



CONTRA COSTA
HEALTH

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cchealth.org

MEMORANDUM

24-MEMO-004

TO: EMS Service Providers, EMS Prehospital Personnel, 911 Field Provider Agencies, and Local Area Hospitals
FROM: Senai Kidane, MD, EMS Medical Director
DATE: May 15, 2024
SUBJECT: **Public Comment Period Open: Proposed Changes For 2025 Field Treatment Guidelines**

The Contra Costa County Emergency Medical Services Agency (CCCEMSA) has opened a public comment period for the proposed changes for 2025 Field Treatment Guidelines and requests your feedback.

All feedback must be submitted using the online public comment form link or QR code located below no later than May 29, 2024 at 5:00 p.m. This memo and attached documentation will be published to the CCCEMSA website at the website link below, and on the Contra Costa County EMS mobile application, "XCCEMS". Publishing to the website may take twenty-four (24) hours.

Online Public Comment Form Link:

<https://forms.office.com/g/fmzm4K8kAS>



Public Comment Form QR Code:

Attachments

1. Field Treatment Guideline Summary of Changes Public Comment Packet 2025

Field Treatment Guideline	2025 Summary of Updates	Reason for change/evidence/other notes
General		
G05 IV/IO Access	Deleted FTG. Re-located several of the PEARLS to other FTG/FP: Bullet 1 ...Cardiac Arrest... was moved to Pearls for AC01 - Cardiac Arrest Bullet 2 ...Hemodynamically unstable... was moved to A12 - Shock Bullet 4 ...Working venous catheter... was added as a "Note" to FP23 - Venous Access Bullet 7 ...Any prehospital fluids... was added to FP15 - IO Access Bullet 9 ...IV rates... was added as a "Note" to FP23 - Venous Access Bullet 10 ...Micro drip... was added to FP24 - Pediatric Medication Admin	Repetitive, as the info was already captured in the IV and IO FPs.
G06 VAD	Verified and Updated page 2 contact numbers for the 24hr VAD hotline. New Kaiser number, which his pager only. Removed number for CPMC, as it is no longer being used and there is no replacement.	Some of the numbers were found to be innaccuarte upon double-checking during review process
Adult Cardiac		
Adult Medical		
A06 Childbirth/Labor	Corrected misspelling of "gestation" under Crowning	Grammar error
Pediatric Cardiac		
PC04 Post Resuscitation (ROSC)	Updated FTG to mimic adult, removed directions out to bradycardia, blood glucose, and seizure. These interventions have been incorporated into the FTG.	Pediatric resuscitation is a highly stressful call, a uniform approach that mimics the adult will ensure consistent, evidence based practice in management of pediatric patients in which providers have achieved ROSC.
Pediatric Medical		
P05 Brief Resolved Unexplained Event (BRUE)	Added Gray Box direction and information for BRUE assessment	Added 4 bullet points to support detailed assessment Determine severity, nature and duration of episode Obtain a complete medical history Perform a comprehensive physical exam and Patients experiencing a BRUE should be transported to an appropriate hospital for further evaluation.
P08 Newly Born	Added "vigorously" to warm, dry and stimulate branch. Added Maintain warmth to HR >100 branch Added direction to Gray Box previously in PEARLS	Keeping a newborn warm is an essential part of newly born care. Added to all branches of care and included as a direction instead of a PEARL. Viaorously added to assure active stimulation is applied to newly born
P09 Pediatric Overdose/Toxic Ingestion	Updated FTG to mimic adult, added beta blocker or calcium channel blocker overdose with bradycardia intervention.	Pediatric overdose/toxic ingestion is a rare but potentially life threatening situation, a uniform approach that mimics the adult treatment algorithm will ensure consistent, evidence based practice in management of pediatric patients with overdose/toxic ingestion encountered in the field.
P11 Pediatraic Respiratory Distress	Updated language in PEARLS for croup and epiglottitis	Improved verbage, no change to content
Trauma		

T03 Burns	Re-wrote upper half of FTG. Addressed CO/CN positioning Added age specific fluid administration guidelines. Deleted last sentence in bullet #3 Added clarity to transport destination box	Needed to address/define inhalation injury, see s/sx area. Condensed the EMT and paramedic treatment portions into one box. Added fluid admin to be compliant with updated ABA guidelines . Minimized repetition
T06 Multi-System Trauma	Removed fluid admin section. Added reference to T01 Removed the "Over 65yrs" BP in yellow box (oversight from last year) Deleted bullets in Notes section that were specific to Head Trauma	Simplify and decrease multiple exits out to other FTG. Decrease repetitiveness regarding fluid administration
Field Procedures		
FP01 12-Lead ECG	Updated clinical indications, updated #9 to include direction to transport STEMI to appropriate STEMI center, removed "Monitor the patient while continuing to with treatment protocol. Emphasized #11 in red	#9 was added to assure consistency with destination policy and treatment guideline for STEMI.
FP15 Intraosseous Access	Added PEARL about fluids/meds from G05 FTG IO/IV to the top of this FTG Minimized wording under "Clinical Indications"	Clarifying IO reminders versus IV
FP16 Needle Decompression	Total re-write. Changed name to Pleural Decompression	Reminder about how invasive this procedure is. Provided clarity regarding required indications.
FP17 Pediatric Assessment	Changed pediatric assessment triage table to new visual, changed primary assessment table to smaller table with improved information, updated table for pediatric GCS so it is clear (removed fuzzy appearance)	Improved visuals and information to support reference for rapid assessment and considerations for interventions.
FP23 Vascular Access	Changed title to Intravenous Vascular Access Deleted #2 and #4c in the Procedure Section	Clearly separate IV versus IO procedures. Did not need IO remarks in this FTG, as we have a separate IO specific FTG
FP24 Pediatric Medication Administration	Updated clinical indications 0-14 instead of "under 15", added IN for intranasal	Minor verbage change only
FP25 Finger Stick	Changed LOC to level of consciousness and BLG to Blood Glucose Level (BGL)	Assures acronyms are spelled out for clarity
FP 26 EMT Epinephrine Administration	Updated language to align closer with Field Treatment Guideline, corrected age for Pedi auto injector to 0-14 years, fixed typos	Assure consistency of verbage between field procedure and treatment guideline
FP 27 EMT Narcan Administration	Updated clinical indications 2. Patient with suspected opioid (was narcotic) 2.c added depressed level of consciousness Removed Contraindications #2- "Relative contraindication for allergy to naloxone Added in bold to Equipment: 2. (pre-load IN or IM autoinjector) Added to procedure for Intramuscular	Corrections made to align for consistency Field Treatment Guideline, Drug Reference and Field Procedure. No changes to medication or directions
FP 29 Vaccination by EMS Personnel	Deleted FTG. It was only a placeholder this year.	Only outside RN's are providing vaccinations
Drug Reference		
Pediatric Glucagon	Added the indication: beta blocker/calcium channel blocker overdose	addition is necessary to remain consistent with FTG direction
Naloxone -page 5	Updated EMT option for IN or IM autoinjector	

Ventricular Assist Devices

History

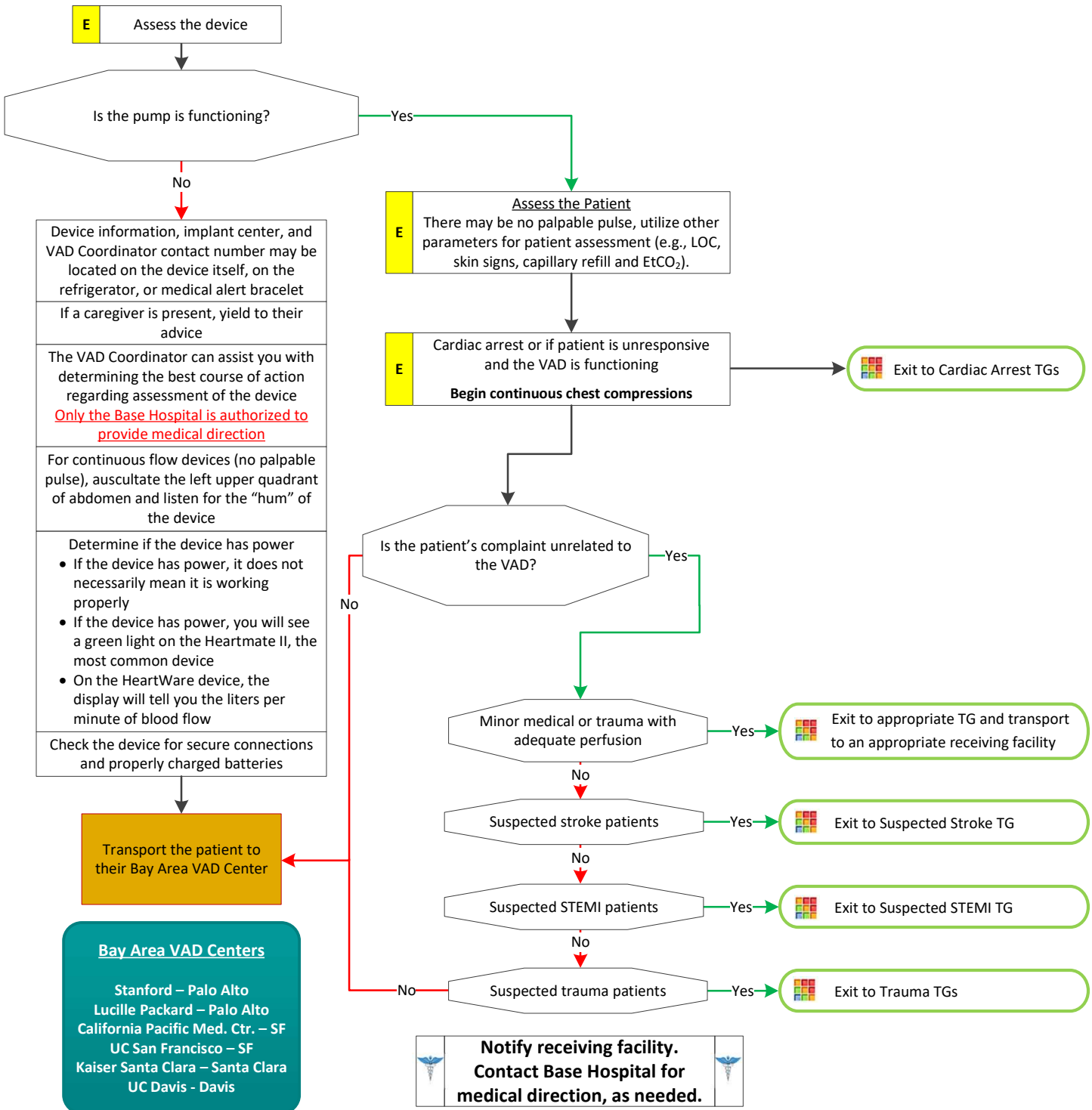
- Dispatch information about VAD at the location
- VAD Patient
- DNR/POLST

Signs and Symptoms

- VAD patient with:
 - Signs of shock
 - Difficulty breathing
 - In cardiac arrest

Differential

- Device failure
- Asymptomatic dysrhythmias

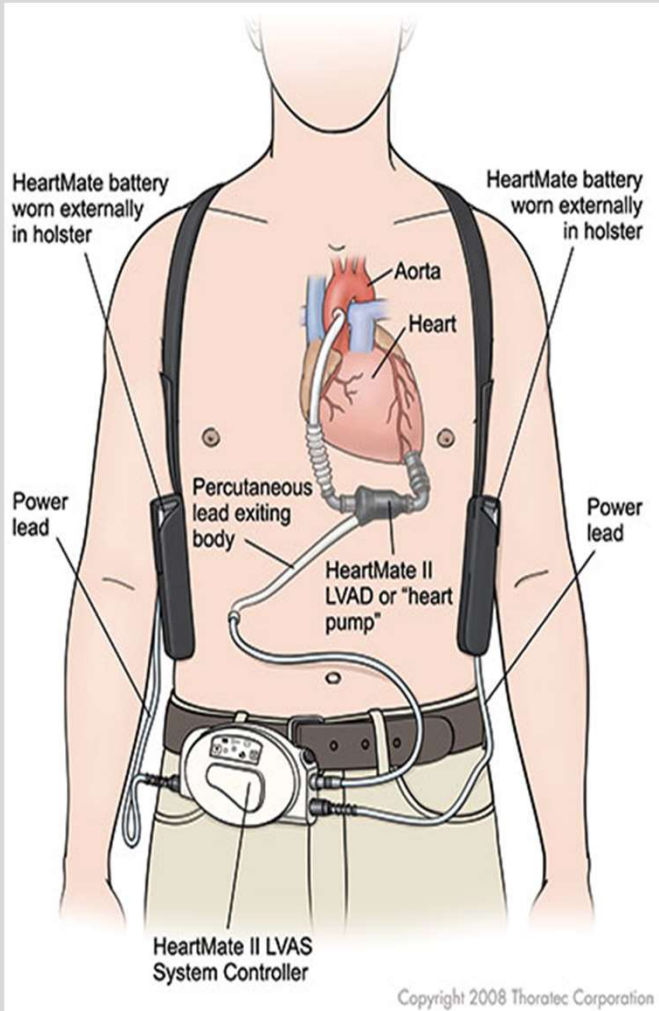


General Treatment Guidelines

- Bay Area VAD Centers**
- Stanford – Palo Alto
 - Lucille Packard – Palo Alto
 - California Pacific Med. Ctr. – SF
 - UC San Francisco – SF
 - Kaiser Santa Clara – Santa Clara
 - UC Davis - Davis



Ventricular Assist Devices



VAD CENTER	24-HOUR HOTLINE
Stanford Hospital	(650) 723-6661
Lucille Packard Children's Hospital at Stanford*	
UC San Francisco	(415) 443-5823 Pager
Kaiser Santa Clara	(408) 851-3750
UC Davis	(916) 734-2020
*Stanford Hospital and Lucille Packard Children's Hospital at Stanford share the same VAD Coordinators	

Pearls

- Patients may be cardioverted or defibrillated if symptomatic, but asymptomatic dysrhythmias do not require treatment.
- Consider contacting the Base Hospital if there are questions concerning destination choices.
- If possible, the patient's family member or caregiver should accompany the patient in the ambulance, and all related VAD equipment, including spare batteries, should also be transported with the patient.
- In arrest situations, a POLST/DNR or advanced directive may be available. Many VAD patients have made end of life care decisions.



Childbirth/Labor

History

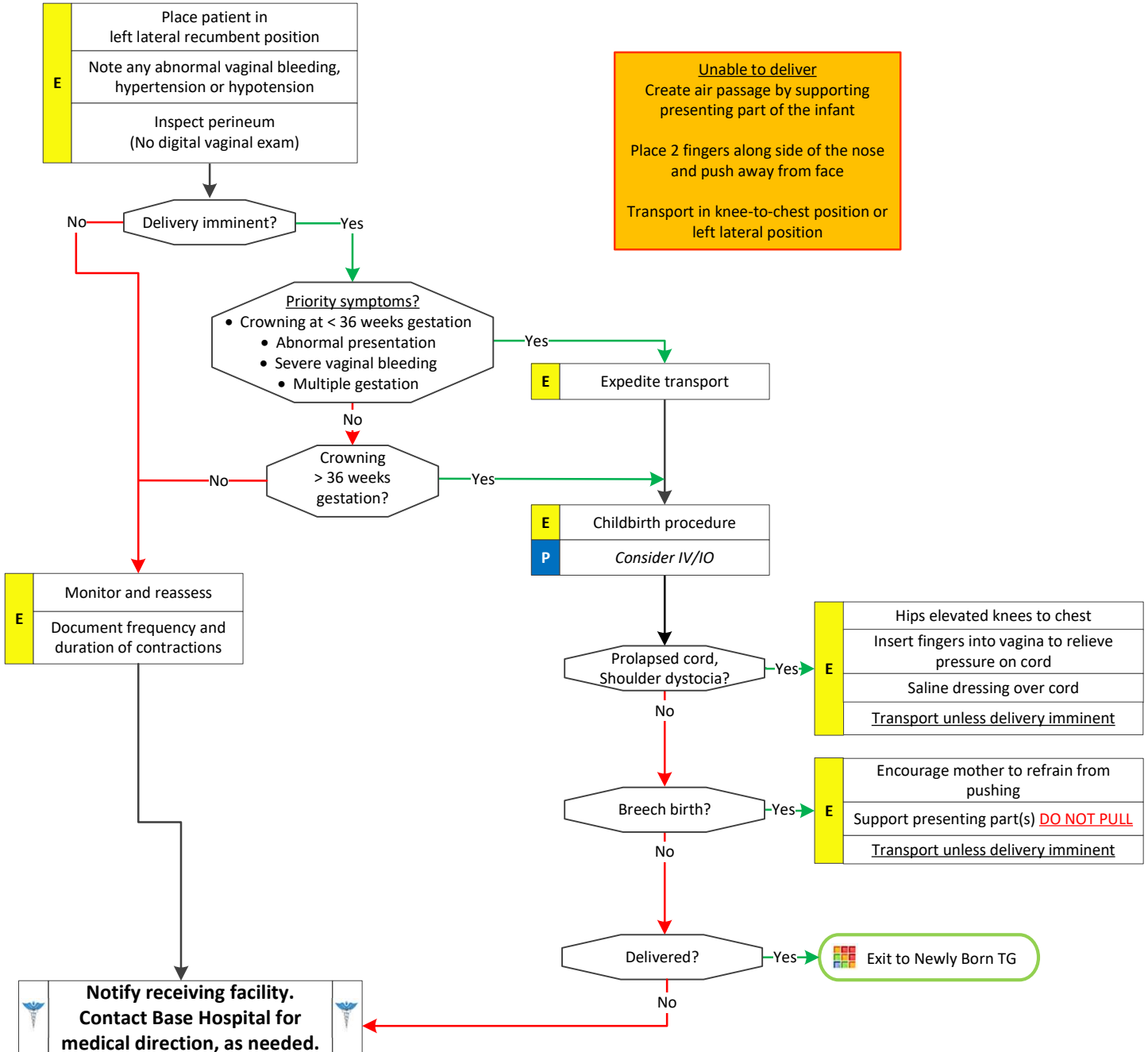
- Due date
- Time contractions started/how often
- Rupture of membranes
- Time/amount of any vaginal bleeding
- Sensation of fetal activity
- Medications
- Gravida/Para status
- Known high risk pregnancy
- Known pregnancy complications

Signs and Symptoms

- Contractions
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium
- Severe pain
- Abdominal tenderness

Differential

- Abnormal presentation
 - Buttock
 - Foot
 - Hand
- Prolapsed cord
- Placenta previa
- Abruptio placenta



Adult Medical Treatment Guidelines



Childbirth/Labor

- Document the following information during care in childbirth:
 - Para/gravida
 - Contraction frequency and length
 - Time of delivery
 - Time cord was cut
 - Name of the prehospital provider who cut the cord

Pearls

- After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control post partum bleeding.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.



Post Resuscitation (ROSC)

History

- Respiratory arrest
- Cardiac arrest

Signs and Symptoms

- Return of spontaneous circulation

Differential

- Continue to address specific differentials associated with the original dysrhythmia



Worsening bradycardia in ROSC patients may indicate impending rearrest

E	Repeat primary assessment
	Optimize ventilation and oxygenation <ul style="list-style-type: none"> • Maintain SpO₂ ≥ 94% • Maintain respiratory rate of 10/minute for EtCO₂ 35 – 45 • DO NOT HYPERVENTILATE
	Monitor vital signs
	Blood glucose (BGL) analysis
P	Establish IV/IO if not previously established
	<i>If BGL < 60 mg/dl</i> D-10 IV <u>Use Pediatape and refer to dosing guide</u>
	<i>For patients > 40kg</i> Intubate with cuffed ETT as appropriate or Place i-Gel, refer to weight-based guide
	<i>If poor perfusion or shock</i> (Refer to age dependent chart) Normal Saline bolus IV/IO <u>Use PEDIATAPE and refer to dosing guide</u> May repeat to age dependent goal SBP
<i>If signs of seizure</i> Midazolam IN (preferred) or IM <u>Use Pediatape and refer to dosing guide</u> Max single dose: 5 mg (≤ 40 kg) and 10 mg (> 40 kg)	

Age Dependent SBP for Signs of Shock

- Neonate: < 60mmHg or weak pulses
- Infant: < 70mmHg or weak pulses
- 1-10 years: < 70mmHg + (age in years x2)
- Over 10 years: <90mmHg

↓

	Notify receiving facility. Contact Base Hospital for medical direction, as needed.	
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Pearls

- Hyperventilation is a significant cause of hypotension/recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs.



Pediatric Brief Resolved Unexplained Event (BRUE)

History

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

Signs and Symptoms

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

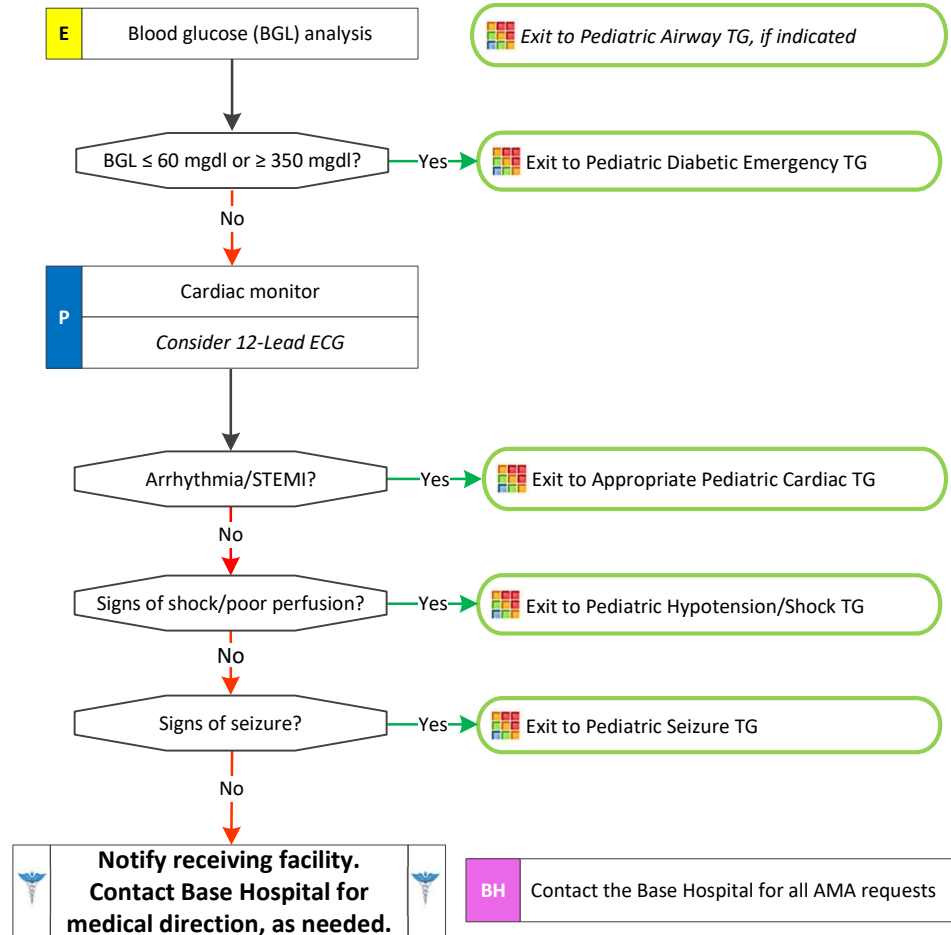
Differential

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

BRUE Definition

An infant ≤ 1 year who experienced an episode frightening to the observer that is characterized by:

- cyanosis or pallor
- absent, decreased, or irregular breathing
- choking or gagging
- change in muscle tone
- altered level of consciousness



- Determine severity, nature and duration of episode
- Obtain a complete medical history
- Perform a comprehensive physical exam
- Patients experiencing a BRUE should be transported to an appropriate hospital for further evaluation

Pearls

- BRUE is formally diagnosed in the ED only when there is no explanation for a qualifying event after a physician conducts an appropriate history and physical examination.
- Always consider non-accidental trauma in any infant who presents with BRUE.
- It is important to document sleeping position as parent co-sleeping is associated with infant deaths.



Newly Born

History

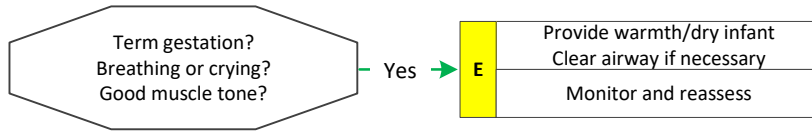
- Due date and gestational age
- Multiple gestation (twins, etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors (substance abuse, smoking)

Signs and Symptoms

- Just born
- Uncut umbilical cord
- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis or mottling (abnormal)
- Altered level of responsiveness
- Bradycardia

Differential

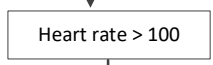
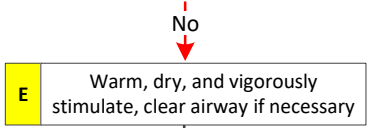
- Airway failure (secretions, respiratory drive)
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia



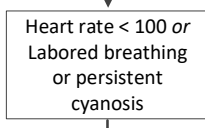
AT ANY TIME

If Return of Spontaneous Circulation

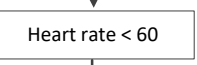
Exit to Post ROSC TG



E Monitor and reassess
Maintain warmth



E Supplemental Oxygen
BVM ventilations
If repeating cycle, take correction action by changing BVM position or technique.
Monitor SPO2
Maintain warmth
P Cardiac monitor



E Supplemental Oxygen
BVM ventilations
If repeating cycle, take correction action by changing BVM position or technique.
Monitor SPO2
Maintain warmth
Begin chest compressions 3:1 ratio
Cardiac monitor
P IV/IO procedure
Epinephrine (0.1 mg/ml) IV/IO every 3-5 minutes as needed
Use Pediatape and refer to dosing guide
Normal saline bolus
Use Pediatape and refer to dosing guide

Targeted SPO2 after Birth

- 1 min – 60-65%
- 2 min – 65-70%
- 3 min – 70-75%
- 4 min – 75-80%
- 5 min – 80-85%
- 10 min – 85-90%

Notify receiving facility.
Contact Base Hospital for medical direction, as needed.

Pediatric Treatment Guidelines



Newly Born

- Transport mother WITH infant whenever possible.
- It is extremely important to keep an infant warm. Do not place hot packs directly on baby's skin as it may cause severe burns.
- Place baby skin-to-skin on mother.
- Common pediatric terms used to describe children are defined as:
 - Newly born are ≤ 24 hours old
 - Neonates are ≤ 28 days old
 - Infants are ≤ 1 year old

Pearls

- Term gestation, strong cry/breathing and with good muscle tone generally will need no resuscitation.
- Most newborns requiring resuscitation will respond to stimulation, ventilation/BVM, compressions, or Epinephrine. If not responding, consider hypovolemia, pneumothorax, or hypoglycemia ($< 40\text{mg/dl}$).
- Most important vital signs in the newly born are respirations/respiratory effort and heart rate.
- Maternal sedation or narcotics will sedate an infant.
- Naloxone is no longer recommended for use in the newly born who may be sedated from maternal medications.



Pediatric Overdose/Toxic Ingestion

History

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

Signs and Symptoms

- Mental status changes
- Hypo or hypertension
- Decreased respiratory rate
- Tachycardia or dysrhythmias
- Seizures
- S.L.U.D.G.E.

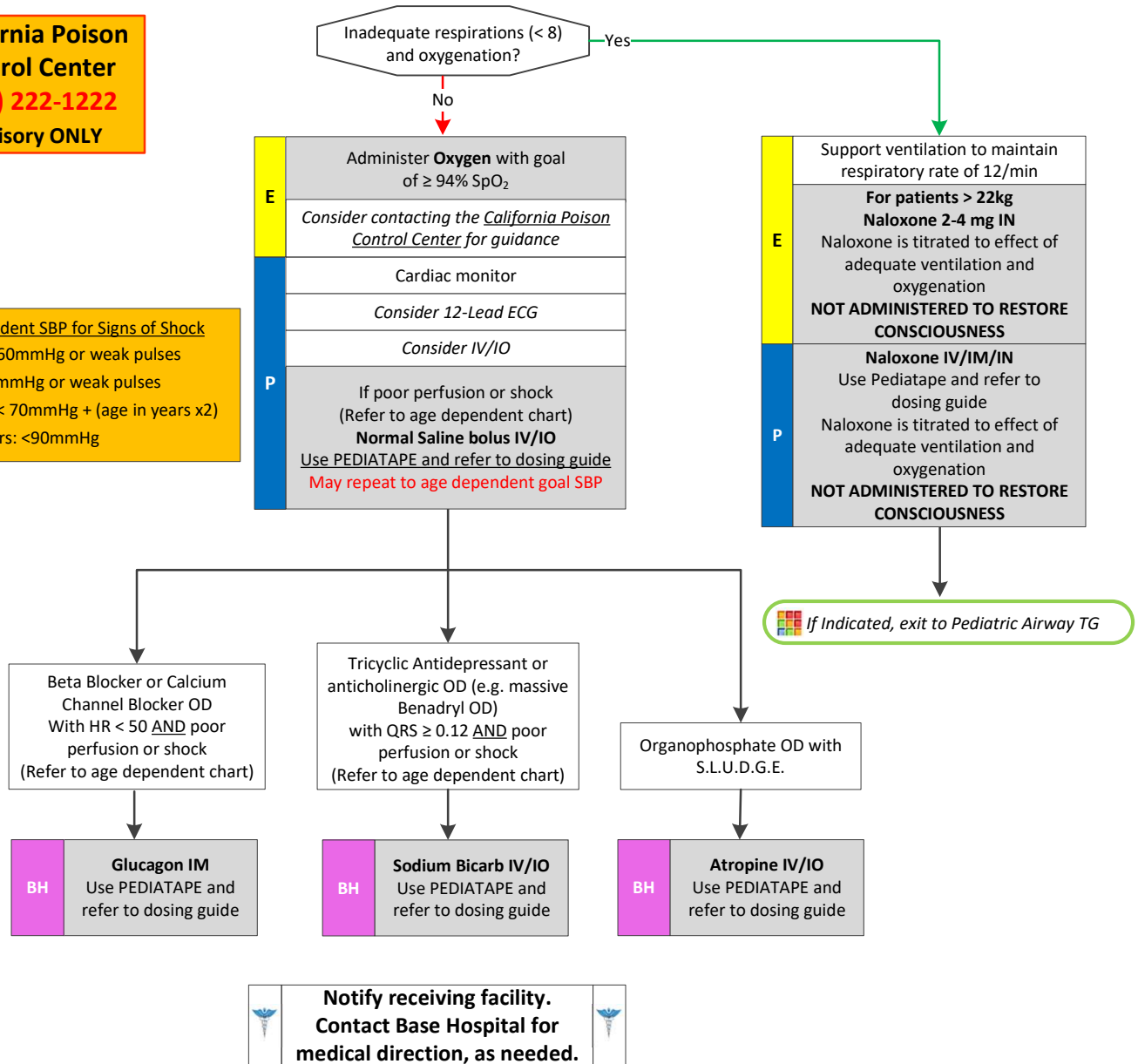
Differential

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

California Poison Control Center
(800) 222-1222
Advisory ONLY

Age Dependent SBP for Signs of Shock

- Neonate: < 60mmHg or weak pulses
- Infant: < 70mmHg or weak pulses
- 1-10 years: < 70mmHg + (age in years x2)
- Over 10 years: <90mmHg



Pediatric Treatment Guidelines

Pearl

- Do not rely on patient history of ingestion, especially in suicide attempts. Make sure the patient is still not carrying other medications or weapons. Bring bottles, contents, and emesis to ED.



Pediatric Respiratory Distress

History

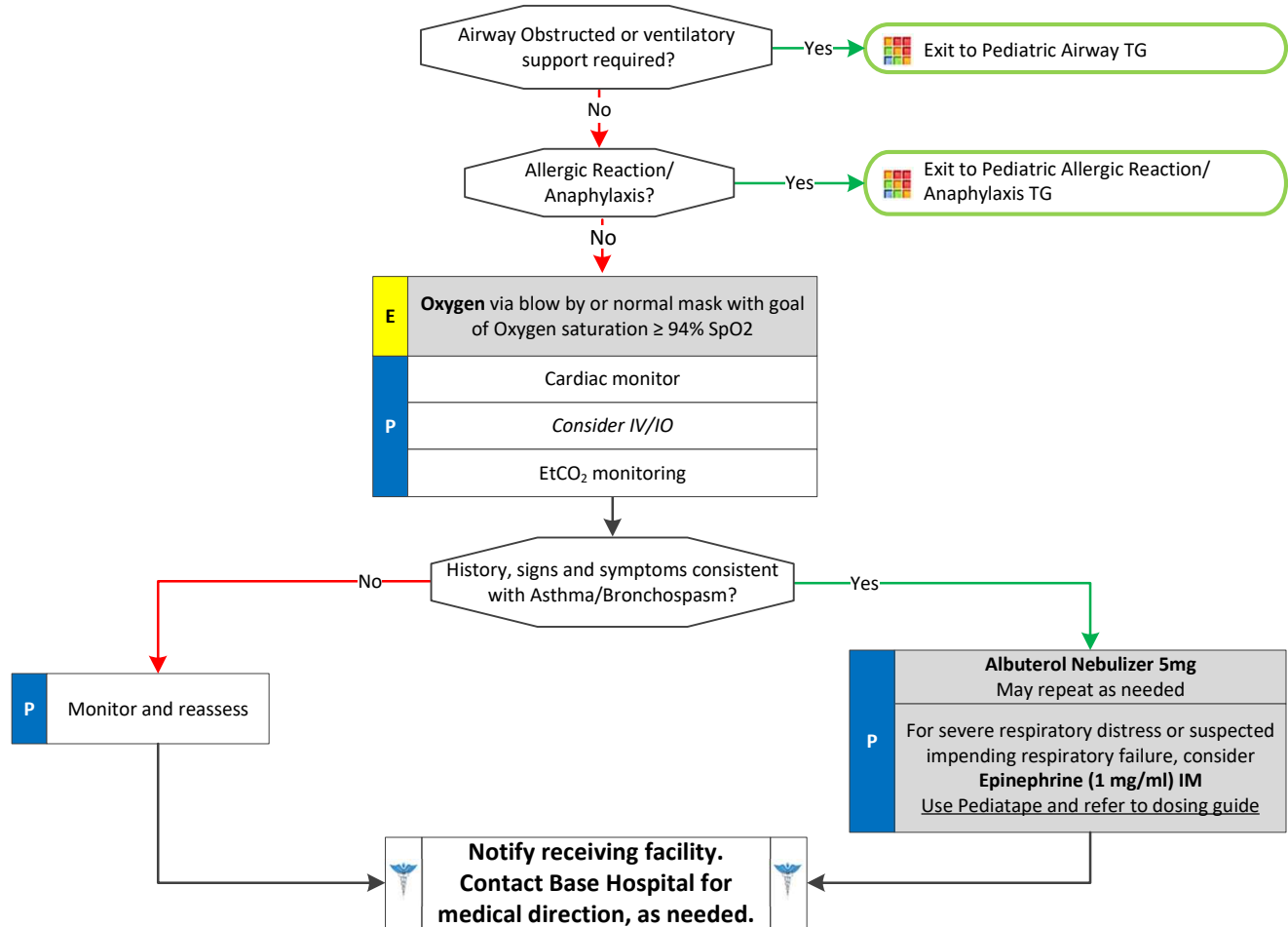
- Time of onset
- Possibility of foreign body
- Past medical history
- Medications
- Fever/Illness
- Sick contacts
- History of trauma
- History/possibility of choking
- Ingestion/Overdose
- Congenital heart disease

Signs and Symptoms

- Wheezing/Stridor/Crackles/Rales
- Nasal flaring/Retractions/Grunting
- Increased heart rate
- AMS
- Anxiety
- Attentiveness/Distractibility
- Cyanosis
- Poor feeding
- JVD/Frothy sputum
- Hypotension

Differential

- Asthma/Reactive Airway Disease
- Aspiration
- Foreign body
- Upper or lower airway infection
- Congenital heart disease
- Overdose/Toxic ingestion/CHF
- Anaphylaxis
- Trauma
- Epiglottitis



Pediatric Treatment Guidelines

- All respiratory patients must have continuous pulse oximetry and waveform capnography (EtCO₂).
- Do not force a child into a position; allow them to assume a position of comfort.

Pearls

- Bronchiolitis is a viral infection typically affecting infants which results in wheezing that may not respond to Albuterol.
- Croup is a viral infection affecting children > 2 years of age. Symptoms may include fever, gradual onset, and without drooling.
- Epiglottitis is a bacterial infection affecting children > 2 years of age. Symptoms may include fever, rapid onset, and the need to sit up. Drooling is common. Airway manipulation may worsen condition.



Burns

History

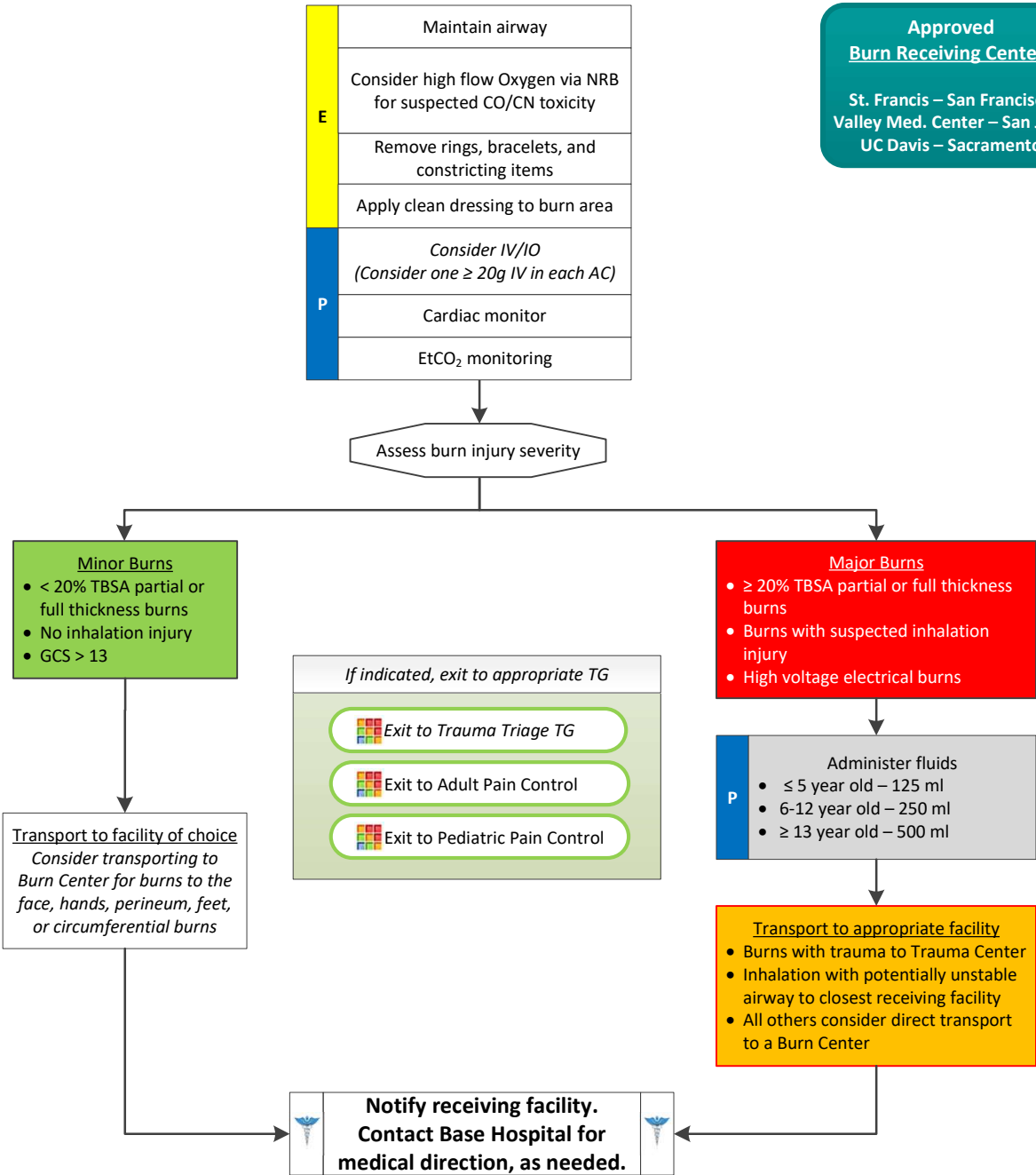
- Type of exposure (heat, gas, or chemical)
- Inhalation injury involved
- Time of injury
- Other trauma
- Past medical history
- Medications

Signs and Symptoms

- Inhalation injury: Respiratory distress or hoarse voice with soot in mouth/throat or nose
- ALOC or unconsciousness suggest CO/CN poisoning

Differential

- Superficial – red and painful (do not include in Total Body Surface Area)
- Partial thickness – blistering
- Full thickness – painless with charred or leathery skin
- Chemical injury
- Thermal injury
- Radiation injury
- Blast injury



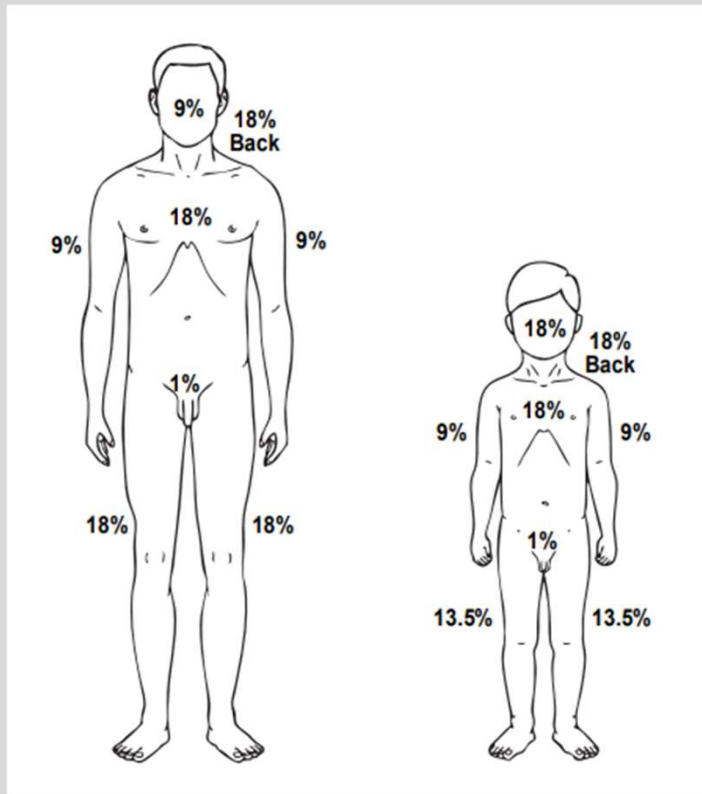
Approved Burn Receiving Centers

St. Francis – San Francisco
Valley Med. Center – San Jose
UC Davis – Sacramento

Adult and Pediatric Trauma/Environmental Treatment Guidelines



Burns



Rule of Nines

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

Burn Assessment Terminology

Approved Terminology	Former Terminology
Superficial	1st degree
Partial thickness	2nd degree
Full thickness	3rd degree

Burn assessment should be documented and reported using only approved terminology

- Early intubation is required when the patient experiences significant inhalation injuries. If the patient requires advanced airway management that cannot be quickly achieved in the field, transport to the nearest facility for stabilization prior to transfer to the Burn Center. Do not wait for a helicopter if airway patency is a critical concern.
- For major burns, do not apply wet dressings, liquids or gels to burns unless it is to remove whatever caused the burn (i.e. dry chemical agent, etc.). Cooling large burns may lead to hypothermia.
- Burn patients are often trauma patients. If burns are evident in the presence of trauma, follow trauma triage guidelines and transport to trauma center if activation criteria is met.
- Never administer IM pain medication into a burned area.

Pearls

- Airway burns may lead to rapid compromise of the airway and can be identified by soot around the nares or mouth or visible burns or edematous mucosa in the mouth.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.



Multi-System Trauma

History

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

Signs and Symptoms

- Evidence of trauma
- Pain, swelling, deformity, lesions, or bleeding
- ALOC
- Unconscious
- Respiratory distress or failure
- Hypotension or shock
- Arrest

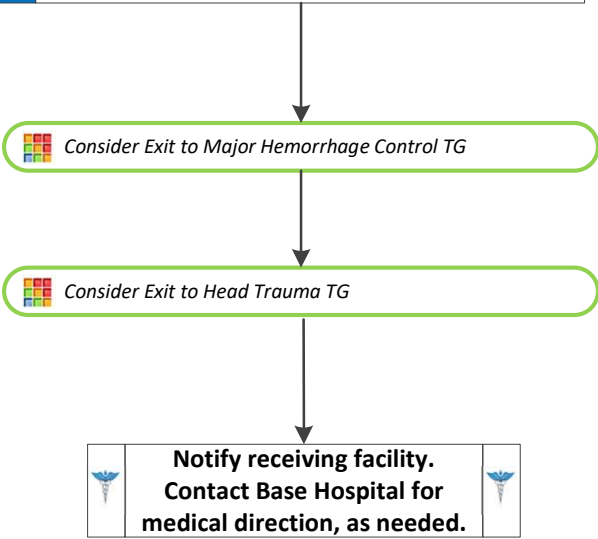
Differential

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

E	Control external hemorrhage Do not delay transport
	Secure airway and support ventilation <i>Consider SMR</i>
	Assess and stabilize injuries
P	Cardiac monitor
	Establish IV/IO
	<i>If indicated, perform needle decompression (FP16)</i>
	EtCO ₂ monitoring

Early transport
Limit scene time to 10 minutes
for critical patients

Reference T01
Trauma Triage Criteria



Age Dependent SBP for Signs of Shock
 • Neonate: < 60mmHg or weak pulses
 • Infant: < 70mmHg or weak pulses
 • 1-10 years: < 70mmHg + (age in years x2)
 • Over 10 years: < 90mmHg



Multi-System Trauma

- Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize jaw thrust technique to open the airway. An advanced airway should not be used in traumatic arrest.
- In cases of clear-cut traumatic arrest, Epinephrine is not indicated in PEA or asystole. Epinephrine will not correct arrest caused by a tension pneumothorax, cardiac tamponade, or hemorrhagic shock. If there is any doubt as to the cause of arrest, treat as a non-traumatic arrest.
- Assessment of baseline GCS is critical for patient care. Aggressively monitor and assess for changes by repeat examination.
- Hypotension is age dependent. This is not always reliable and should be interpreted in context with the patient's typical BP, if known. Shock may be present with a seemingly normal blood pressure initially. Hypotension usually indicates injury or shock and should be treated aggressively.

	Hypotension
Neonate	< 60 mmHg or weak pulses
Infant	< 70 mmHg or weak pulses
1-10 years	< 70 mmHg + (age in years x2)
Over 10 years	< 90 mmHg

Pearls

- ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.
- Do not overlook the possibility of associated domestic violence or child/elder abuse.



12-Lead ECG

Applies to:

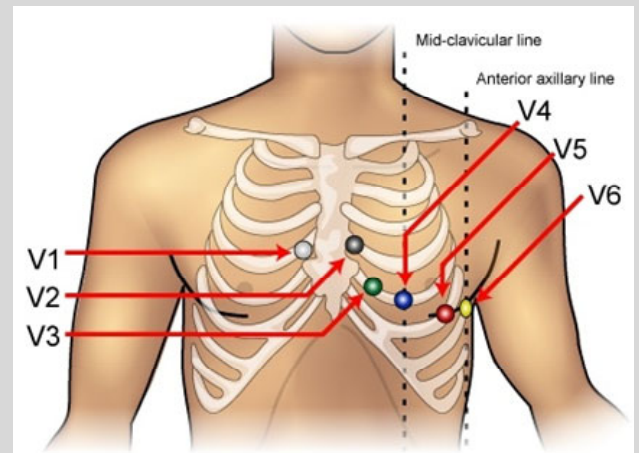
P Paramedic

Clinical Indications:

1. Chest pain with clinical indications of cardiac ischemia or dysrhythmia.
2. Patient presents with syncope, ROSC, abdominal pain or indications of suspected cardiac involvement.

Procedure:

1. Prepare ECG monitor and connect patient cable with electrodes.
2. Enter the required patient information: age, gender, incident number and patient's first and last initials into the ECG monitor.
3. Expose chest and prep as necessary (e.g. shaving). Modesty of the patient should be respected.
4. Apply chest leads and extremity leads using the following landmarks:
 - a. V1 – 4th intercostal space at right sternal border
 - b. V2 – 4th intercostal space at left sternal border
 - c. V3 – Directly between V2 and V4
 - d. V4 – 5th intercostal space at midclavicular line
 - e. V5 – Level with V4 at left anterior axillary line
 - f. V6 – Level with V5 at left midaxillary line
5. Instruct the patient to remain still.
6. Acquire the 12-Lead ECG.
7. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the 12-Lead acquisition may be interrupted until the noise is resolved.
8. Once acquired, as soon as possible, transmit 12-lead ECG
9. If computerized interpretation indicates *****ST ELEVATION MI CRITERIA***** the patient is to be transported to the nearest STEMI Receiving Center
10. Contact the STEMI Receiving Center as soon as feasible to notify them of a STEMI Alert and that a STEMI positive 12-Lead ECG has been transmitted to their facility.
11. **Download the cardiac monitor data as required by EMS policy and attach a copy of the 12-Lead ECG to the prehospital EHR.**
12. Document in the prehospital EHR: the 12-Lead procedure time, the ECG results, and the time of transmission to the STEMI Receiving Center for a STEMI positive ECG.



Intraosseous Access

Any prehospital fluids or medications approved for IV use may also be given through IO access.

Applies to:

P Paramedic

Clinical Indications:

1. Patients where rapid, regular IV access is unavailable and/or unsuccessful with any of the following:
 - a. Cardiac arrest
 - b. Shock or evolving shock, regardless of the cause.
 - c. Impending arrest or unstable dysrhythmia.

Contraindications:

1. Fracture of the targeted bone.
2. IO within the past 48 hours in the targeted bone.
3. Infection at the insertion site.
4. Burns that disrupt actual bone integrity at the insertion site.
5. Inability to locate landmarks or excessive tissue over the insertion site.
6. Previous orthopedic procedure near the insertion site (e.g. prosthetic limb or joint).

Location:

1. Proximal humerus (preferred site in patients with perfusing rhythm)
2. Proximal tibia
3. Distal tibia (if proximal humerus or proximal tibia are unsuitable)

Procedure:

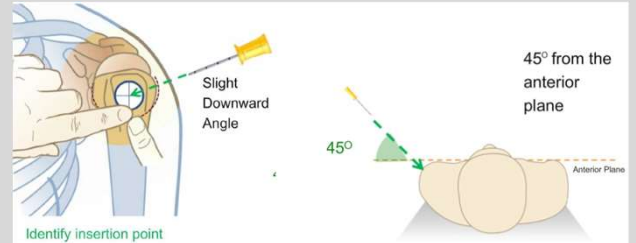
1. Locate the insertion site:
 - a. The proximal humerus site is the greater tubercle, identifiable as a prominence on the humerus when the arm is rotated inward and the patient's hand is on the abdomen.
 - b. The proximal tibia site is on the flat medial aspect of the tibia, 2 finger-breadths below the lower edge of the patella and medial to the tibial tuberosity.
 - c. The distal tibia site is 2 finger-breadths above the most prominent aspect of the medial malleolus (inside aspect of ankle) in the midline of the shaft of the tibia.
2. Prep the selected site with chlorhexidine and allow to air dry.
3. Select and load the appropriate sized needle on the driver.
 - a. For humeral access, a 45mm (yellow) needle is used except in patient adults less than 40kg.
 - b. For proximal and distal tibial access, the amount of soft tissue should be gauged to determine if a 25mm (blue) or 45mm (yellow) needle is appropriate.



Intraosseous Access

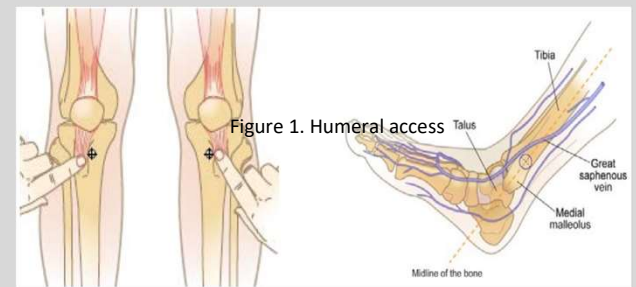
4. Introduce the IO needle through the skin without engaging the power driver:

- a. For humeral access, the direction of the needle should be perpendicular to the skin, directed at a downward angle of 45 degrees from the frontal plane, heading slightly downward toward the feet.
- b. For tibial sites, the direction of the needle should be at a 90 degree angle to the flat surfaces of the tibia.



5. Once the needle has touched the bone surface, assess to see if the black line on the needle is visible. If it is not visible, either a larger needle is needed, or in the case of the 45mm needle, the soft tissue is too thick to allow the use of that needle.

6. With firm pressure, insert needle using the power driver. In most cases, the hub should be flush or touching the skin. Verify that the needle is firmly seated in the bone; it should not wobble.



7. Remove the stylet and introduce Lidocaine if the patient is conscious.

- a. For adult patients not in arrest, 40mg of Lidocaine should be infused slowly over 1-2 minutes and allow 1 additional minute before flushing.
- b. For patients in arrest, Lidocaine is not necessary but may be needed if the patient regains consciousness.

Figure 2. Tibial Sites

8. Flush with 10ml Saline. In conscious patients, flush with 5ml Saline initially and repeat if necessary.

9. Attach stabilizer to skin.

10. Attach IV tubing to IO hub and begin infusion using pressure bag.

11. If painful, an additional 20mg of Lidocaine can be infused over 30 seconds, and after another minute, infusion should be restarted.

12. Monitor site for swelling or signs of infiltration and monitor pulses distal to area of placement.

13. Complete date and time and place wristband included with IO set on patient.



Pleural Decompression

Pleural decompression is a highly invasive procedure that is reserved for trauma patients that display all of the below clinical indications.

Applies to:

P Paramedic

Clinical Indications:

1. Severe respiratory distress
2. Diminished or absent breath sounds on the affected side
3. Hypotension (weak or absent radial pulses may be substituted for a BP measurement in patients with respiratory distress and penetrating trauma to the neck, chest or upper back)

Procedure:

1. Identify site:
2nd intercostal space, mid-clavicular line
2. Prepare the site with chlorhexidine
3. At a 90° angle insert a 14g catheter into the skin over the 3rd rib (superior border) into the pleural space until air escapes or a distinctive “give” is felt.
4. Remove the needle, leaving the plastic catheter in place.
5. Secure the catheter hub to the chest wall with an Asherman chest seal and stabilize within the flutter valve mechanism.
6. Re-check patient status and document the response to the procedure.

Notes:

1. Tracheal deviation and/or JVD may also be present but are late signs.
2. Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated, may require bilateral decompression even in the absence of the indications below.



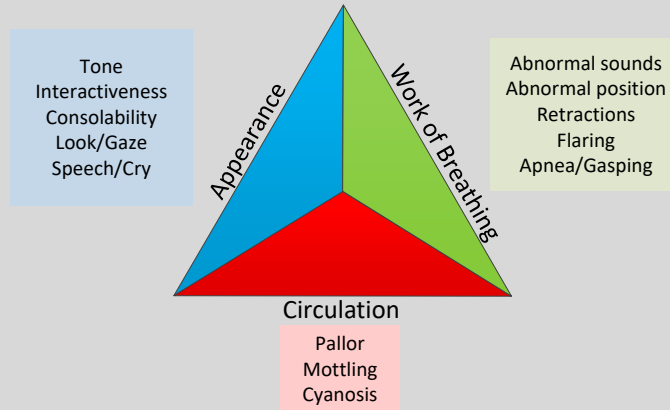
Pediatric Assessment

Clinical Indications:

1. Any child that can be measured with the Peditape.

Applies to:	
E	EMT
P	Paramedic

Pediatric Assessment Triangle:



Primary Assessment:

	Assessment findings	Interventions
Airway	Stridor, upper airway swelling, snoring	Back blows/abdominal thrusts, jaw thrust, chin lift, NPA/OPA, BVM
Breathing	Breath sounds, respiratory rate, end tidal capnography, pulse oximetry	Supplemental O2, BVM
Circulation	Blood pressure; capillary refill; presence, equality, and strength of pulses	IV/IO, 20ml/kg fluid boluses
Disability	Pupil size/reactivity, AVPU for mental status, blood glucose	D10, Airway protection



Pediatric Assessment

Pediatric GCS:

GCS	INFANT	SCORE	CHILD	SCORE
Motor Response	Spontaneous movement	6	Obeys commands	6
	Withdraws to touch	5	Localizes	5
	Withdraws to pain	4	Withdraws	4
	Flexion	3	Flexion	3
	Extension	2	Extension	2
	No response	1	No response	1
Verbal Response	Coos and babbles	5	Oriented	5
	Irritable cry	4	Confused	4
	Cries to pain	3	Inappropriate	3
	Moans to pain	2	Incomprehensible	2
	No response	1	No response	1
Eye Response	Opens spontaneously	4	Opens spontaneously	4
	Opens to speech	3	Opens to speech	3
	Opens to pain	2	Opens to pain	2
	No response	1	No response	1



Intravenous Vascular Access

Applies to:	
P	Paramedic

Clinical Indications:

1. Any patient where intravenous access is indicated (significant trauma, emergent, or potentially emergent medical condition) for fluid or medication therapy.

Procedure:

1. Saline locks may be used as an alternative to an IV tubing and IV fluid in every treatment guideline at the discretion of the ALS provider.
2. Use the largest catheter necessary based upon the patient's condition and size of veins.
3. Select the most appropriate site:
 - a. Arm – General fluid and medications. This is not a preferred site for patients in shock.
 - b. Antecubital – Preferred site for patients in shock, cardiac arrest, who will receive Adenosine, or when a peripheral site is not available.
 - c. External Jugular (EJ) **Adult Only** – Unstable patients who need emergent IV medications or fluids AND no peripheral site is available AND IO access is not appropriate.
4. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
5. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and flush the tubing, to remove all air bubbles from the line.
6. Place a tourniquet around the patient's extremity to restrict venous flow only.
7. Prep the skin with chlorhexidine and allow to air dry.
8. Insert the needle with the bevel up into the skin in a steady, deliberate motion until a blood flashback is visualized in the catheter.
9. Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into a sharps container without recapping.
10. Remove the tourniquet and connect the IV tubing or saline lock.
11. Open the IV to assure free flow of the fluid and then adjust the flow rate as clinically indicated.

Notes:

1. Any working venous catheter already accessed prior to EMS arrival may be used for EMS IV fluids and medications.
2. All IV fluid rates should be kept at a minimum rate to keep the vein open (TKO).



Pediatric Medication Administration

Patient Safety is medication administration is paramount. Accurate administration of pediatric medication requires multiple steps. Follow each of the steps below in every case.

Clinical Indications:

1. Any patient 0-14 years of age that requires a medication intervention.

	Applies to:
P	Paramedic

Procedure:

1. Assess Patient

Use the 6 RIGHTS – Right patient, Right drug (and indication), Right dose, Right route of administration, Right timing and frequency, and Right documentation.

2. Obtain weight estimate in Kilograms

- A. Use the Peditape measurement device in every child of appropriate height to determine color range of weight. *Peditape applies to patients less than 147 cm tall (4 foot, 10 inches)*
- B. If taller than the Peditape tape, estimate weight by patient/parent history or paramedic estimate and ALWAYS convert to kilograms using conversion table.

3. Determine volume on Drug Chart

- A. Consult drug chart based on medication name to determine volume in ml.
- B. If patient is 50 Kg or greater, utilize adult dosages.

4. Draw up medication

- A. Verify drug being administered.
- B. Utilize smallest syringe for volume (e.g. 1 ml or less, use tuberculin syringe).
- C. When giving intramuscular (IM) or intranasal (IN) medication, load syringe ONLY with amount to be administered.

5. Double check to confirm volume

- A. **Double-check volume and dose with drug chart in hand** – verbalize name of medication, volume, dosage and route to another paramedic or trained EMT on scene. If possible, have another provider visually confirm dose in syringe and as called for on drug card.

6. Administer Medication

- A. Administer medication by appropriate route.
- B. Observe the patient for signs of an adverse reaction.
- C. Use Micro drip sets for all patients ≤ 6 years of age.

7. Documentation

- A. Always document dosages in your patient care report in milligrams (or if Dextrose, in grams).
- B. Document response to medication and any observed adverse reaction.



Finger Stick Blood Glucose

Applies to:

E	EMT
P	Paramedic

Clinical Indications:

1. Suspected diabetic patient
 - a. Signs and symptoms may include, altered mental status, combative or irritable, diaphoresis, seizure, abdominal pain, nausea or vomiting, weakness, dehydration, deep or rapid breathing
 - b. Medical bracelet found, insulin or other diabetic medications found, information received from patient and bystanders
2. Decreased level of consciousness of unknown origin

Contraindications:

1. None

Equipment:

1. PPE
2. Glucometer
3. Chlorhexidine or Alcohol prep pads
4. Blood glucose test strips
5. Lancet & band-aid
6. Sharps container

Procedure:

1. Activate 9-1-1 if not already activated
2. Assess patient to confirm indications are met
3. Insert test strip into glucometer
4. Cleanse finger with chlorohexidine wipe
5. Gently massage finger to promote blood flow and pierce with lancet
6. Apply blood sample to blood strip and document results
7. If Blood glucose level (BGL) glucometer reading is < 60, follow treatment guideline for administration of oral glucose.
8. Continue to monitor, reassess and treat patient

Special Considerations:

1. Glucometer manufacturer instructions should be included in all Agency specific training

Treatment Guidelines:

1. Adult: G01, A03, A05, A07, A08, A12, A13, A16, A17, A18, A19, A20, T08
2. Pediatric: PC01, PC04, P03, P04, P05, P06, P07, P09, P12, P13



EMT Epinephrine Administration

Applies to:

E

EMT

Clinical Indications:

1. Patient exposed to allergen with any signs of airway compromise or other moderate to severe signs and symptoms such as:
 - Wheezing, stridor, respiratory distress
 - Repetitive cough
 - Throat/chest tightness/restriction
 - Lightheadedness, syncope, hypotension, shock
 - Repeated vomiting or severe abd cramps
 - Throat swelling (edema) or moderate-severe tongue swelling

Contraindications:

1. Use caution with patients who are >50 years of age and patients with cardiac history
 - a. Patients >50 years of age should receive pediatric dose (0.14 mg)

Equipment:

1. PPE
2. Epinephrine auto-injector (adult and pediatric)
3. Chlorhexidine or Alcohol prep pads
4. Sharps container

Procedure:

1. Activate 9-1-1 if not already activated
2. Assess patient to confirm indications are met
 - a. Remove allergens
 - b. Manage life threats: airway, breathing, and circulation
3. Consider aseptic technique if appropriate
4. Administer appropriate epinephrine auto-injector (record time of administration)
 - a. **Adult auto-injector:** 15 through 49 years of age
 - b. **Pediatric auto-injector:** 0 through 14 years of age and > 50 years of age
5. Continue to monitor, reassess and treat patient
 - a. Be ready to support ventilations
 - b. Secondary administration should be via IV route by a Paramedic

Special Considerations:

1. Manufacturer instructions should be included in all agency specific training

Treatment Guidelines:

1. A04, P02



EMT Naloxone Administration

Applies to:

E

EMT

Clinical Indications:

1. Patient >22 kg. (50 lbs.)
2. Patient with suspected opioid overdose and inadequate breathing (respiratory rate <8). Signs and symptoms include:
 - a. Deep snoring or gurgling
 - b. Pale and or clammy skin
 - c. Depressed level of consciousness (LOC), no response to stimulation, heavy nod
 - d. Pinpoint pupils

Contraindications:

1. Patient is breathing adequately and able to maintain own airway
2. Not advised when patient has exercised their right under the California End of Life Act, or are on hospice, or for the newly born

Equipment:

1. PPE
2. Naloxone prefilled syringe (pre-load IN or IM auto-injector)
3. Nasal atomizer (pre-load)
4. Chlorohexidine prep pads or alcohol pads
5. Sharps container

Procedure:

1. Activate 9-1-1 if not already activated
2. Assess patient to confirm indications are met
 - a. Manage life threats, airway, breathing and circulation
3. Administration of naloxone should be titrated to effect adequate breathing not to restore consciousness.
4. Consider aseptic technique if appropriate
5. Administer naloxone
 - Intranasal (IN)
 - a. Attach nasal atomizer
 - b. Administer 2-4 mg into each nostril
 - Intramuscular (IM)
 - a. Expose and prep site
 - b. Trigger auto-injector
6. Prepare for patient to vomit; utilize recovery position and suction
7. Continue to monitor, reassess, and treat patient

Special Considerations:

1. Manufacturer instructions should be included in all Agency specific training

Treatment and Field Procedure Guidelines:

1. G02, G03, A13, A14, P08, P09, P10, FP09



Glucagon

Indications: Hypoglycemia, Beta Blocker/Calcium Channel Blocker Overdose
Concentration = 1 mg/ml

COLOR	Doses (mg)	Give (ml)
Gray	0.5 mg	0.5 ml
Pink	0.5 mg	0.5 ml
Red	0.5 mg	0.5 ml
Purple	0.5 mg	0.5 ml
Yellow	0.5 mg	0.5 ml
White	0.5 mg	0.5ml
Blue	0.5 mg	0.5 ml
Orange	1 mg	1 ml
Green	1 mg	1 ml
40kg	1 mg	1 ml
50kg	1 mg	1 ml



Drug Reference

Drug	Indication	Dosing	Cautions	Comments
Midazolam	Behavioral emergency	Initial - 5mg IM <i>or</i> 1-3mg IV in 1mg increments May repeat to a max of 5mg For excited delirium Initial – 10mg IM May repeat to a max of 10mg For patients ≥ 12 years of age only. Refer to pediatric dosing guide	Use caution in patients over 60 years of age.	Observe respiratory status after administration. For pediatric patients, repeat administration require Base Hospital orders.
	Sedation for pacing or cardioversion	1mg IV/IO Titrate in 1-2mg increments to a max of 5mg Refer to pediatric dosing guide		
	Sedation of patient with an advanced airway	2-5mg IV/IO May repeat to a max of 5mg Refer to pediatric dosing guide		
Naloxone	Respiratory depression or apnea	2-4mg IN <i>or</i> 1-2mg IV/IM Refer to pediatric dosing guide	Abrupt withdrawal symptoms and combative behavior may occur.	IN administration preferred unless patient is in shock or has copious secretions/blood in nares. Shorter duration of action than that of narcotics. Titrate to effect of normal respirations; it is not necessary to fully wake the patient.
Naloxone	Overdose	Preload delivery only	See Naloxone	See Naloxone

