body Length in cm	0 to 53	54 to 58	59 to 65	66 to 74	75 to 80	81 to 86	87 to 99	100 to 113	114 to 132	133 to 158	159 to 189
Av. Body Wt kg	< 2.5	2.5 - 4	6	7	10	12	16	20	25	34	41
Activated Charcoal c=6.25 g/oz. dose = 1 g/kg	1 – 2.5 g	2.5 - 4 g	6 g	7 g	10 g	12 g	16 g	20 g	25 g	34 g	41 g
Adenosine c = 3 mg/ml dose = 0.1 mg/kg	-	0.25 – 0.4 mg	0.6 mg	0.7 mg	1 mg	1.2 mg	1.6 mg	2.0 mg	2.5 mg	3.4 mg	4.1 mg
Albuterol 1 unit dose (3 ml of 0.083% solution)	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit	1 unit
Atropine IV c = 0.1 mg/ml dose = 0.02 mg/kg	-	.1 mg	0.12 mg	0.14 mg	0.2 mg	0.24 mg	0.32 mg	0.4 mg	0.5 mg	0.68 mg	0.82 mg
Dextrose (D25) dose = 2 ml/kg	2 – 5 ml	5 - 8 ml	12 ml	14 ml	20 ml	24 ml	-	-	-	-	-
Dextrose (D50) dose = 1 ml/kg	-	-	-	-	-	-	16 ml	20 ml	25 ml	34 ml	41 ml
Diphenhydramine c = 10 mg/ml dose = 1 mg/kg	1 – 2.5 mg	2.5 – 4 mg	6 mg	7 mg	10 mg	12 mg	16 mg	20 mg	25 mg	34 mg	41 mg
Dopamine	**Refer to Pediatric Dopamine chart.**										
Epi1:10,000 IV/IO dose = 0.01 mg/kg	0.01 – 0.025 mg	0.025 – .04 mg	0.06 mg	0.07 mg	0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.25 mg	0.34 mg	0.41 mg

	Premie	NB	3 Mos.	6 Mos.	1 Yr	2 Yr	4 Yr	6 Yr	8 Yr	10 Yr	12 Yr
Body Length in cm	0 to 53	54 to 58	59 to 65	66 to 74	75 to 80	81 to 86	87 to 99	100 to 113	114 to 132	133 to 158	159 to 189
Av. Body Wt kg	< 2.5	2.5 - 4	6	7	10	12	16	20	25	34	41
Epi1:1000 SQ dose = 0.01 mg/kg	-	-	0.06 mg	0.07 mg	0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.25 mg	0.34 mg	0.41 mg
Fluid Challenge dose = 20 ml/kg	20 – 50 ml	50 – 80 ml	120 ml	140 ml	200 ml	240 ml	320 ml	400 ml	500 ml	680 ml	820 ml
Glucagon c = 1 mg/ml or 1 unit/ml dose = 0.05 mg/kg (up to 1 mg)	0.05 – 0.125 mg	0.125 – 0.2 mg	0.3 mg	0.35 mg	0.5 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg
Lidocaine IV c = 20 mg/ml dose = 1 mg/kg	-	2.5 – 4 mg	6 mg	7 mg	10 mg	12 mg	16 mg	20 mg	25 mg	34 mg	41 mg
Lidocaine ET c = 20 mg/ml dose = 3 mg/kg	-	7.5 - 12 mg	18 mg	21 mg	30 mg	36 mg	48 mg	60 mg	75 mg	102 mg	123 mg
Midazolam c = 1 mg/ml dose 0.1 mg/kg	0.2 mg	0.4 mg	0.6 mg	0.7 mg	1 mg	1.2 mg	1.6 mg	2 mg	2.5 mg	3.4 mg	4.1 mg
Morphine c = 10 mg/ml dose = 0.1 mg/kg	-	0.25 - 0.4 mg	0.6 mg	0.7 mg	1 mg	1.2 mg	1.6 mg	2 mg	2.5 mg	3.4 mg	4.1 mg
Naloxone c = 1 mg/ml dose = 0.1 mg/kg	0.1 – 0.25 mg	0.25 - 0.4 mg	0.6 mg	0.7 mg	1 mg	1.2 mg	1.6 mg	2 mg	2 mg	2 mg	2 mg

	Premie	NB	3 Mos.	6 Mos.	1 Yr	2 Yr	4 Yr	6 Yr	8 Yr	10 Yr	12 Yr
Body Length in cm	0 to 53	54 to 58	59 to 65	66 to 74	75 to 80	81 to 86	87 to 99	100 to 113	114 to 132	133 to 158	159 to 189
Av. Body Wt kg	< 2.5	2.5 - 4	6	7	10	12	16	20	25	34	41
Sodium Bicarb c = 1 mEq/ml dose = 1 mEq/kg	1 – 2.5 mEq	2.5 - 4 mEq	6 mEq	7 mEq	10 mEq	12 mEq	16 mEq	20 mEq	25 mEq	34 mEq	41 mEq

DOPAMINE DRIP CHART FOR PEDIATRICS

FOR A CONCENTRATION OF **800** µg of DOPAMINE PER MILLILITER SOLUTION

Patient Age	NB	NB	3 Mos.	6 Mos.	1 Yr	2 Yr	4 Yr	6 Yr	8 Yr	10 Yr	12 Yr
Body Length in cm	0-53	54-58	59-65	66-74	75-80	81-86	87-99	100-113	114-132	133-158	159-189
Weight in kgs	2	4	6	7	10	12	16	20	25	34	41
2 µg/min	0	1	1	1	1	2	2	3	4	5	6
3 µg/min	0	1	1	2	2	3	4	4	6	8	9
4 µg/min	1	1	2	2	3	4	5	6	7	10	12
5 µg/min	1	1	2	3	4	4	6	7	9	13	15
6 µg/min	1	2	3	3	4	5	7	9	11	15	18
7 µg/min	1	2	3	4	5	6	8	10	13	18	22
8 µg/min	1	2	4	4	6	7	10	12	15	20	25
9 µg/min	1	3	4	5	7	8	11	13	17	23	28
10 µg/min	1	3	4	5	7	9	12	15	19	25	31
11 µg/min	2	3	5	6	8	10	13	16	21	28	34
12 µg/min	2	4	5	6	9	11	14	18	22	31	37
13 µg/min	2	4	6	7	10	12	16	19	24	33	40
14 µg/min	2	4	6	7	10	13	17	21	26	36	43
15 µg/min	2	4	7	8	11	13	18	22	28	38	46
16 µg/min	2	5	7	8	12	14	19	24	30	41	49
17 µg/min	3	5	8	9	13	15	20	25	32	43	52
18 µg/min	3	5	8	9	13	16	22	27	34	46	55
19 µg/min	3	6	9	10	14	17	23	28	36	48	58
20 µg/min	3	6	9	10	15	18	24	30	37	51	61
FLOW RATE IN DROPS PER MIN based on a micro drip at 60 drops equal to 1ml.											

One 5 ml ampule of Dopamine (200 mg of dopamine per ampule) mixed in 250 ml of NS