Treatment Protocols Index

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San Mateo County Emergency Medical Services

Guide to Protocol Utilization

History
- Important history items
- Circumstances of event
- SAMPLE
- Time of onset
- Duration

Signs and Symptoms
- Important signs and symptoms specific to each protocol

Differential
- A list of other diseases or injuries that should be considered

BLACK BOX

Highlights important information

G01 General – Routine Medical Care Protocol

Will be used on all patients and will not appear on individual protocols

RED BOX

Highlights critical information

May direct to another protocol

Signals protocol within a protocol

Indicates entry/exit from/to another protocol(s)

Information box

Decision Point
Darker outline to highlight

Teal Shading
Specialty hospital information and alerting when criteria are met

Red Shading of Information Box
Medication (Bolded) Contraindicated
Base contact advised if you want to administer

Gray Shading of Information Box
Medication (Bolded) Administration
Dosages found on SMC Drug Card
Normal face provides guidance if present

Orange Shading of Information Box
Indicates transport decision based boxes that may not be to the closest hospital

EMS Provider Legend	
R	Emergency Medical Responder
E	Emergency Medical Technician (EMT)
O	EMT Optional Scope
P	Paramedic

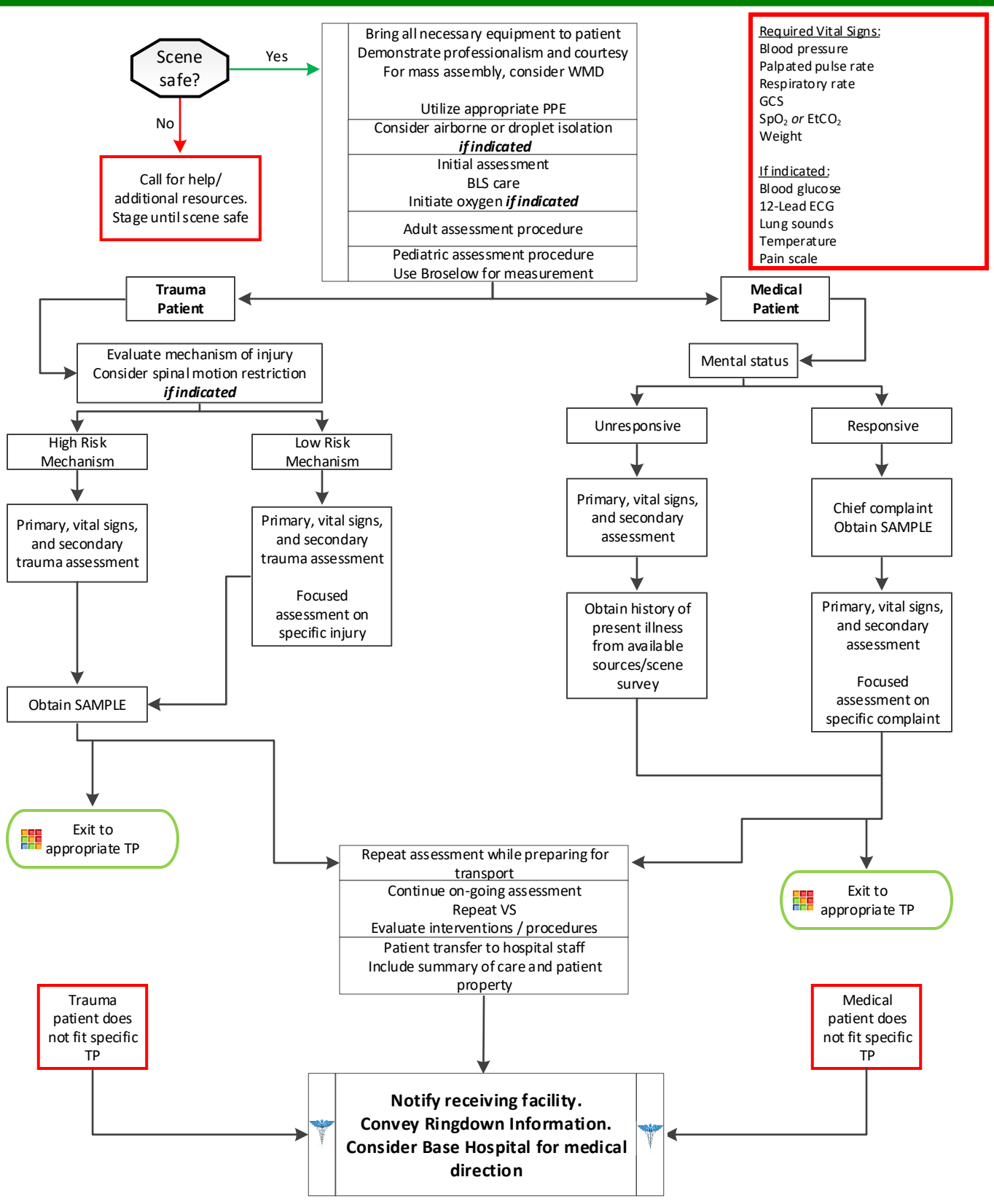
Notification and Medical Direction Legend
Notify receiving facility. Consider Base Hospital for medical direction

Pearls
- Important information specific to each protocol will appear here.
- Will usually appear on last page of specific protocol.
- Important exam items listed here specific to the protocol.

Protocol Introduction

San Mateo County Emergency Medical Services

Routine Medical Care



General Treatment Protocol

Routine Medical Care

Scene Safety Evaluation: Identify potential hazards to prehospital providers, patient, and public. Identify the number of patients and utilize triage protocol if indicated. Observe patient position and surroundings.

General: All patient care must be appropriate to the provider level of training and documented in the ePCR. The ePCR narrative should be considered a story of the circumstances, events, and care of the patient and should allow the reader to understand the complaint, assessment, treatment, why procedures were performed, and why indicated procedures were not performed as well as ongoing assessments and response to treatment and interventions.

Adult Patient: An adult should be suspected of being acutely hypotensive when systolic blood pressure is less than 90mmHg. Diabetic patients and women may have atypical presentations of cardiac-related problems such as MI. General weakness can be the symptom of a very serious underlying process. Beta blockers and other cardiac drugs may prevent a reflexive tachycardia in shock with low to normal pulse rates.

Geriatric Patient: Falls, car collisions, hip fractures, and dislocations have high mortality rates. Altered mental status is not always dementia. Always check BGL and assess for signs for stroke, trauma, etc. with any alteration in a patient's baseline mental status. Minor or moderate injury in the typical adult may be very serious in the elderly.

Pediatric Patient: A pediatric medical patient is defined as any patient who can be measured on a Broselow Tape. A pediatric medical patient is defined as any patient < 15 years of age. Special needs children may require continued use of Pediatric based protocols regardless of age and weight. Initial assessment should utilize the Pediatric Assessment Triangle which encompasses appearance, work of breathing and circulation to skin. The order of assessment may require alteration dependent on the developmental state of the pediatric patient. Generally the child or infant should not be separated from the caregiver unless absolutely necessary during assessment and treatment.

Special note on oxygen administration and utilization: Oxygen in prehospital patient care is probably over utilized. Oxygen is a pharmaceutical drug with indications, contraindications as well as untoward side effects. Utilize oxygen when indicated, not because it is available. A reasonable target oxygen saturation for most patients is 92% regardless of delivery device.

Pearls

- Utilize body substance isolation for all patients.
  - **All-hazards precautions** include standard PPE plus airborne and contact precautions. This level of precaution is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g., Ebola, MERS, SARS).
  - **Airborne precautions** include standard PPE plus a N95 or P100 mask. This level of precaution is utilized for very small germs like tuberculosis, measles, and chicken pox.
  - **Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O_2 mask for the patient. This level of precaution should be utilized when influenza, meningitis, mumps, streptococcal pharyngitis and other illnesses spread via large particle droplets are suspected. A patient with a potentially infectious rash should be treated with droplet precautions.
  - **Contact precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact and strict hand washing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g., MRSA and VRE), scabies, herpes zoster (shingles), or other illnesses spread by contact are suspected.
- Timing of transport should be based on the patient's condition and the destination policy.
- Never hesitate to contact the Base Hospital as a high risk refusal resource for any patient who refuses transport.
- SAMPLE: Signs/Symptoms; Allergies; Medications; PMH; Last oral intake; Events leading to injury/illness.
- For patients on whom a cardiac monitor has been placed, the standard of care and expectation is that they remain on the cardiac monitor until such time that transfer of care has occurred at the hospital.

Routine Medical Care

Trauma Ringdowns

- Unit ID (i.e. M107 or San Mateo Medic 42)
- Code 2 or Code 3 with **trauma activation**
- Age
- Gender
- Mechanism of Injury: Blunt vs. penetrating
  - MVA
    - Restrained vs. unrestrained
    - Location inside car
    - Speed
    - Type of MVA (e.g., head-on/rear-ended/ t-bone/rollover
    - Damage
    - Airbag deployment
  - FALL
    - Height
    - Surface
    - Taking blood thinners?
  - ASSAULT
    - Punched, kicked, struck by an object
  - GSW
    - Wound location(s)
    - Type of weapon (e.g., handgun/shotgun/ rifle)
  - STABBING
    - Wound location(s)
    - Size of blade
    - Type of blade (e.g., serrated or smooth)
- Chief complaint
- Mental status and GCS
- Physical findings
- Vital signs (BP/HR/RR/O_2 sat/BGL)
- Treatment
- ETA
- How do you copy?

Stroke/ALOC Ringdowns

- Unit ID (i.e. M107 or San Mateo Medic 42)
- Code 2 or Code 3 with **stroke alert**
- Age
- Gender
- Time last known well
- Mental status and GCS
- Chief Complaint
- Physical findings
- Vital signs (BP/HR/RR/O_2 sat/BGL/Temp)
- Treatment
- Patient is positive/negative for blood thinners
- MR# or patient name and DOB
- ETA
- How do you copy?

STEMI/Medical Ringdowns

- Unit ID (i.e. M107 or San Mateo Medic 42)
- Code 2 or Code 3 with **STEMI alert**
- Age
- Gender
- Chief Complaint
- Physical findings
- Vital signs (BP/HR/RR/O_2 sat/BGL/Temp)
- Treatment
- 12-Lead ECG has been transmitted to your facility
- MR# or patient name and DOB
- ETA
- How do you copy?

Best family contact and phone number must be gathered on all patients and relayed to receiving hospital staff during transfer of care

San Mateo County Emergency Medical Services

End of Life Care

History
- Terminal illness
- Hospice care
- POLST or DNR

Signs and Symptoms
- AMS
- Congestion
- Change in breathing
- Change in pulse
- Fever

Differential
- Natural end of life
- Medication OD

E

If needed, provide immediate supportive care
- Oxygen
- Open and maintain the airway using non-invasive means ***only*** (e.g., chin lift or jaw thrust)
- Suction as necessary
- Position for comfort
- Control external hemorrhaging
- Immobilize obvious fractures using techniques to minimize pain

Review POLST, DNR, or Final Attestation form (*if present*).
Honor wishes listed on legal form

Honor and respect patient/family wishes for transport after discussion

EMS may be summoned by family for a patient who has taken a lethal dose of medication under the California End of Life Option Act.

Respect the patient's wishes, but if family objects and requests intervention or transport, initiate comfort care.

Is the patient on hospice?

Yes

If family member with decision-making authority is not present, ask for the phone number for ***their*** Hospice Nurse if not already on scene

Contact Hospice Nurse

Let Hospice Nurse discuss options with family, even if only over the phone

The family and Hospice Nurse should decide on an appropriate course of treatment or decision to transport

Transport to appropriate receiving center or requested facility of choice

No

P

Administration of Naloxone is not advised

Determine level of pain and treat if indicated

For pain consider, **Fentanyl**

Monitor and reassess 5 minutes following administration

If transport is declined, complete Refusal and thoroughly document encounter

Notify receiving facility. Consider Base Hospital for medical direction

General Treatment Protocols

Pearls
- Patients who have been deemed terminally ill by two independent physicians have the right under the California End of Life Option Act to end their life with dignity at a time that they choose themselves. EMS personnel should be aware of and familiar with this act. Refer to Operations 10 for additional information.
- Naloxone will not have an affect on the drugs prescribed for death with dignity patients.

End of Life Care

HIPAA PERMITS DISCLOSURE OF POLST TO OTHER HEALTH CARE PROVIDERS AS NECESSARY

Physician Orders for Life-Sustaining Treatment (POLST)

EMSA #111 B (Effective 1/1/2016)*

First follow these orders, then contact Physician/ NP/ PA. A copy of the signed POLST form is a legally valid physician order. Any section not completed implies full treatment for that section. POLST complements an Advance Directive and is not intended to replace that document.

Patient Last Name:	Date Form Prepared:
Patient First Name:	Patient Date of Birth:
Patient Middle Name:	Medical Record #: *(optional)*

A Check One — **CARDIOPULMONARY RESUSCITATION (CPR):** *If patient has no pulse and is not breathing. If patient is NOT in cardiopulmonary arrest, follow orders in Sections B and C.*

- ☐ **Attempt Resuscitation/CPR** (Selecting CPR in Section A **requires** selecting Full Treatment in Section B)
- ☐ **Do Not Attempt Resuscitation/DNR** (Allow Natural Death)

B Check One — **MEDICAL INTERVENTIONS:** *If patient is found with a pulse and/or is breathing.*

- ☐ **Full Treatment – primary goal of prolonging life by all medically effective means.** In addition to treatment described in Selective Treatment and Comfort-Focused Treatment, use intubation, advanced airway interventions, mechanical ventilation, and cardioversion as indicated.
  - ☐ ***Trial Period of Full Treatment.***
- ☐ **Selective Treatment – goal of treating medical conditions while avoiding burdensome measures.** In addition to treatment described in Comfort-Focused Treatment, use medical treatment, IV antibiotics, and IV fluids as indicated. Do not intubate. May use non-invasive positive airway pressure. Generally avoid intensive care.
  - ☐ ***Request transfer to hospital only** if comfort needs cannot be met in current location.*
- ☐ **Comfort-Focused Treatment – primary goal of maximizing comfort.** Relieve pain and suffering with medication by any route as needed; use oxygen, suctioning, and manual treatment of airway obstruction. Do not use treatments listed in Full and Selective Treatment unless consistent with comfort goal. ***Request transfer to hospital only if comfort needs cannot be met in current location.***

Additional Orders: _____

C Check One — **ARTIFICIALLY ADMINISTERED NUTRITION:** *Offer food by mouth if feasible and desired.*

- ☐ Long-term artificial nutrition, including feeding tubes. Additional Orders: _____
- ☐ Trial period of artificial nutrition, including feeding tubes. _____
- ☐ No artificial means of nutrition, including feeding tubes. _____

D — **INFORMATION AND SIGNATURES:**

Discussed with: ☐ Patient (Patient Has Capacity) ☐ Legally Recognized Decisionmaker

- ☐ Advance Directive dated _____, available and reviewed →
- ☐ Advance Directive not available
- ☐ No Advance Directive

Health Care Agent if named in Advance Directive: Name: _____ Phone: _____

Signature of Physician / Nurse Practitioner / Physician Assistant (Physician/NP/PA)
My signature below indicates to the best of my knowledge that these orders are consistent with the patient's medical condition and preferences.

Print Physician/NP/PA Name:	Physician/NP/PA Phone #:	Physician/PA License #, NP Cert. #:
Physician/NP/PA Signature: *(required)*		Date:

Signature of Patient or Legally Recognized Decisionmaker
I am aware that this form is voluntary. By signing this form, the legally recognized decisionmaker acknowledges that this request regarding resuscitative measures is consistent with the known desires of, and with the best interest of, the individual who is the subject of the form.

Print Name:		Relationship: *(write self if patient)*
Signature: *(required)*	Date:	**FOR REGISTRY USE ONLY**
Mailing Address (street/city/state/zip):	Phone Number:	

SEND FORM WITH PATIENT WHENEVER TRANSFERRED OR DISCHARGED

*Form versions with effective dates of 1/1/2009, 4/1/2011 or 10/1/2014 are also valid

POLST forms are generally copied on pink paper to help ensure that the document stands out and is followed. However, POLST on any paper color is valid.

Unlike POLST, there is no standardized DNR order form. If you have doubt of a DNR order authenticity, initiate BLS care and contact the Base Hospital for guidance.

Pearls

- Hospice patients and those on palliative end of life care are often heavily medicated with pain medications. Administration of Naloxone, even in small amounts, can result in unnecessary suffering.
- A Medic Alert Bracelet or Medallion stamped DNR is a valid DNR order.
- Follow the wishes outlined in a signed POLST or DNR order. A competent patient or designated decision maker acting on behalf of the patient can override POLST.
- If a POLST or DNR order is not immediately available, immediately initiate BLS supportive care. Do not delay care while waiting for the form.
- If transport is initiated at the request of the family and the patient subsequently goes into cardiac or respiratory arrest during transport, continue to the closest appropriate hospital.
- Always involve the patient's assigned Hospice Nurse, even if it is by phone. It is important to recognize that families may be educated on what to expect with a dying family member, but no amount of preparation can eliminate the stress and grief of watching a loved one die.
- Contact the Base Hospital for direction or assistance with family in the absence of a Hospice Nurse if necessary.

Ventricular Assist Devices

Bay Area VAD Centers

Stanford – Palo Alto
Lucile Packard – Palo Alto
California Pacific Med. Ctr. – SF
UC San Francisco – SF
UC San Francisco – Mission Bay
Kaiser Santa Clara – Santa Clara

Assess the patient

E — Because there may be no palpable pulse, utilize other parameters for patient assessment (e.g., LOC, skin signs, capillary refill and $EtCO_2$).

Assess the device

E
- Device information, implant center, and VAD Coordinator contact number may be located on the device itself, on the refrigerator, or medical alert bracelet
- If a caregiver is present, yield to their advice.
- You are authorized to take orders from professionals at the LVAD Center, as long as they are within your scope of practice.
- For continuous flow devices (no palpable pulse), auscultate the left upper quadrant of abdomen or over the heart and listen for the "hum" of the device
- Determine if the device has power
  - If the device has power, it does not necessarily mean it is working properly
  - If the device has power, you will see lights or pump giving you information
  - The display will tell you the liters per minute of blood flow
- Check the device for secure connections and properly charged batteries
- A malfunctioning pump should beep. If the pump is functioning with good flow, CPR is not indicated.

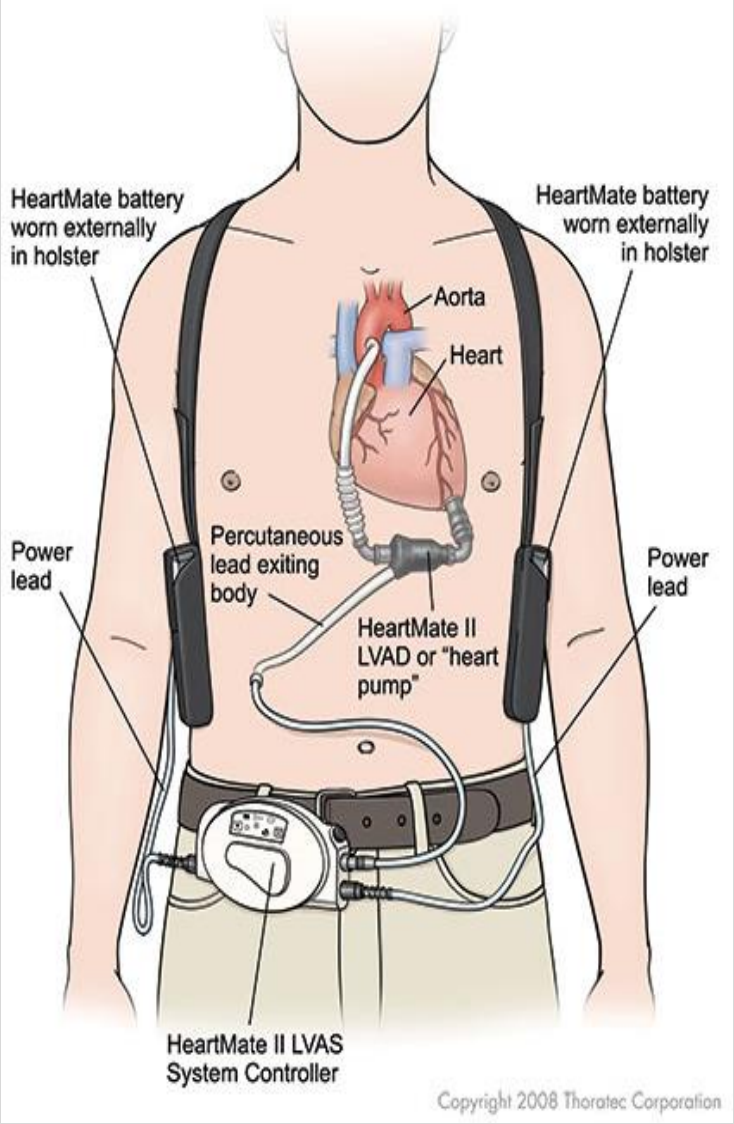
If the patient's condition appears to be <u>related to their VAD</u>, and it is safe and reasonable, it is preferred to transport the patient to their Bay Area VAD Center unless the patient has any of the following conditions, which warrant transport to a closer hospital:

- Minor medical or trauma with adequate perfusion → Exit to appropriate TP and transport to any approved receiving facility
- Stroke patients (eg., AMS, acute severe headache, seizure, vomiting, hemiparesis, etc.) → **Stroke**
- STEMI patients → **Chest Pain: STEMI**
- Trauma patients → **Trauma**
- Cardiac arrest or critical patients with unstable perfusion → Exit to appropriate TP

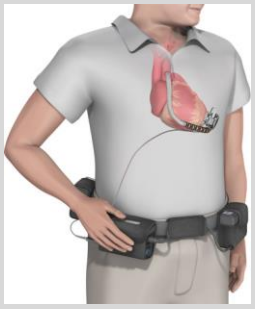
Notify receiving facility. Consider Base Hospital for medical direction

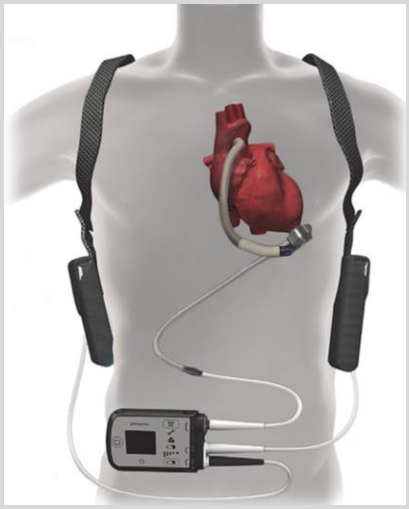
General Treatment Protocols

Ventricular Assist Devices



VAD CENTER	24-HOUR HOTLINE
Stanford Health Care	(650) 617-4216
Lucille Packard Children's Hospital at Stanford	(650) 497-8000 Ask for - 4LVAD
California Pacific Medical Center	(415) 600-1051 Heart Transplant
UC San Francisco	(415) 443-5823
Kaiser Santa Clara	(408) 851-1000 Cardiology MCS



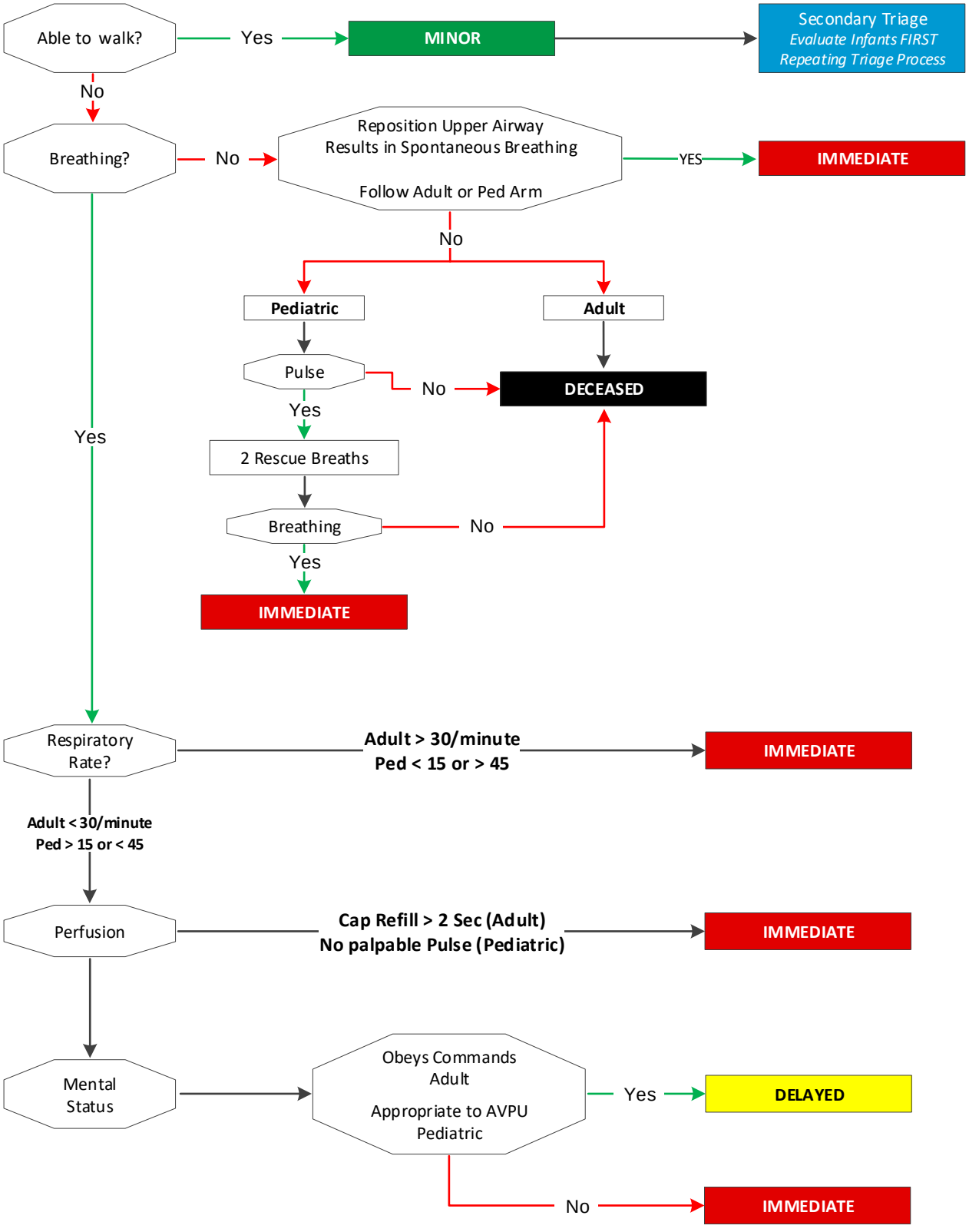


General Treatment Protocols

Pearls

- Patients may be cardioverted or defibrillated if symptomatic, but asymptomatic dysrhythmias do not require treatment.
- Chest compressions can be performed, but only if you are certain the pump is not working and/or no flow through the VAD.
- Treatment should otherwise follow appropriate treatment guidelines.
- Contact the Base Hospital with questions or if directed by patient's caregiver or LVAD Center personnel to do something outside of your protocol.
- 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, determine if a POLST/DNR or advanced directive is available. Many VAD patients have made end of life care decisions.

MCI Triage


Able to walk?
Yes
MINOR
Secondary Triage
Evaluate Infants FIRST
Repeating Triage Process
No
Breathing?
No
Reposition Upper Airway
Results in Spontaneous Breathing
Follow Adult or Ped Arm
YES
IMMEDIATE
No
Pediatric
Adult
Pulse
No
DECEASED
Yes
2 Rescue Breaths
Breathing
No
Yes
IMMEDIATE
Yes
Respiratory Rate?
Adult > 30/minute
Ped < 15 or > 45
IMMEDIATE
Adult < 30/minute
Ped > 15 or < 45
Perfusion
Cap Refill > 2 Sec (Adult)
No palpable Pulse (Pediatric)
IMMEDIATE
Mental Status
Obeys Commands
Adult
Appropriate to AVPU
Pediatric
Yes
DELAYED
No
IMMEDIATE

MCI Triage

Pearls

- **Reference Operations 9**
- **When approaching a multiple casualty incident where resources are limited:**
  Triage decisions must be made rapidly with less time to gather information.
  Emphasis shifts from ensuring the best possible outcome for an individual patient to ensuring the best possible outcome for the greatest number of patients.
- **Scene Size Up:**
  1. Conduct a scene size up. Assure well being of responders. Determine or ensure scene safety before entering. If there are several patients with the same complaints consider HazMat, WMD or CO poisoning.
  2. Take Triage ribbon kit/tags.
  3. Determine number of patients. Communicate the number of patients and nature of the incident, establish command and establish a medical group supervisor and triage unit leader, if personnel available.
- **Triage is a continual process and should recur in each section as resources allow.**
  - Step 1. Global sorting: Call out to those involved in the incident to walk to a designated area and assess third.
    For those who cannot walk, have them wave/indicate a purposeful movement and assess them second.
    Those involved who are not moving or have an obvious life threat, assess first.
  - Step 2: Individual assessments:
    Control major hemorrhage.
    Open airway and if child, give 2 rescue breaths.
    Perform Needle Chest Decompression Procedure if indicated.
    Administer injector antidotes if indicated.
- **Assess the first patient you encounter using the three objective criteria which can be remembered by RPM.**
  R: Respiratory
  P: Perfusion
  M: Mental Status
- If your patient falls into the RED category, stop, place RED TAG/RIBBON and move on to next patient. Attempt only to correct airway problems, treat uncontrolled bleeding, or administer an antidote before moving to next patient.
- **Treatment:**
  - Once casualties are triaged focus on treatment can begin. You may need to move patients to treatment areas. REDs are moved/treated first followed by YELLOWs. BLACKs should remain in place.
  - You may also indicate deceased patients by pulling their shirt/clothing over their head.
  - As more help arrives then the triage/treatment process may proceed simultaneously.
- Capillary refill can be altered by many factors including skin temperature. Age-appropriate heart rate may also be used in triage decisions.
- DMS triage tag system is utilized in San Mateo County.

San Mateo County Emergency Medical Services

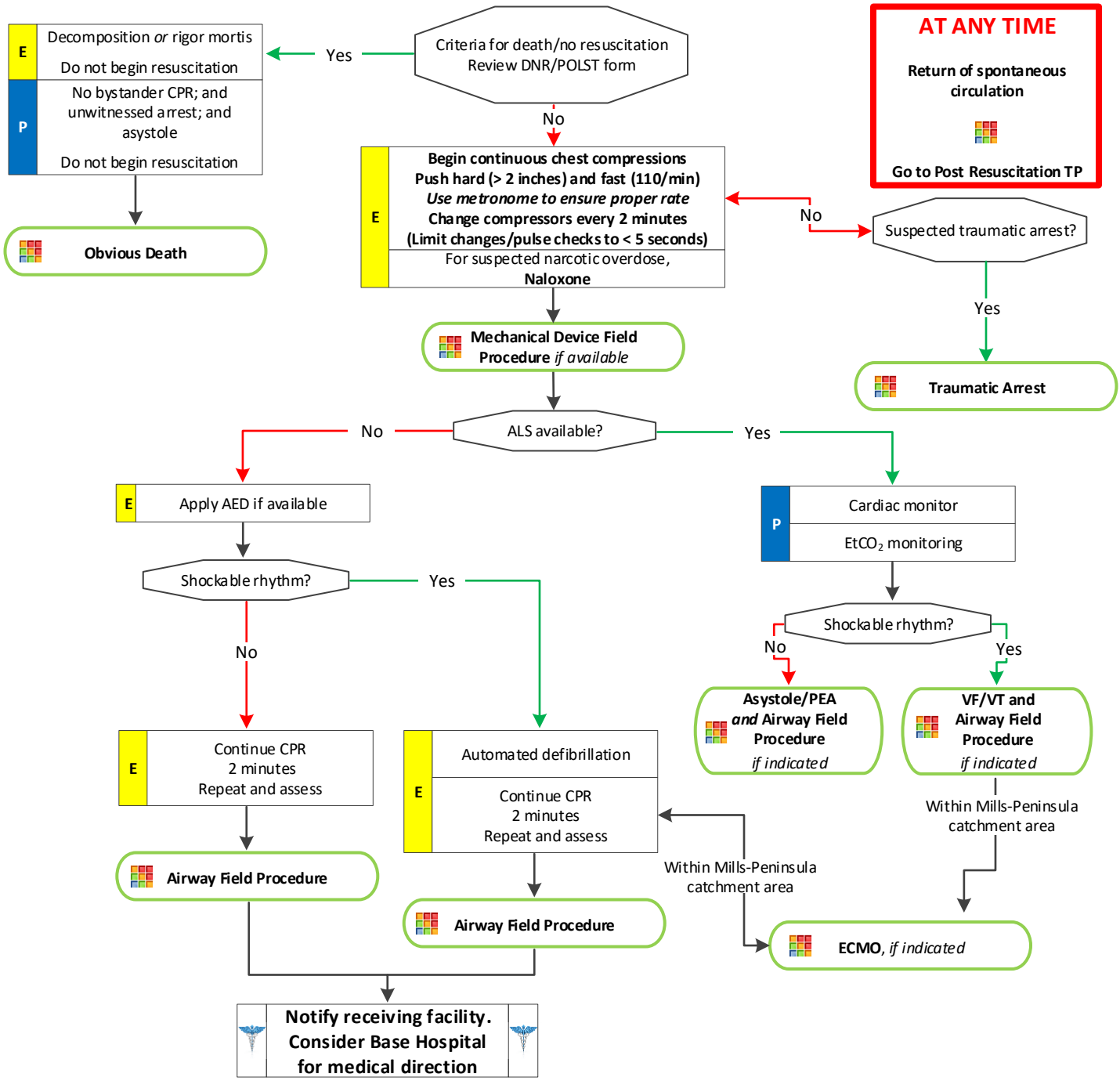
Cardiac Arrest - Non-traumatic

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

History
- Code status (DNR or POLST)
- Events leading to arrest
- Estimated downtime
- History of current illness
- Past medical history
- Medications
- Existence of terminal illness

Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

Differential
- Medical vs. trauma
- VF vs. pulseless VT
- Asystole
- PEA
- Primary cardiac event vs. respiratory arrest or drug overdose



Adult Cardiac Arrest – Non-traumatic Treatment Protocols

Cardiac Arrest – Non-traumatic

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

Pearls

- Move patient to floor in an area where a 5-person crew have adequate space, and begin compressions.
- Efforts should be directed at high quality and continuous chest compressions with limited interruptions. Consider early IO placement if available or direct IV access if anticipated.
- Use pediatric BVM with EtCO2 and deliver ventilation with every 10th compression on the upstroke.
- Placement of an advanced airway should be deferred unless a provider is unable to ventilate the patient with a BLS airway and BVM.
- Do not delay chest compressions while applying any device or intervention.
- Use a metronome during chest compression to ensure proper rate.
- In cases of obvious traumatic arrest with PEA or asystole, epinephrine is not indicated. 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.
- Provide resuscitative efforts on scene for 30 minutes to maximize chance of ROSC.
- If resuscitative efforts do not attain ROSC, consider cessation of efforts per Operations 10 – Determination of Death and Procedure 27 – High Performance CPR.
- Do not interrupt chest compressions to place ETT.
- Airway preferred 1) Video Laryngoscopy, 2) Direct Laryngoscopy, 3) Continued BVM, 4) King Airway
- See Cardiac Arrest Management Utilizing High Performance CPR Triangle of Life Procedure for High Performance CPR outline.
- Resuscitation is based on proper planning and organized execution. Procedures require space and patient access. Make room to work. Utilize a team focused approach assigning responders to predetermined tasks.
- Reassess and document ETT placement and $EtCO_2$ frequently, after every move, and at transfer of care.
- Maternal arrest: Treat mother per appropriate TP with immediate notification to the Base Hospital along with rapid transport. Manually displace fetus from inferior vena cava to ensure continued fetal blood circulation by pushing the uterus to the left. Defibrillation is safe at all energy levels.
- Defibrillation vests should be removed by EMS personnel before compressions, but do not cut vests. Once removed, disengage battery to prevent alarming.

San Mateo County Emergency Medical Services

Cardiac Arrest - Asystole/PEA

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

History
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- End stage renal disease
- Suspected hypothermia
- Suspected overdose
  - Tricyclic
  - Digitalis
  - Beta blockers
  - Calcium channel blockers
- DNR, POLST, or Living Will

Signs and Symptoms
- Pulseless
- Apneic or agonal respirations
- No electrical activity on ECG
- No heart tones on auscultation

Differential
- Hypovolemia (e.g., trauma, AAA or other)
- Cardiac tamponade
- Hypothermia
- Drug overdose (e.g., tricyclic, digitalis, beta blockers, or calcium channel blockers)
- Myocardial infarction
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia

AT ANY TIME

Return of spontaneous circulation

Go to Post Resuscitation TP

Cardiac Arrest-Non traumatic

E Begin continuous chest compressions
Push hard (> 2 inches) and fast (110/min)
Change compressors every 2 minutes
(Limit changes/pulse checks to < 5 seconds)

Shockable rhythm?

Yes → **Appropriate Cardiac Dysrhythmia**

No

P
- Search for reversible causes and treat appropriately
- Establish IV/IO
- **Normal Saline Bolus 500ml** ***Maximum 2L***
- **Epinephrine (1:10,000)**
- *Consider* Chest Decompression Procedure for suspected tension pneumothorax

Criteria for discontinuation?

Yes →
- 12 Lead EKG
- $ETCO_2$ documentation
- Base Hospital Contact for PEA
- Discontinue Resuscitation
- Follow Operations 10 – Determination of Death

No

Notify receiving facility. Consider Base Hospital for medical direction

Reversible Causes

Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypothermia
Hypo/Hyperkalemia
Hypoglycemia
Tension pneumothorax
Tamponade (cardiac)
Toxins
Thrombosis (pulmonary)(PE)
Thrombosis (coronary)(MI)

Adult Cardiac Arrest – Non-traumatic Treatment Protocols

Cardiac Arrest - Asystole/PEA

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

Pearls

- Efforts should be directed at high quality and continuous chest compressions with limited interruptions and early defibrillation when indicated. Consider early IO placement if available or direct IV access if anticipated.
- Provide resuscitative efforts on scene for 30 minutes to maximize chance of ROSC.
- If resuscitative efforts do not attain ROSC, consider cessation of efforts in accordance with the Determination of Death policy.
- Epinephrine in doses of greater than 3mg has been shown to be detrimental to patient outcome.
- Survival from PEA or Asystole is based on identifying and correcting the CAUSE: consider a broad differential diagnosis with early and aggressive treatment of possible causes.
- Consider breathing and airway management after second shock or two (2) rounds of chest compression (2 minutes each round).
- Potential association of PEA with hypoxia may exist, so placing an effective BLS airway with oxygenation early may provide benefit.
- PEA caused by sepsis or severe volume loss may benefit from higher volume of normal saline administration.
- Return of spontaneous circulation after Asystole/PEA requires continued search for underlying cause of cardiac arrest.
- Treatment of hypoxia and hypotension are important after resuscitation from Asystole/PEA.
- Asystole is commonly an end stage rhythm following prolonged VF or PEA with a poor prognosis.
- Prior to termination of efforts, an advanced airway shall be established.
- Discussion with the Base Hospital can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.
- Potential TPs used during resuscitation include: Overdose/Toxic Ingestion and Hypoglycemia.
- In the setting of renal failure, dialysis, suspected DKA or hyperkalemia, calcium chloride followed by sodium bicarbonate shall be administered.

San Mateo County Emergency Medical Services

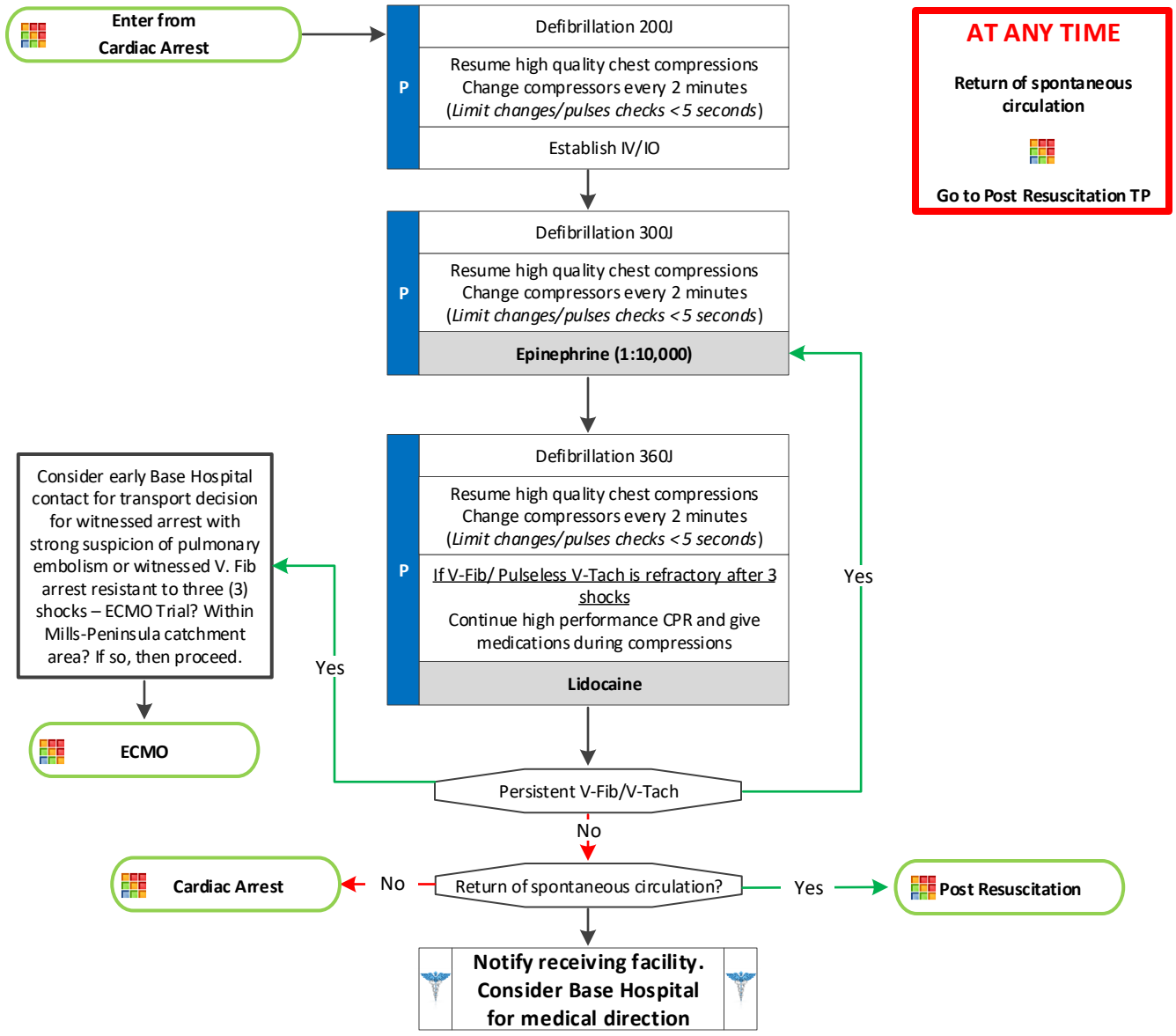
V-Fib/Pulseless V-Tach

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

History
- Events leading to arrest
- Estimated downtime
- Prior resuscitation attempts
- Past medical history
- Medications
- Known terminal illness

Signs and Symptoms
- Pulseless
- Apneic

Differential
- Medical vs. trauma
- VF vs. pulseless VT
- Asystole
- PEA
- Primary cardiac event vs. respiratory arrest or drug overdose



Adult Cardiac Arrest – Non-traumatic Treatment Protocols

Cardiac Arrest - V-Fib/Pulseless V-Tach

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

Pearls

- For defibrillation or cardioversion, follow manufacturers recommendations.
- Efforts should be directed at high quality and continuous chest compressions with limited interruptions and early defibrillation when indicated. Consider early IO placement if available or direct IV access if anticipated.
- Assemble BVM with EtCO2 and deliver ventilation with every 10th compression on the upstroke.
- Placement of an advanced airway should be deferred unless a provider is unable to ventilate the patient with a BLS airway and BVM.
- Use a metronome during chest compression to ensure proper rate.
- Provide resuscitative efforts on scene for 30 minutes to maximize chance of ROSC.
- Epinephrine in doses of greater than 3 mg has been shown to be detrimental to patient outcome.
- If resuscitative efforts do not attain ROSC, consider cessation of efforts per Operations 10 – Determination of Death.
- Do not interrupt chest compressions to place ETT.
- Consider breathing and airway management after second shock or two (2) rounds of chest compression (2 minutes each round).
- Effective chest compressions and prompt defibrillation are the keys to successful resuscitation.
- Reassess and document ETT placement and $EtCO_2$ frequently, after every move, and at transfer of care.
- Do not stop chest compressions to check for placement of ETT or to give medications.
- If the use of a BVM is ventilating the patient successfully, intubation should be deferred.
- In the setting of renal failure, dialysis, suspected DKA or hyperkalemia, calcium chloride followed by sodium bicarbonate shall be administered.

San Mateo County Emergency Medical Services

Refractory V-Fib/Pulseless V-Tach
Mills Peninsula Pilot Program

History
- Events leading to arrest
- Estimated downtime
- Prior resuscitation attempts
- Past medical history
- Medications
- Known terminal illness

Signs and Symptoms
- Pulseless
- Apneic

Differential
- Medical vs. trauma
- VF vs. pulseless VT
- Asystole
- PEA
- Primary cardiac event vs. respiratory arrest or drug overdose

Enter from Cardiac Arrest

V-Fib or pulseless V-Tach

Mechanical Device Field Procedure

Yes

P
- Defibrillation 200J
- Resume high quality chest compressions Change compressors every 2 minutes (*Limit changes/pulses checks <5 seconds*)
- Establish IV/IO

P
- Defibrillation 300J
- Resume high quality chest compressions Change compressors every 2 minutes (*Limit changes/pulses checks <5 seconds*)
- **Epinephrine (1:10,000)**

P
- Defibrillation 360J
- Resume high quality chest compressions Change compressors every 2 minutes (*Limit changes/pulses checks <5 seconds*)
- If V-Fib/ Pulseless V-Tach is refractory after 3 shocks Continue high performance CPR and give medications during compressions
- **Lidocaine**

AT ANY TIME

Return of spontaneous circulation

Go to Post Resuscitation TP

Consider Criteria for EMS Transport for Emergent ECMO:
- 18 – 75 years of age
- Body morphology able to accommodate automatic CPR device.
- Mills-Pen as receiving facility

After Second Shock:
- Notify on-call Shock Physician
- **(650) 988-5500**
- Mechanical CPR device applied
- Continue ACLS (limit 3 mg Epi), defibrillation PRN in route

INFORMATION FOR ON-CALL SHOCK CONTACT

Witnessed or unwitnessed?
Bystander CPR or no bystander CPR?
Downtime?
Age?
ROSC at any time?
Trauma?
Co-morbidities?
Body size (ok for LUCAS device?)

Persistent V. fib/V-tach AND phone call made — No → Return of spontaneous circulation?

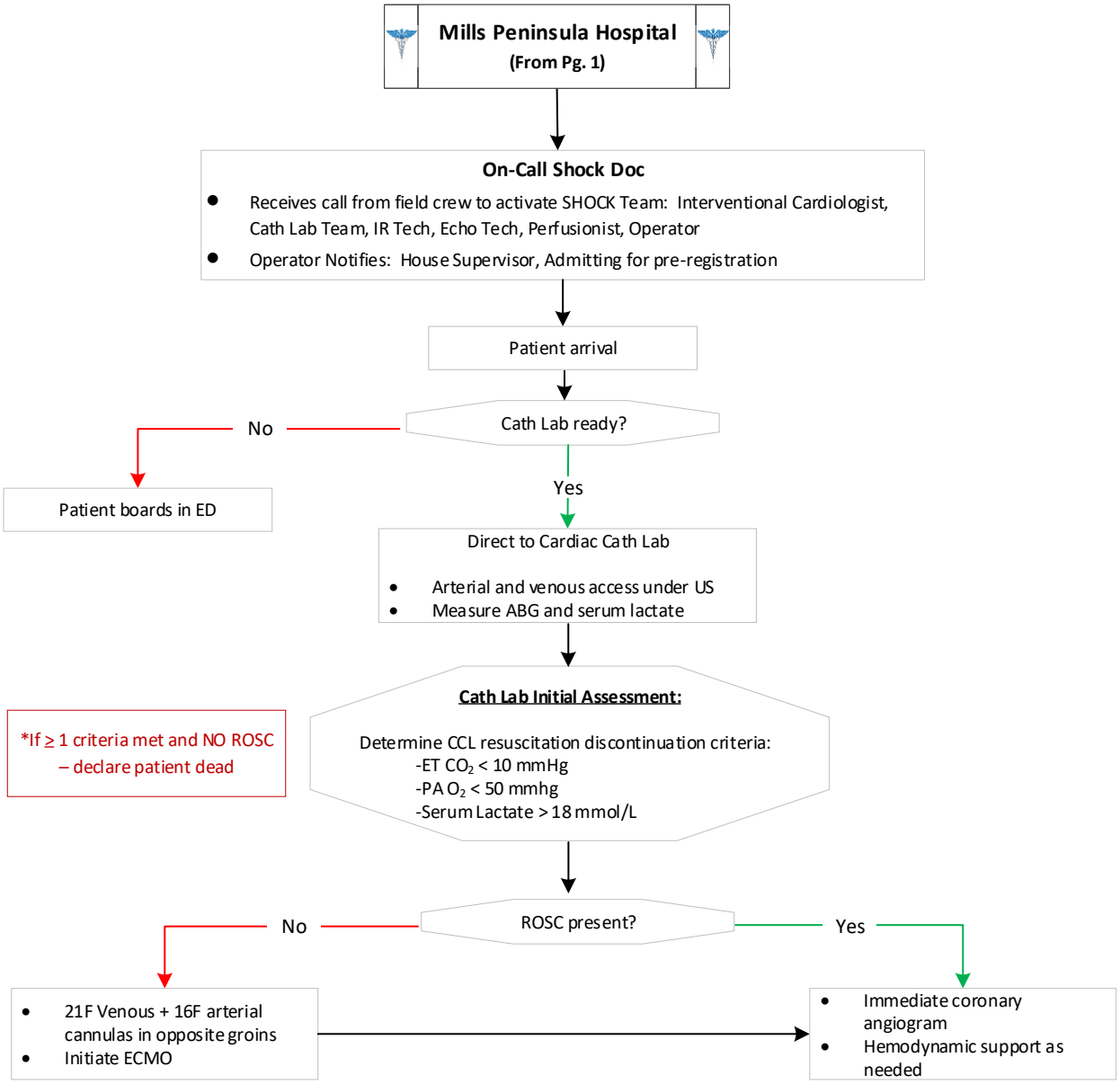
Yes

Yes → **If in Mills-Peninsula catchment area, begin transport to Mills Peninsula Hospital** (Go to Pg. 2)

No → **Cardiac Arrest**

Adult Cardiac Arrest – Non-traumatic Treatment Protocols

Refractory V-Fib/Pulseless V-Tach
Mills Peninsula Pilot Program



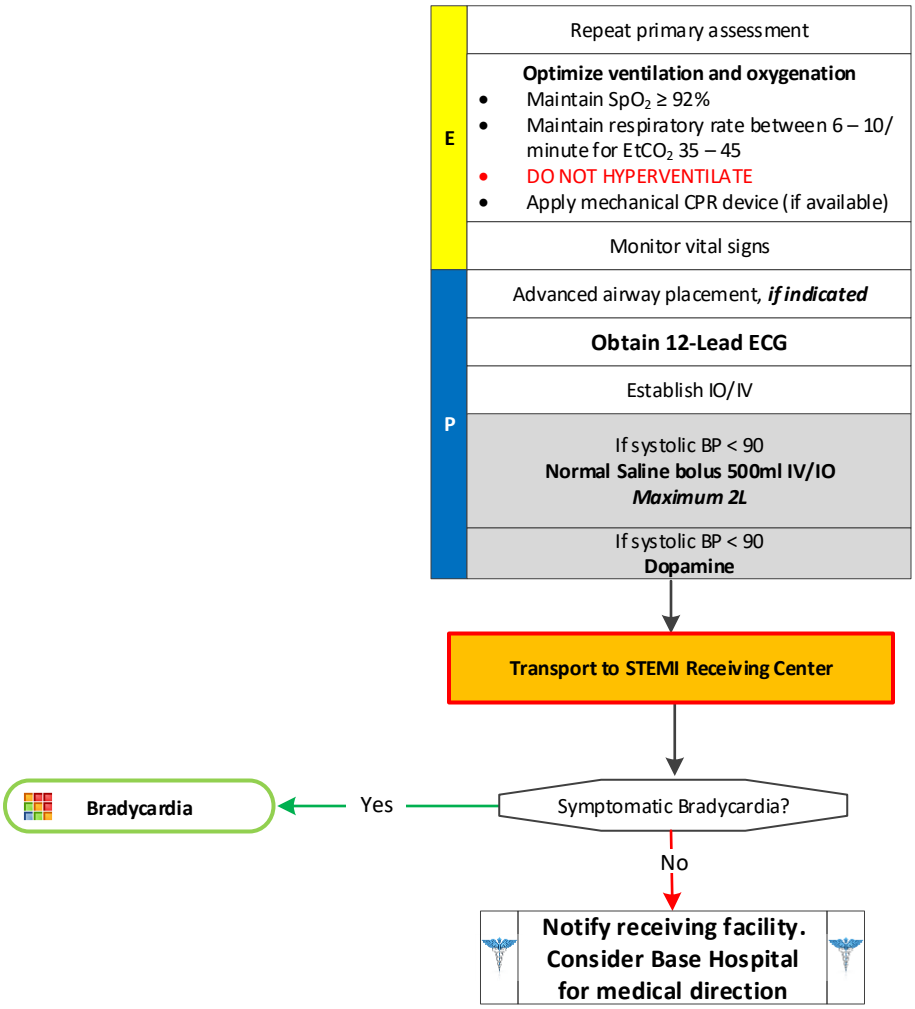
San Mateo County Emergency Medical Services

Cardiac Arrest - 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



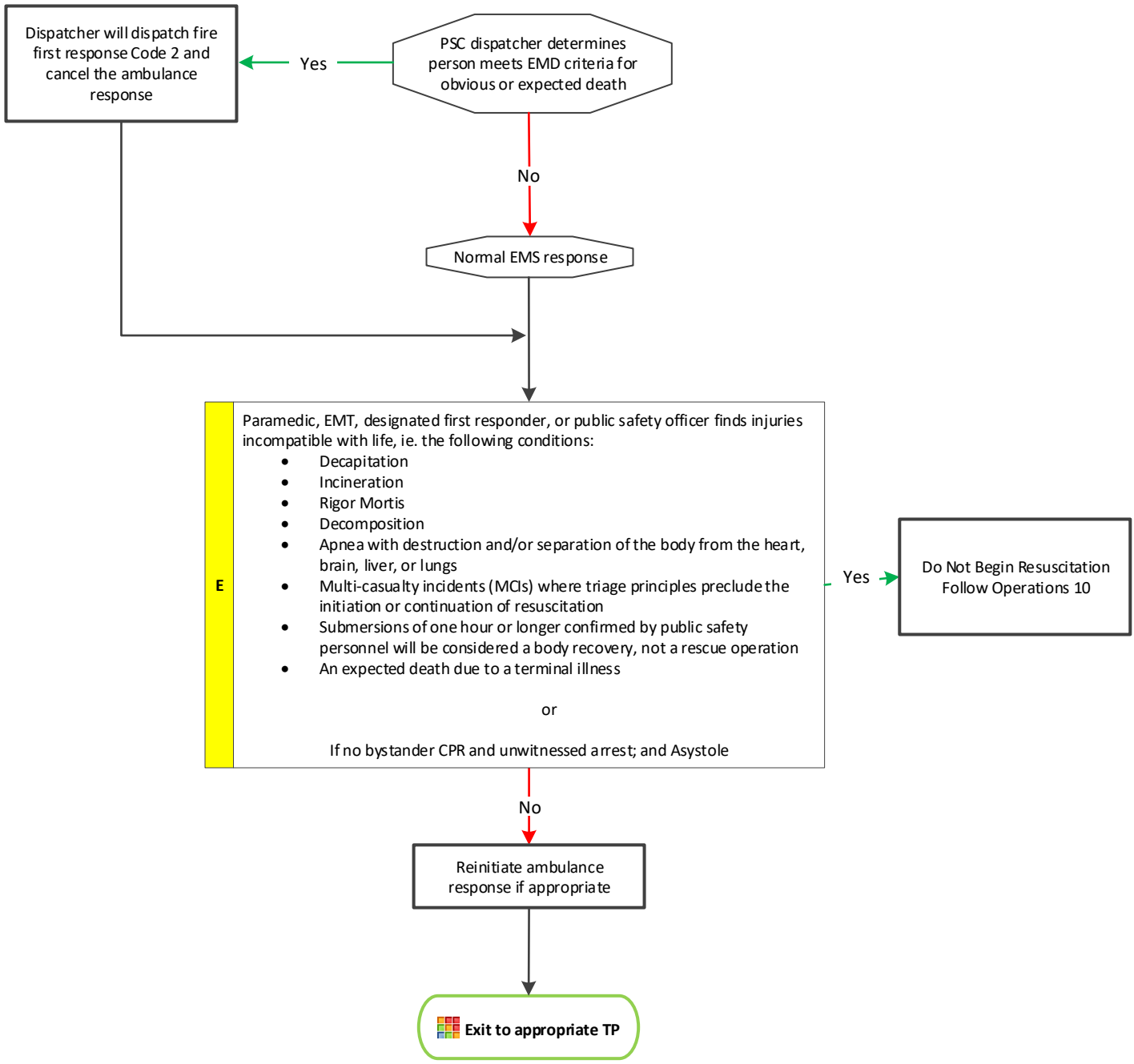
Approved
STEMI Receiving Centers

Stanford Health Care
Kaiser Redwood City
Sequoia Medical Center
Mills-Peninsula Medical Center
Seton Medical Center

Adult Cardiac Arrest – Non-traumatic Treatment Protocols

Pearls
- Transmit any EKG that shows STEMI to the receiving hospital.

Obvious Death



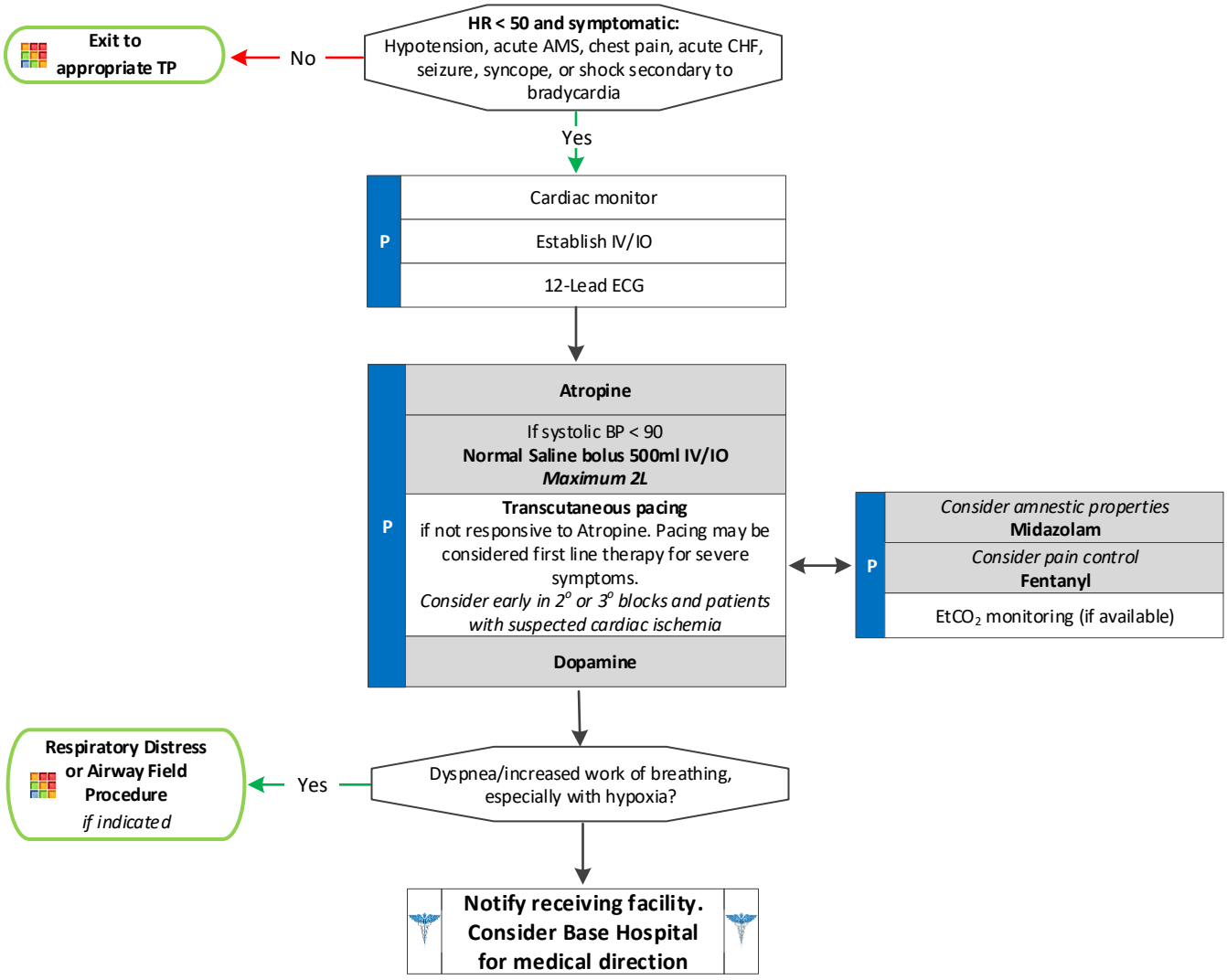
San Mateo County Emergency Medical Services

Bradycardia (Symptomatic)

History
- Past medical history
  - Heart transplant
- Medications
  - Beta blockers
  - Calcium channel blockers
  - Clonidine
  - Digoxin
- Pacemaker

Signs and Symptoms
- Heart rate < 50 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope or shock secondary to bradycardia
- Systolic BP < 90
- Chest pain
- Respiratory distress
- Hypotension or shock
- Altered mental status
- Syncope

Differential
- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (e.g., 1°, 2° or 3°)
- Overdose



Adult Cardiac Dysrhythmia Treatment Protocols

Bradycardia (Symptomatic)

Pearls

- Bradycardia causing symptoms is typically < 50/minutes. Rhythm should be interpreted in the context of symptoms and pharmacological treatment given only when symptomatic, otherwise monitor and reassess frequently.
- Identifying signs and symptoms of poor perfusion caused by bradycardia is paramount.
- Atropine vs. pacing: Caution should be exercised in the setting of a suspected acute MI. The use of Atropine for bradycardia in the presence of an acute MI may worsen heart damage. Providers should NOT DELAY transcutaneous pacing for patients with poor perfusion in the setting of an acute MI or 2^{o} or 3^{o} heart block.
- For patients who are not in 2^{o} or 3^{o} heart block, pacing may be considered for bradycardia not responsive to Atropine. Prepare to utilize transcutaneous pacing early if the patient does not respond to Atropine.
- For wide complex, bizarre appearance of QRS complexes with slow rhythm, consider hyperkalemia.
- Consider treatable causes for bradycardia (e.g., beta blocker OD, calcium channel blocker OD, etc.)
- Hypoxemia is a common cause of bradycardia. Be sure to oxygenate the patient and support respiratory effort.
- Sinus bradycardia in the absence of key symptoms requires no specific treatment; monitor and observe.
- Sinus bradycardia is often seen in patients with STEMI or ischemia. An early 12-Lead ECG should be obtained to assess for STEMI.
- A fluid bolus may address hypotension and lessen the need for pacing or treatment with Atropine.
- Sedation prior to starting pacing is not required. Patients with urgent needs should be paced first and sedated afterwards.
- The objective of amnesia and pain control with pacing is to decrease discomfort, not to decrease level of consciousness. Patients who are in need of pacing are unstable and medications should be used with extreme caution.
- Monitor respiratory status closely and support ventilation as necessary.
- Atropine is not effective for bradycardia in heart transplant patients as there is no vagus nerve innervation in these patients.
- Patients with wide QRS or 2^{o} or 3^{o} heart blocks will not have a response to Atropine because their heart rates are not based on vagal tone. An increase in ventricular arrhythmias may occur.
- If no capture or hypotensive (SBP<90), then start dopamine 5 mcg/kg/min. If inadequate response after 5 minutes, then may increase 5 mcg/kg/min to a maximum dose of 20 mcg/kg/min.

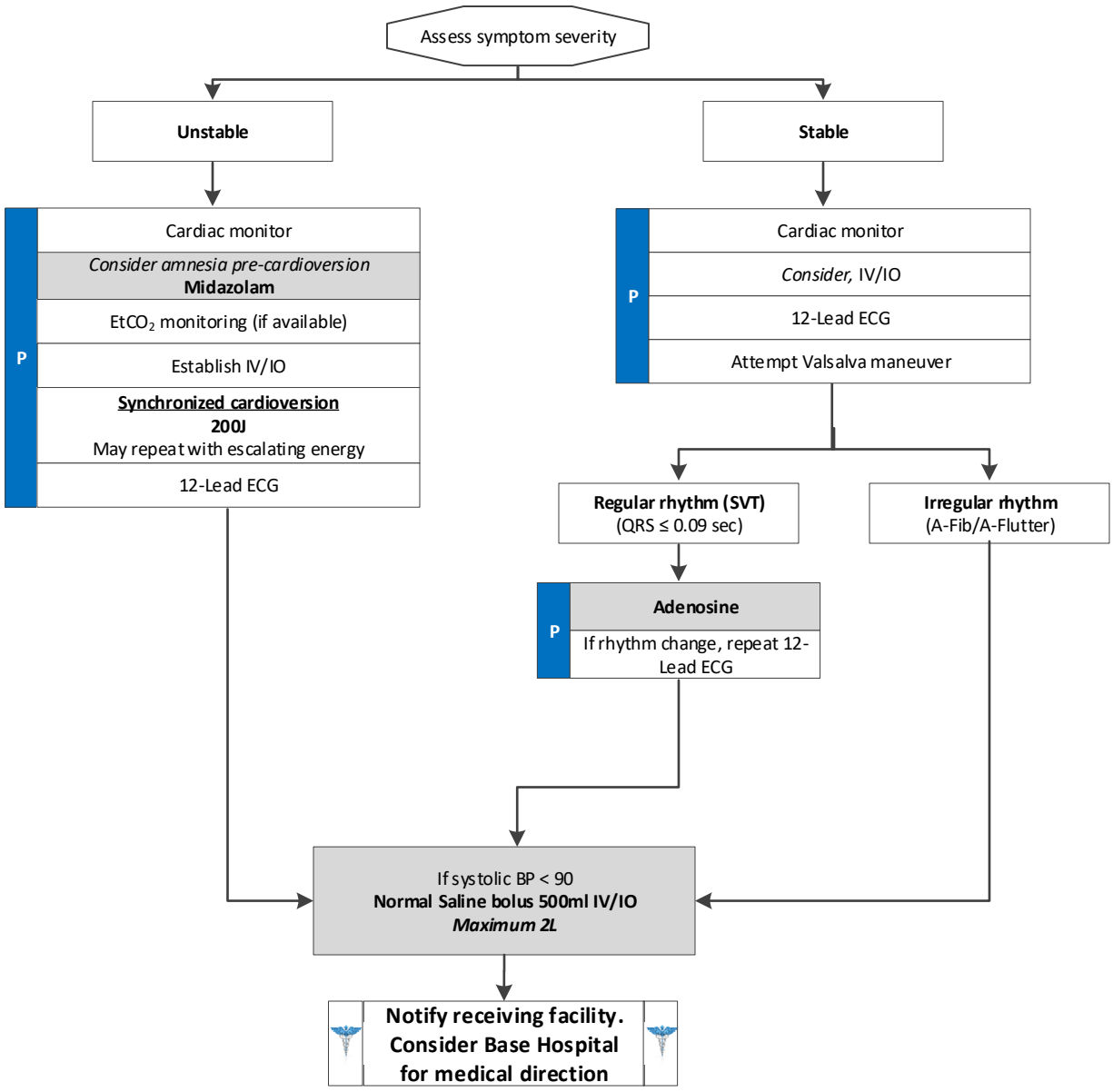
San Mateo County Emergency Medical Services

Narrow Complex Tachycardia

History
- Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
- Diet
- Drugs (e.g., nicotine and illegal drugs)
- Past medical history
- History of palpations/heart racing
- Syncope/near syncope

Signs and Symptoms
- Heart rate > 150 with narrow, regular complexes
- Systolic BP < 90
- Dizziness, chest pain, shortness of breath, altered mental status, or diaphoresis
- Acute Pulmonary Edema
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter
  - Multifocal atrial tachycardia
  - Ventricular tachycardia

Differential
- Heart disease (e.g., WPW or valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypoxia
- Hypovolemia or anemia
- Drug effect/overdose (see **History**)
- Hypothyroidism
- Pulmonary embolus



Adult Cardiac Dysrhythmia Treatment Protocols

Narrow Complex Tachycardia

Pearls

- Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.
- If at any point the patient becomes unstable, move to the unstable arm of the algorithm.
- For ASYMPTOMATIC patients (or those with only minimal symptoms, such as palpitations) and any tachycardia with a rate of approximately 100 – 120 with a normal blood pressure, consider CLOSE OBSERVATION or fluid bolus rather than immediate treatment with an anti-arrhythmic medication. For example, a patient's "usual" atrial fibrillation may not require emergent treatment.
- Continuous paper recording peri-adenosine administration
- All Adenosine administrations should be immediately followed by a 20ml rapid flush.
- Unstable Signs/Symptoms include: Hypotension; acutely altered mental status; signs of shock/poor perfusion; chest pain with evidence of ischemia (e.g., STEMI, T-wave inversions or depressions); and acute pulmonary edema.
- Search for underlying cause of tachycardia such as fever, sepsis, dyspnea, etc.
- If patient has a history of Wolfe Parkinson White (WPW), Adenosine is contraindicated.
- Synchronized Cardioversion is recommended to treat UNSTABLE atrial fibrillation/flutter and monomorphic-regular tachycardia (SVT).
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Activate and upload all monitor data.

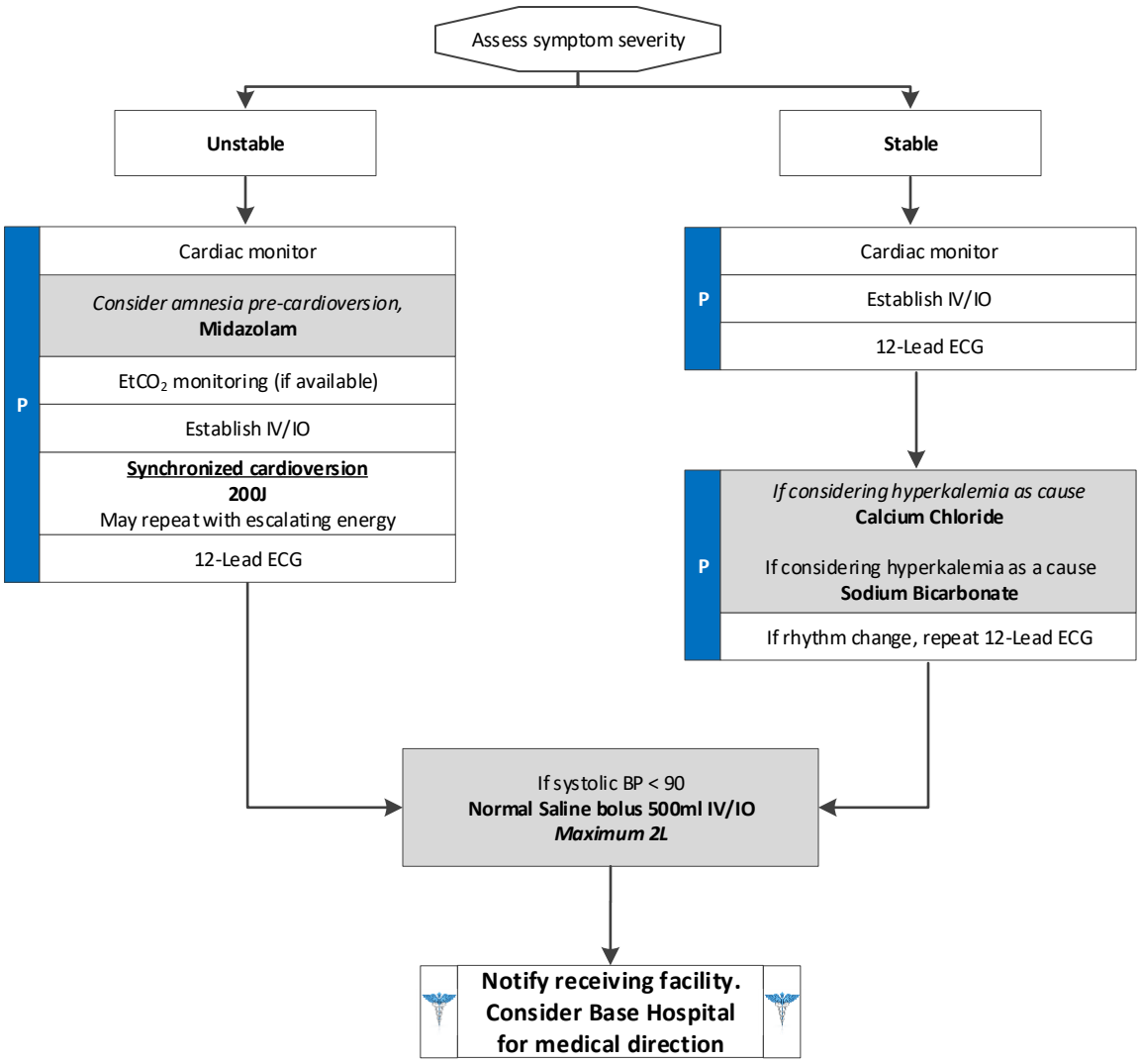
San Mateo County Emergency Medical Services

Wide Complex Tachycardia

History
- Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
- Diet (e.g., caffeine and chocolate)
- Drugs (e.g., nicotine and illegal drugs)
- Past medical history
- History of palpations/heart racing
- Syncope/near syncope
- Renal failure
- Missed dialysis

Signs and Symptoms
- Heart rate > 150
- Systolic BP < 90
- Dizziness, chest pain, shortness of breath, altered mental status or diaphoresis
- Acute pulmonary edema
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter
  - Multifocal atrial tachycardia
  - Ventricular tachycardia

Differential
- Heart disease (e.g., WPW or valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypoxia
- Hypovolemia or anemia
- Drug effect/overdose (see **History**)
- Hypothyroidism
- Pulmonary embolus



Adult Cardiac Dysrhythmia Treatment Protocols

Wide Complex Tachycardia

Pearls

- Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.
- If at any point the patient becomes unstable, move to the unstable arm of the algorithm.
- For ASYMPTOMATIC patients (or those with only minimal symptoms, such as palpitations) and any tachycardia with a rate of approximately 100 – 120 with a normal blood pressure, consider CLOSE OBSERVATION or fluid bolus.
- Unstable Signs/Symptoms include: Hypotension; acutely altered mental status; signs of shock/poor perfusion; chest pain with evidence of ischemia (e.g., STEMI, T-wave inversions, or depressions); and acute pulmonary edema.
- Search for underlying cause of tachycardia such as fever, sepsis, dyspnea, etc.
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Activate and upload all monitor data.
- Consider trial of Adenosine to rule out SVT with aberrancy.

San Mateo County Emergency Medical Services

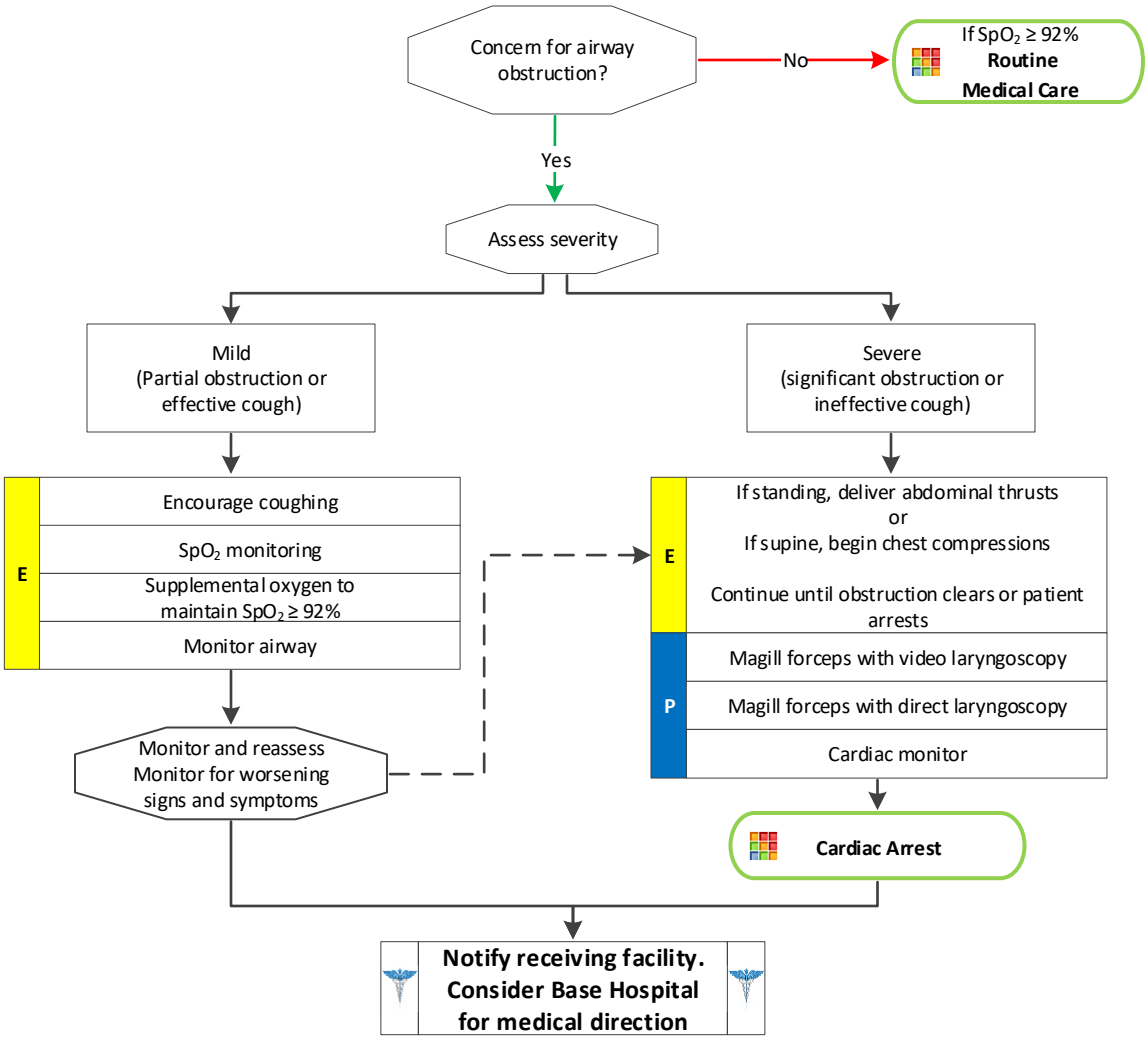
Airway Obstruction/Choking

For any upper airway emergency including choking, foreign body, swelling, stridor, croup, and obstructed tracheostomy

History
- Sudden onset of shortness of breath/coughing
- Recent history of eating or food present
- History of stroke or swallowing problems
- Past medical history
- Sudden loss of speech
- Syncope

Signs and Symptoms
- Sudden onset of coughing, wheezing or gagging
- Stridor
- Inability to talk
- Universal sign for choking
- Panic
- Pointing to throat
- Syncope
- Cyanosis

Differential
- Foreign body aspiration
- Food bolus aspiration
- Epiglottitis
- Syncope
- Hypoxia
- Asthma/COPD
- CHF exacerbation
- Anaphylaxis
- Massive pulmonary embolus



Pearls
- Bag valve mask can force the food obstruction deeper
- If unable to bag valve mask, consider a foreign body obstruction, particularly after proper airway maneuvers have been performed
- For obese and pregnant victims, put your hands at the base of their breastbones, right where the lowest ribs join together
- If foreign body is below cords and chest compressions fail to dislodge obstruction, consider intubation and forcing foreign body into right main stem bronchus.

Adult Respiratory Distress Treatment Protocols

San Mateo County Emergency Medical Services

Respiratory Arrest/Respiratory Failure

For patients requiring positive-pressure ventilation and/or hypoxia despite 100% oxygen

History
- Sudden onset of shortness of breath/coughing
- Past medical history
- Sudden loss of speech
- Syncope
- COPD/Asthma
- CHF
- Cardiac disease
- Lung disease

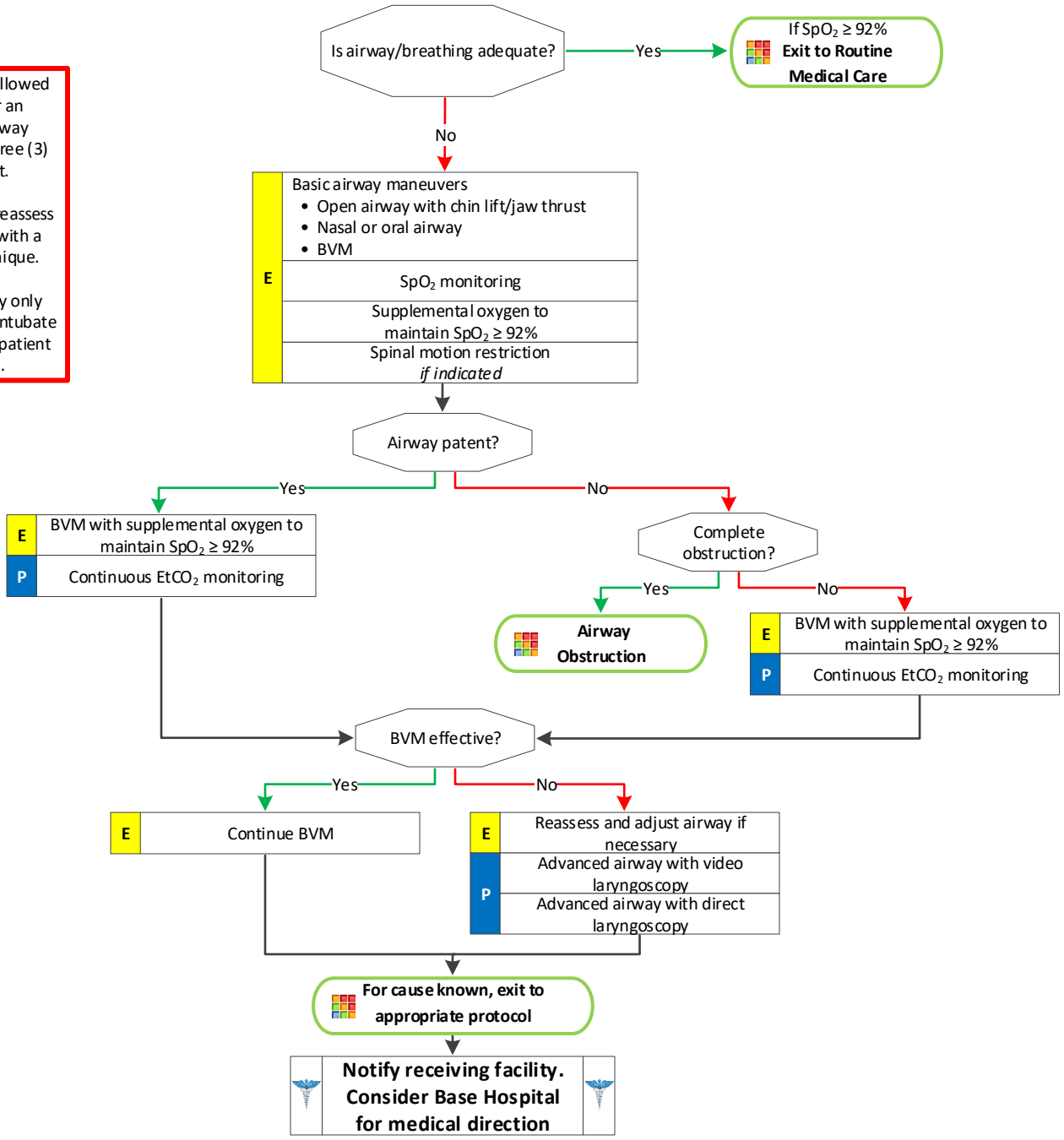
Signs and Symptoms
- Sudden onset of coughing, wheezing or gagging
- Stridor
- Inability to talk in complete sentences
- Panic
- Pointing to throat
- Syncope
- Cyanosis

Differential
- Foreign body aspiration
- Seizure
- Epiglottitis
- Syncope
- Hypoxia
- Asthma/COPD
- CHF exacerbation
- Anaphylaxis
- Massive pulmonary embolus

The maximum allowed attempts for an advanced airway placement is three (3) per patient.

If attempts fail, reassess and approach with a different technique.

Use King airway only when unable to intubate or ventilate the patient with BVM.



Adult Respiratory Distress Treatment Protocols

SAN MATEO COUNTY HEALTH
EMERGENCY MEDICAL SERVICES

Treatment Protocol R02

Effective October 2019

Respiratory Arrest/Respiratory Failure

For patients requiring positive-pressure ventilation and/or hypoxia despite 100% oxygen

Pearls

- Effective use of a BVM is best achieved with two (2) providers. Use adult BVM until cardiac arrest.
- Continuous capnometry ($EtCO_2$) is mandatory with all intubations and BVM. Document results.
- If an effective airway is being maintained with a BVM and a basic airway adjunct with continuous pulse oximetry values of ≥ 90% or values expected based on pathophysiologic condition with otherwise reassuring vital sign (e.g., pulse oximetry of 85% with otherwise normal vital signs in a post-drowning patient), it is acceptable to continue with basic airway measures rather than placing an advanced airway.
- For the purposes of this treatment protocol (TP), a secure airway is achieved when the patient is receiving appropriate oxygenation and ventilation.
- An intubation attempt is defined as passing the laryngoscope blade or advanced airway past the teeth with the intent to intubate.
- An appropriate ventilatory rate is one that maintains an $EtCO_2$ of 35 to 45.
- The airway should be reassessed with each patient move. Document findings and $EtCO_2$ readings for each.
- Maintain spinal motion restriction for patients with suspected spinal injury.
- In deteriorating patients with head trauma, increase ventilation rate to maintain an $EtCO_2$ of 30-35.
- It is important to secure the advanced airway well and consider c-collar use (in the absence of trauma) to better maintain advanced airway placement. Manual stabilization of advanced airway should be used during all patient moves/transfers.

San Mateo County Emergency Medical Services

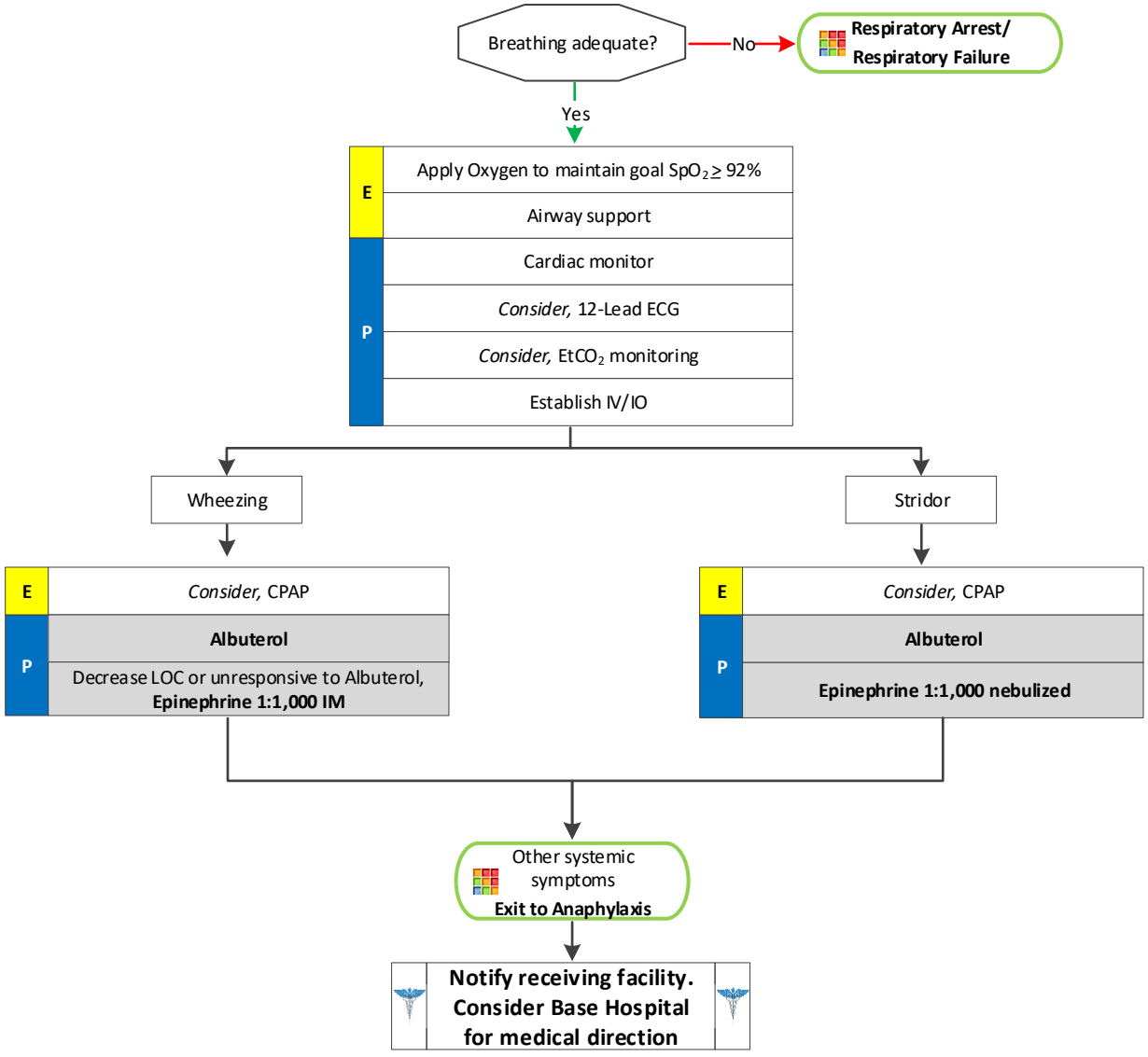
Respiratory Distress/Bronchospasm

For COPD/asthma exacerbations and any bronchospasms/wheezing not from pulmonary edema

History
- Asthma
- COPD – chronic bronchitis, emphysema
- Home treatment (e.g., oxygen or nebulizer)
- Medications (e.g., Theophylline, steroids, inhalers)
- Frequency of inhaler use

Signs and Symptoms
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing or rhonchi/diminished breath sounds
- Use of accessory muscles
- Cough
- Tachycardia

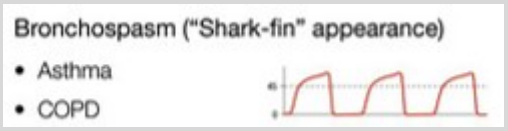
Differential
- Asthma
- Anaphylaxis
- Aspiration
- COPD (emphysema or bronchitis)
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (e.g., carbon monoxide, etc.)



Adult Respiratory Distress Treatment Protocols

Respiratory Distress/Bronchospasm

For COPD/asthma exacerbations and any bronchospasms/wheezing not from pulmonary edema



Pearls

- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Patients receiving epinephrine should receive a 12-Lead ECG at some point in their care in the prehospital setting, but this should NOT delay the administration of Epinephrine.
- Pulse oximetry monitoring is required for all respiratory patients.

San Mateo County Emergency Medical Services

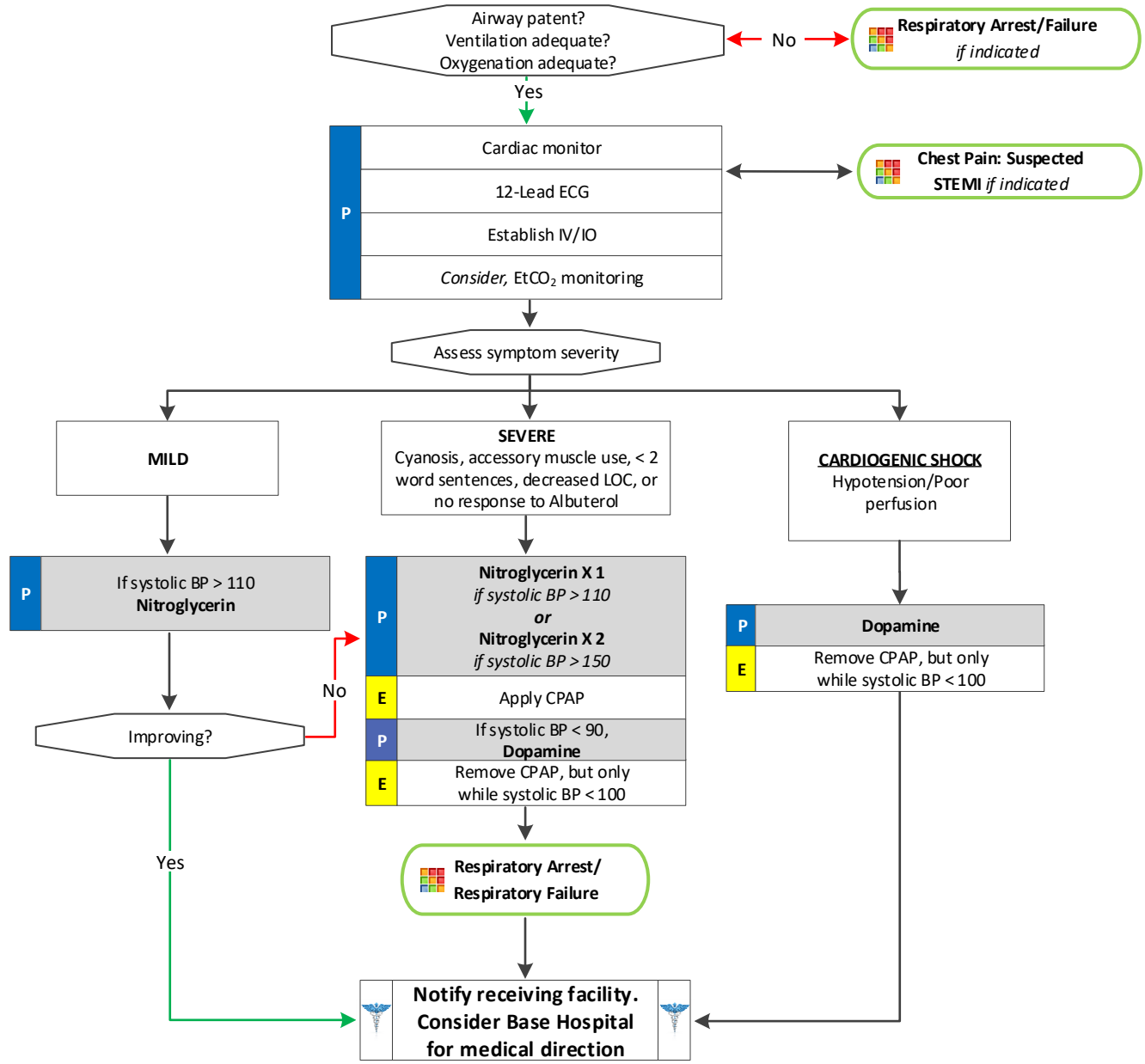
Respiratory Distress/CHF/Pulmonary Edema

For congestive heart failure exacerbation

History
- Congestive heart failure
- Past medical history
- Medications (e.g., Digoxin, Lasix, erectile dysfunction medications)
- Cardiac history including past MI

Signs and Symptoms
- Hypotension/shock
- Bilateral rales/crackles
- Anxiety
- Orthopnea
- Jugular vein distension
- Pink, frothy sputum
- Peripheral edema
- Diaphoresis
- Chest pain
- Hypertensive
- Wheezing

Differential
- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic exposure



Adult Respiratory Distress Treatment Protocols

SAN MATEO COUNTY HEALTH
EMERGENCY
MEDICAL SERVICES

Treatment Protocol R04

Effective April 2020

Respiratory Distress/CHF/Pulmonary Edema

For congestive heart failure exacerbation

Pearls

- Opioids have NOT been shown to improve the outcomes of EMS patients with pulmonary edema. Even though this has historically been a mainstay of EMS treatment, it is no longer recommended.
- Avoid Nitroglycerin in any patient who has used Erectile Dysfunction Medications Viagra/Revatio (Sildenafil) or Levitra (Vardenafil) in the past 24 hours or Cialis (Tadalafil) in the past 36 hours due to potential for severe hypotension.
- Carefully monitor the patient's level of consciousness, chest pain, and respiratory status with the above interventions.
- Consider MI in all of these patients.
- A trial of Albuterol can be considered in the undifferentiated patient.

San Mateo County Emergency Medical Services

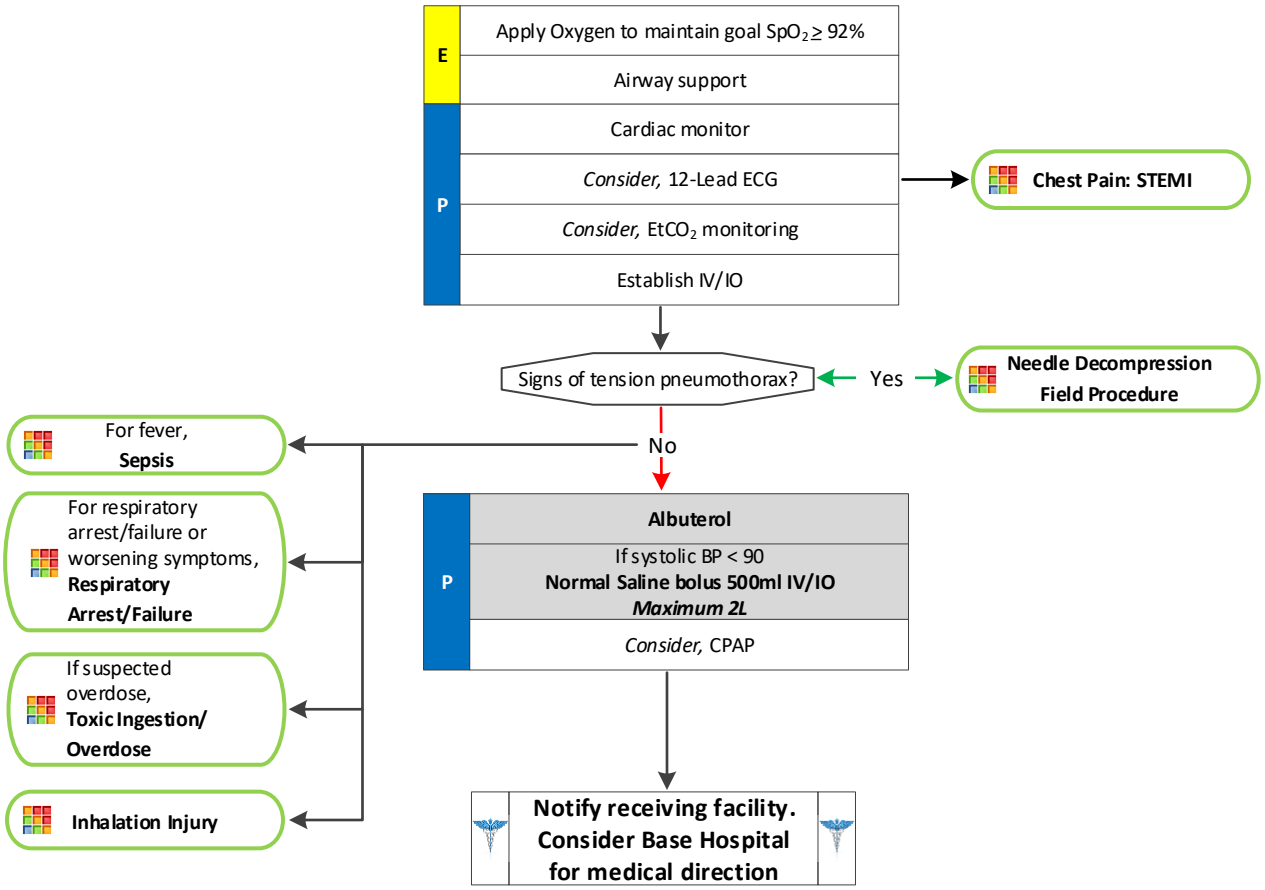
Respiratory Distress Other

For patients with pulmonary disease that is not edema or bronchospasm, includes suspected pneumonia, PE, pneumothorax and non-pulmonary and unknown causes of respiratory distress

History
- Recent respiratory illness, including pneumonia
- Pulmonary embolism
- Pneumothorax
- Medications (e.g., antibiotics, steroids, inhalers)
- Non-pulmonary and unknown causes of respiratory distress
- Anxiety
- Home ventilator/oxygen

Signs and Symptoms
- Shortness of breath
- Decreased ability to speak
- Increased respiratory rate and effort
- Rhonchi/diminished breath sounds
- Use of accessory muscles
- Cough
- Tachycardia
- Fever
- Hypotension

Differential
- Asthma/COPD
- Anaphylaxis
- Aspiration
- Sepsis/Metabolic acidosis
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax/Tension pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Toxin (e.g., carbon monoxide, ASA.)



Pearls
- For suspected anxiety, consider calming and coaching to slow breathing prior to starting ALS treatment.
- CPAP is contraindicated for patients with signs/symptoms of a pneumothorax.
- Signs/symptoms of a tension pneumothorax include: AMS; hypotension; increased pulse and respirations; absent breath sounds or hyperresonance to percussion on affected side; jugular vein distension; difficulty ventilating; and tracheal shift.
- Pulse oximetry monitoring is required for all respiratory patients.

Adult Respiratory Distress Treatment Protocols

San Mateo County Emergency Medical Services

Inhalation Injury

For any signs/symptoms related to inhaling a gas or substance other than smoke or carbon monoxide

History
- Type of exposure (heat, gas, chemical)
- Duration of exposure
- Time of injury
- Past medical history
- Other trauma
- Loss of consciousness

Signs and Symptoms
- Burns, swelling, pain
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/wheezing
- Seizure/AMS after industrial or closed space fire, consider cyanide poisoning

Differential
- Foreign Body Aspiration
- Upper Respiratory Infection
- Asthma exacerbation
- Anaphylaxis
- COPD exacerbation
- Cyanide poisoning
- Thermal injury
- Chemical/Electrical injury
- Radiation injury
- Blast injury

Scene safety. Quantify and triage patients. Load and go with assessment and treatment enroute to hospital

Assess Airway

No or Mild Airway Involvement
Airway patent, no signs of edema, no stridor or change in voice, nasal hairs intact, low likelihood of airway involvement

If oxygen saturation ≥ 92%
Routine Medical Care

Moderate Airway Involvement
Suspected inhalation injury with only one of the following: Wheezing, change in voice, increased work of breathing/ tachypnea.

E	Monitor and reassess
	Apply Oxygen to maintain goal $SpO_2 \geq 92\%$
P	Cardiac monitor
	Consider, 12-Lead ECG
	Consider, 2 IV/IO sites
	Consider, **Albuterol**

Notify receiving facility. Consider Base Hospital for medical direction

Severe Airway Involvement
Accessory muscle use or altered breath sounds and definitive airway felt necessary
OR
Any combination of the following: Airway edema, stridor, change in voice, increased work of breathing/tachypnea.

Airway Field Procedure *if indicated*

E	Monitor and reassess
	High flow Oxygen Regardless of SpO_2
P	Cardiac monitor
	Consider, 12-Lead ECG
	Consider, 2 IV/IO sites
	Albuterol
	Epinephrine 1:1,000 nebulized for stridor
	CPAP

Closest receiving facility for definitive airway. Consider Base Hospital for medical direction

- **Trauma** *if indicated*
- **Pain** *if indicated*
- **Bum** *if indicated*
- **Carbon Monoxide/ Cyanide** *if indicated*
- **Hazmat** *if indicated*
- **Hypotension** *if indicated*
- **Eye Injury** *if indicated*

Adult Respiratory Distress Treatment Protocols

Inhalation Injury

For any signs/symptoms related to inhaling a gas or substance other than smoke or carbon monoxide

Pearls

- Consider expedited transport for inhalation injury.
- Ensure patient is properly decontaminated before placing in ambulance and transport to hospital.
- Contact Hazmat or Poison Control Center with questions about chemical or guidance on immediate treatment.
- If able, obtain the name of chemical(s) patient was exposed to pass information along to receiving hospital staff.

San Mateo County Emergency Medical Services

Smoke Inhalation Injury

For patients with smoke inhalation

History
- Number and severity of other victims
- Industrial or residential fire
- Duration of inhalation
- Social history - smoking
- Past medical history
- Other trauma
- Odor

Signs and Symptoms
- Facial burns, pain, and/or swelling
- Cherry red skin
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/wheezing
- Seizure/AMS after industrial or closed space fire consider cyanide poisoning

Differential
- Foreign Body Aspiration
- Asthma exacerbation
- COPD exacerbation
- Cyanide poisoning
- Carbon monoxide poisoning
- Thermal injury
- Heart failure
- Acute respiratory distress syndrome

For suspected closed space inhalation, choose Severe Airway Involvement path

Approved Burn Receiving Centers

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

Assess Airway

No or Mild Airway Involvement
Airway patent, no signs of edema, no stridor or change in voice, no soot in the oropharynx or nasopharynx, nasal hairs intact, low likelihood of airway involvement

If oxygen saturation ≥ 92%
Routine Medical Care

Moderate Airway Involvement
Suspected inhalation injury with only one of the following: Wheezing, presence of soot/singed nasal hairs, change in voice, carbonaceous sputum, increased work of breathing/tachypnea.

E	Monitor and reassess
	Apply Oxygen to maintain goal $SpO_2 \geq 92\%$
P	Cardiac monitor
	CO-oximetry (SpCO), if available
	Consider, 12-Lead ECG
	Consider, 2 IV/IO sites
	Consider, **Albuterol**

Notify burn center. Consider Base Hospital for medical direction

Severe Airway Involvement
Accessory muscle use or altered breath sounds and definitive airway felt necessary
OR
Any combination of the following: Airway edema, stridor, presence of soot/singed nasal hairs, change in voice, carbonaceous sputum, increased work of breathing/ tachypnea.

Airway Field Procedure *if indicated*

E	Monitor and reassess
	High flow Oxygen Regardless of SpO_2
P	Cardiac monitor
	Consider, 12-Lead ECG
	Consider, 2 IV/IO sites
	Albuterol
	Epinephrine 1:1,000 nebulized for stridor
	CPAP

Closest receiving facility for definitive airway. Consider Base Hospital for medical direction

Trauma *if indicated*
Pain *if indicated*
Burn *if indicated*
Carbon Monoxide/ Cynaide *if indicated*
Hazmat *if indicated*
Hypotension *if indicated*
Exit to Eye Injury *if indicated*

Adult Respiratory Distress Treatment Protocols

Smoke Inhalation Injury

For patients with smoke inhalation

Pearls

- Ensure patient is properly decontaminated before placing in ambulance and transport to hospital.
- Contact Hazmat or Poison Control Center with questions about chemical or guidance on immediate treatment.
- If able, obtain the name of chemical(s) patient was exposed to pass information along to receiving hospital staff.
- If able, remove patient's clothing before placing in ambulance and transport to hospital.

San Mateo County Emergency Medical Services

Cold/Flu Symptoms

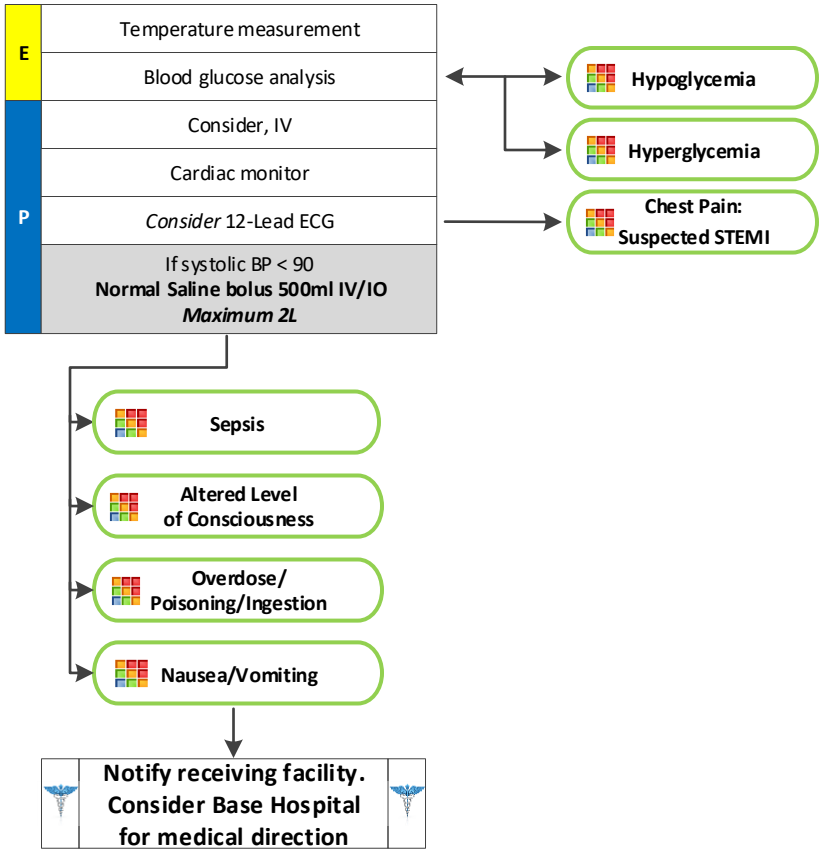
For minor respiratory illness in a patient without shortness of breath or wheezing; must have normal respiratory rate and O2 sat

History
- Recent travel
- Duration of symptoms
- Severity of symptoms
- Current influenza/pneumonia vaccination?
- Past medical history
- Medications
- Immunocompromised (e.g., transplant, HIV, diabetes, cancer)
- Sick contact exposure
- Last acetaminophen or ibuprofen

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

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

Differential
- Infection/sepsis
- Cancer/tumors/lymphomas
- Medication or drug reaction
- Connective tissue disease (e.g., arthritis or vasculitis)
- Carbon monoxide poisoning
- Meningitis



Adult Respiratory Distress Treatment Protocol

San Mateo County Emergency Medical Services

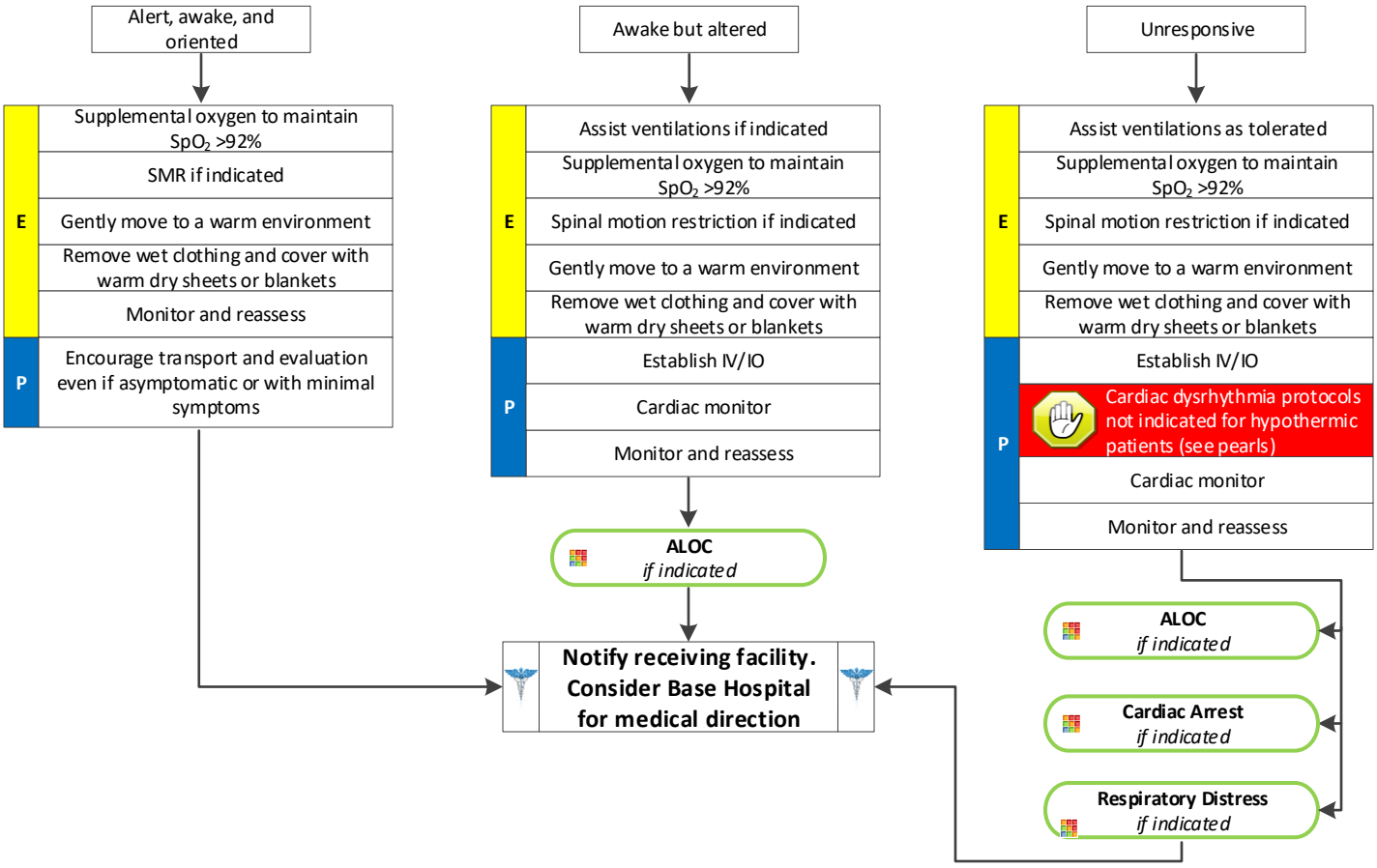
Submersion/Drowning

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

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

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

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



Adult Respiratory Distress Treatment Protocols

Pearls
- Divers Alert Network 24-hour emergency phone number is (919) 684-9111.
- Check for pulselessness for 30-45 seconds to avoid unnecessary chest compressions.
- Defer ACLS medications until patient is warmed. Patients with hypothermia may have good neurologic outcome despite prolonged resuscitative efforts; resuscitative efforts should continue until the patient is rewarmed.
- If V-Fib or pulseless V-Tach is present, shock x1, and defer further shocks due to concerns for hypothermia.
- Extremes of age, malnutrition, alcohol, and other drug use are contributing factors to hypothermia.
- It is important to have baseline blood glucose. If the patient is or becomes altered, check blood glucose and treat accordingly.
- Patients with prolonged hypoglycemia often become hypothermic; blood glucose analysis is essential.
- If a temperature is unable to be measured, treat the patient based on the suspected temperature.
- Warm packs can be placed in the armpit and groin areas. Care should be taken not to place directly on skin.

San Mateo County Emergency Medical Services

Carbon Monoxide/Cyanide

For suspected or known carbon monoxide exposure

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

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

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

E	Immediately remove from exposure
	Airway support
	High flow Oxygen regardless of SpO_2
	Blood glucose analysis
P	Cardiac monitor
	CO-oximetry (SpCO), if available
	12-Lead ECG
	Establish IV/IO
	Consider, $EtCO_2$ monitoring
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***

Notify receiving facility. Consider Base Hospital for medical direction

Emergency Hyperbaric Chambers
John Muir Medical Center – Walnut Creek

Adult Respiratory Distress Treatment Protocols

Pearls
- CO is colorless and odorless.
- Pulse oximetry will likely be normal with CO toxicity.
- Hyperbaric oxygen is recommended for those with AMS, seizure, coma, focal deficits, blindness, CO levels > 25% or > 20% if pregnant. John Muir Medical Center – Walnut Creek is the only emergency hyperbaric chamber in the Bay Area. Contact the Base Hospital for direction.
- Baseline carboxyhemoglobin levels in chronic smokers is 5-10%.
- Consider cyanide poisoning in any patient with CO intoxication.
- For suspected cyanide poisoning, contact the receiving hospital early.
- Consider cyanide poisoning in any patient with AMS.

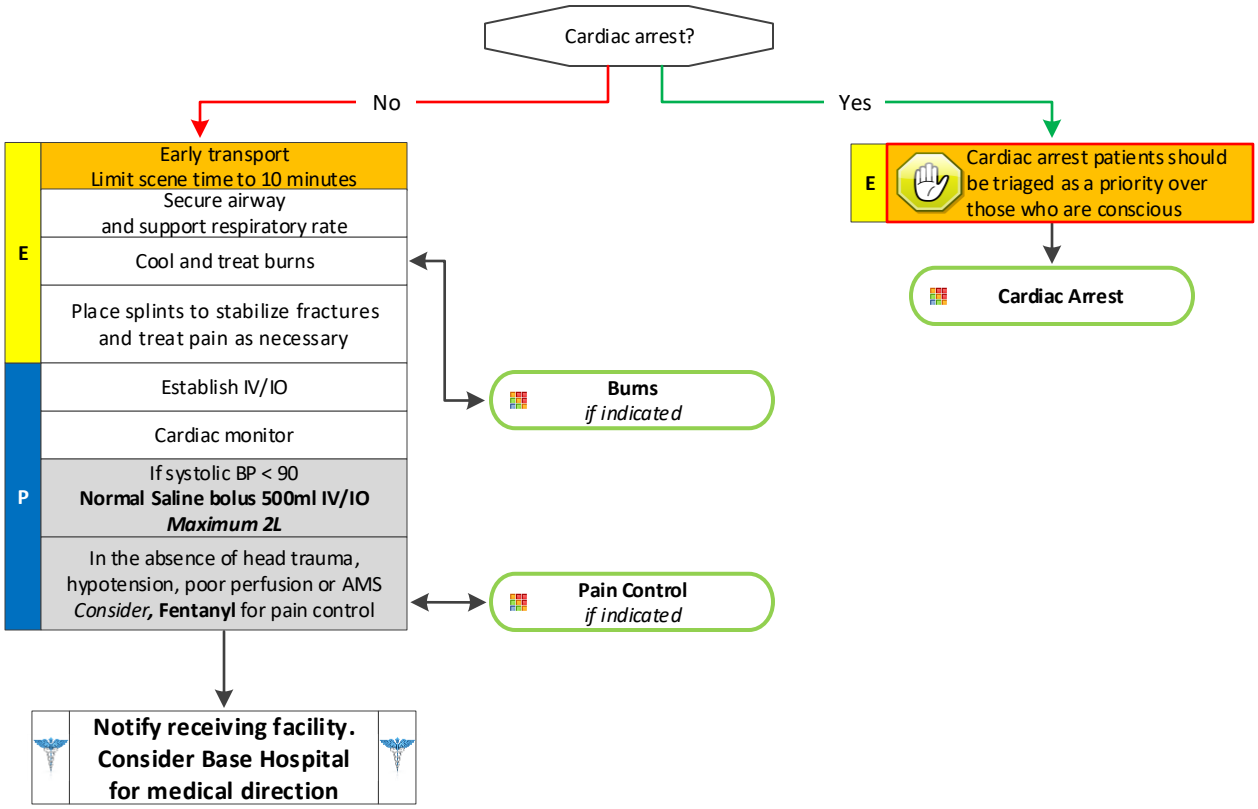
Electrocution

For any electrocution injury

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

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

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



Adult Environmental Treatment Protocols

Electrocution

For any electrocution injury

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

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

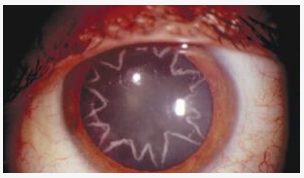
There are five basic mechanisms of injury that occur with lightning strikes:

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

Electrical/lightning burn images

Electrical burn

Electrical burn



Electrical burn

Lightning strike

Lightning strike

Pearls

- Never enter an unsafe scene of an electrical injury.
- In multi-casualty incidents involving electrocution, cardiac arrest patients should be triaged as priority over conscious patients to facilitate early defibrillation. Electrocution patients rarely die as a result of electrical injuries and may have a favorable outcome despite prolonged asystole.
- Be prepared to treat cardiac arrthymias.
- Patients with a combination of trauma and burns should be transported to a trauma center.

San Mateo County Emergency Medical Services

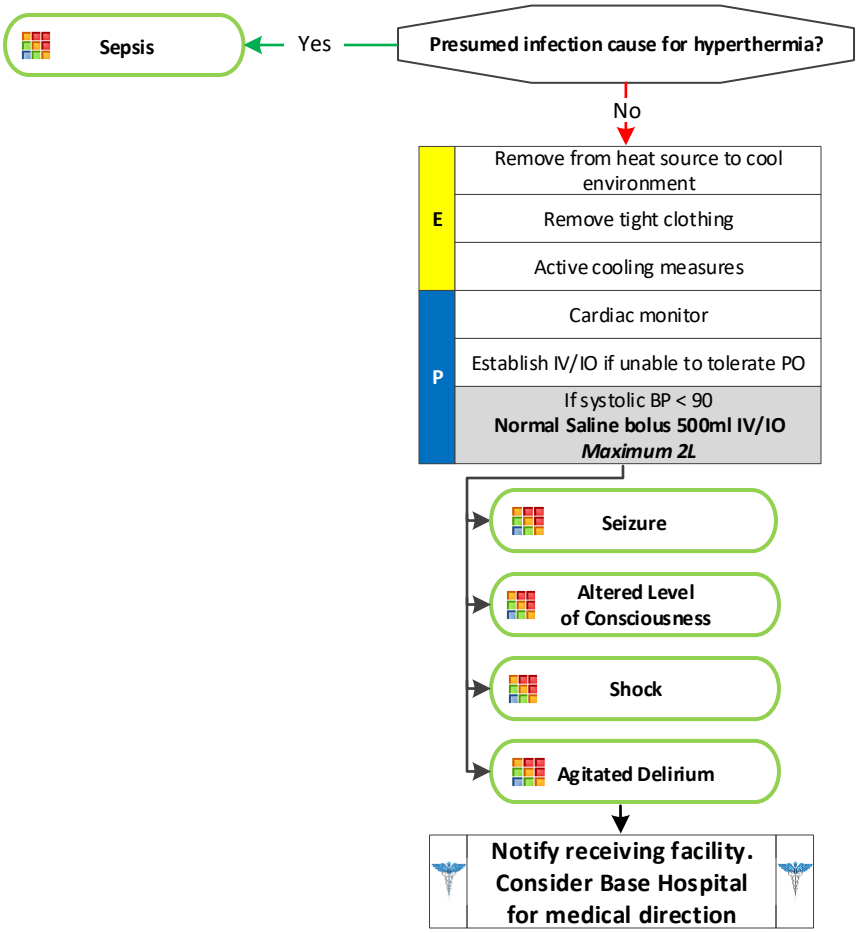
Hyperthermia

For environmental exposure causing hyperthermia (e.g., heat exhaustion and heat stroke); drugs may also be a contributing factor

History
- Exposure to increased temperatures, humidity, or extreme physical exertion
- Time and length of exposure or last seen
- Fatigue or muscle cramping
- Poor oral intake of fluids
- Past medical history
- Medications

Signs and Symptoms
- AMS
- Hot, dry, and/or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

Differential
- Fever/Sepsis
- Hyperthyroidism
- Drug induced hyperthermia (NMS – Neuroleptic Malignant syndrome)
- Delirium tremens (DTs)
- Heat cramps
- Heat exhaustion
- Heat stroke



Pearls
- Check an initial temperature and repeat every 15 minutes while actively cooling.
- Extremes of age are more prone to heat emergencies. Obtain and document the patient temperature and location taken.
- Salicylates, antipsychotics, and some recreational drugs may elevate body temperature.
- Sweating generally disappears as body temperature rises above 104° F.
- Active cooling includes: Removal of bulky clothing; wetting patient with water; and air conditioning/fanning; ice packs to the axilla, groin, and neck.
- Intense shivering may occur as a patient is cooled.
- Seizures may occur with heat stroke; treat seizures per seizure treatment guideline.
- With mild symptoms of heat exhaustion, movement to a cooler environment and fanning may suffice. Increasing symptoms merit more aggressive cooling measures.

Adult Environmental Treatment Protocols

San Mateo County Emergency Medical Services

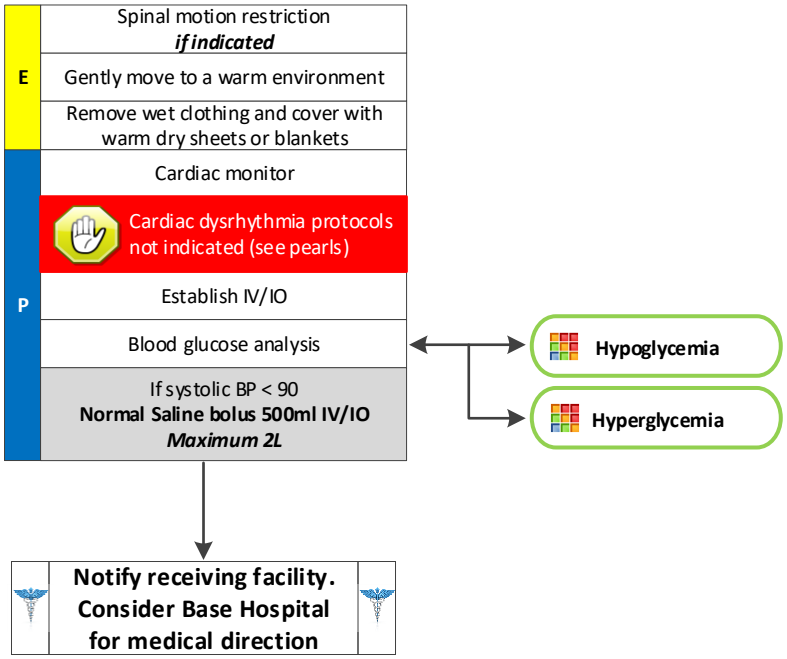
Hypothermia/Cold Injury

For environmental exposures causing hypothermia and/or frostbite injury

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

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

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



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

San Mateo County Emergency Medical Services

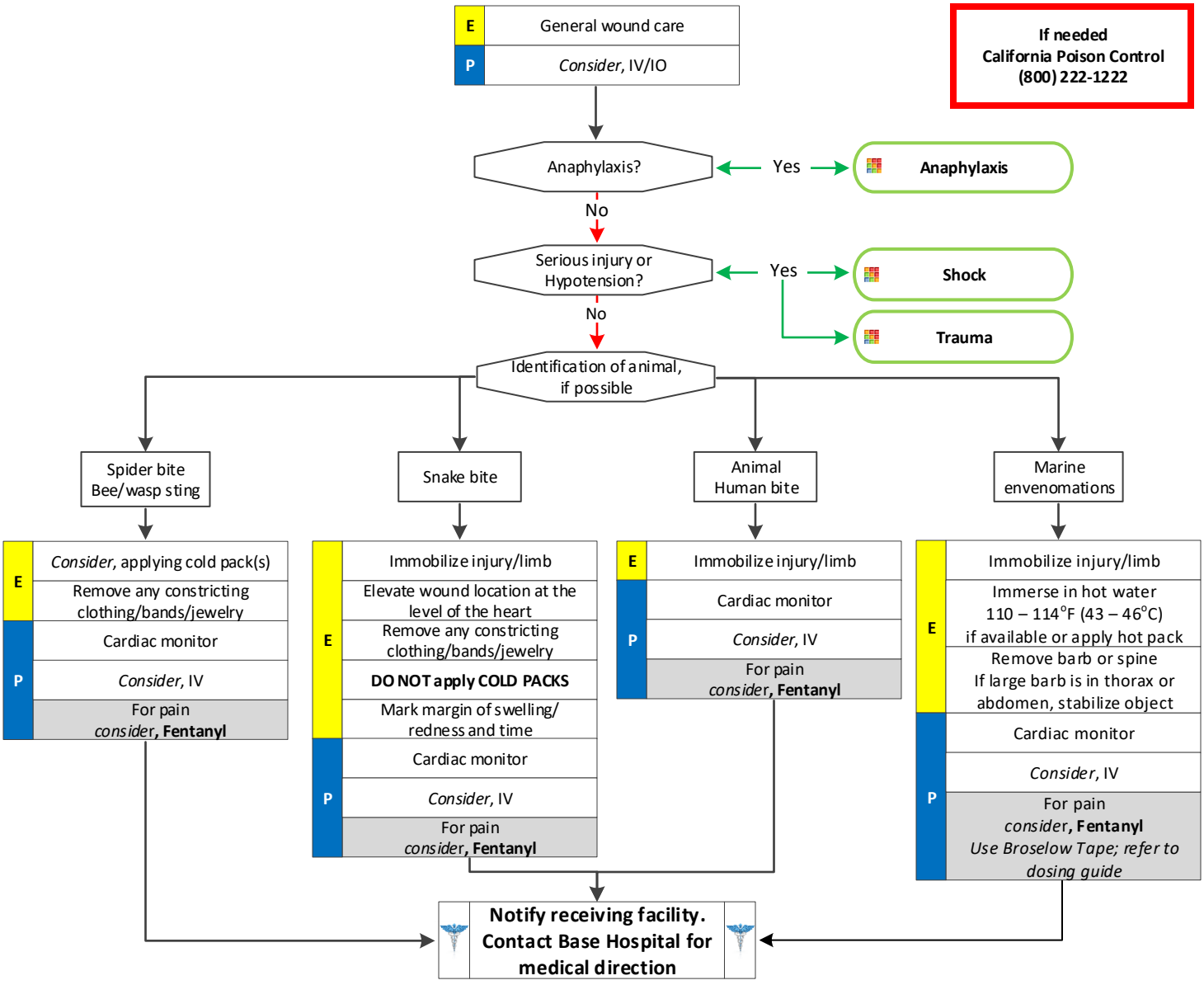
Stings/Venomous Bites

For snake, scorpion, insect, and marine envenomation (e.g., stingrays, jelly fish). NOT for animal bites; use traumatic injury

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

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

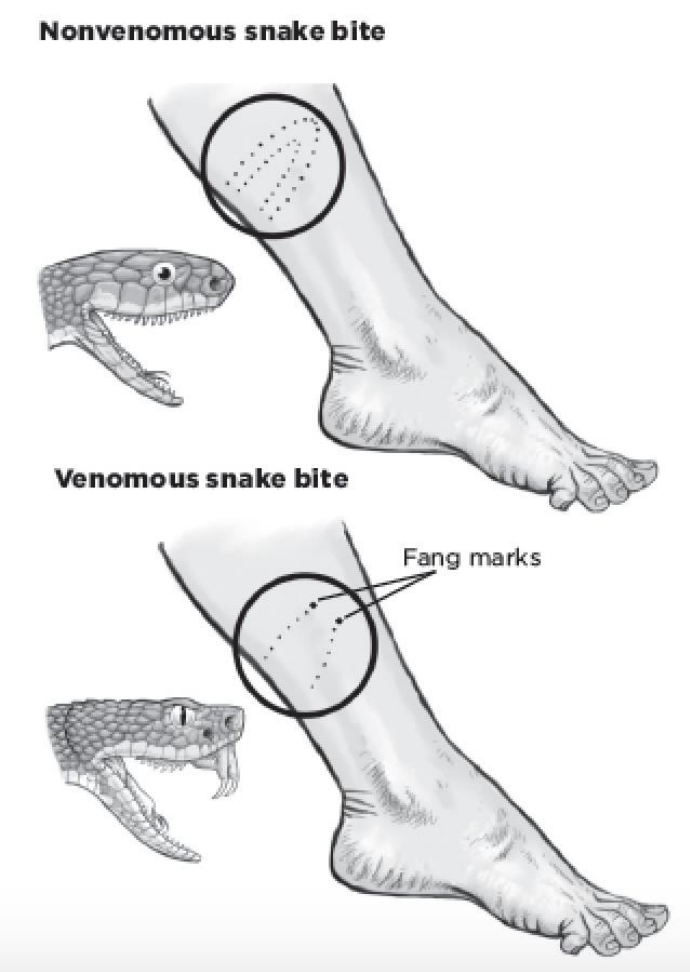
Differential
- Animal bite
- Human bite
- Snake bite (poisonous)
- Spider bite (poisonous)
- Insect sting/bite (bee, wasp, ant, or tick)
- Infection risk
- Rabies risk
- Tetanus risk



Adult Environmental Treatment Protocols

Stings/Venomous Bites

For snakes, scorpion, insects, and marine envenomations (e.g., stingrays, jelly fish). NOT for animal bites; use traumatic injury



Jellyfish sting

Stingray sting

California King snake

Rattlesnake

Common Garter snake

Pearls

- Poisonous snakes in our region are generally of the pit viper family: six rattlesnake species.
- If no pain or swelling is present, envenomation is unlikely. About 25% of snake bites are dry bites.
- Black Widow spider bites tend to be minimally painful initially, but over a few hours, muscular and severe abdominal pain may develop (black spider with a red hourglass on the belly).
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back).
- Evidence of infection includes: swelling, redness, drainage, fever, and red streaks proximal to wound.
- Consider contacting the California Poison Control Center for identification (800) 222-1222.

San Mateo County Emergency Medical Services

Hazmat Exposure/Skin Exposure

For any hazardous material (chemical) exposure. May use with another primary impression (e.g., Inhalation Injury or Burns) when applicable

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

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

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

Secure area
Scene safety
PPE

If needed
request Hazmat
(650) 363-4981

Type of exposure

Radiation

E
- Remove clothing, if appropriate
- Apply Oxygen to maintain goal $SpO_2 \geq 92\%$

P
- Cardiac monitor
- Establish IV/IO
- For nausea/vomiting *consider*, **Ondansetron**
- For pain *consider*, **Fentanyl**

Nerve agents

E
- **Nerve agent kit IM**
  Up to 3 doses rapidly, if needed
- Secure airway
  and support respiratory rate

P
- Establish IV/IO
- Cardiac monitor
- **Atropine 2mg IV/IO/IM**
  Repeat every 3-5 minutes until symptoms resolve
- **If patient is seizing upon EMS arrival, give Midazolam; do not wait to obtain IV or IO access**
  May repeat every 3 to 5 minutes for continued seizure activity
- **If ChemPak is activated, substitute Valium for Midazolam**
  May repeat every 3-5 minutes for continued seizure activity

Chemical burns

E
- For burning involving powders, safely brush off powder. Flush with copious water after all powder is removed .
- For burns involving acids, thoroughly flush affected area(s) with water to remove acid.

P
- For hydrofluoric acid exposure
  Calcium Chloride
  for dysrhythmias or cardiac arrest
- For pain *consider*, **Fentanyl**

For thermal burns:
Burns

Eye Irrigation
Field Procedure

Notify receiving facility.
Consider Base Hospital for medical direction

Adult Toxic Exposure Treatment Protocols

SAN MATEO COUNTY HEALTH
EMERGENCY MEDICAL SERVICES

Treatment Protocol X01

Effective October 2019

Hazmat Exposure/Skin Exposure

For any hazardous material (chemical) exposure. May use with another primary impression (e.g., Inhalation Injury or Burns) when applicable

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

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

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

Pearls

- For gaseous exposures, refer to appropriate respiratory protocols.
- Follow HAZMAT protocols for decontamination. Do not come into contact with or transport any contaminated patient.
- **S**alivation; **L**acrimation; **U**rination (increased or loss of control); **D**efecation or diarrhea; **GI** upset (abdominal pain/cramping); **E**mesis; **M**uscle twitching.
- If triage/MCI issues exhaust supply of Nerve Agent Kits, of if they are not available, use Atropine as indicated.
- Each Nerve Agent Kit contains Pralidoxime and Atropine (Duodote).
- For patients with acute symptoms, there is no limit for Atropine dosing.
- Insecticides: Increased or decreased heart rate, increased secretions, nausea, vomiting, diarrhea, and pinpoint pupils. Consider restraints if necessary for patient's or personnel's protection per Restraint Procedure.
- Carefully evaluate patients to ensure they have not been exposed to another type of agent (e.g., narcotics, vesicants, etc.)
- The main symptom that Atropine addresses is excessive secretions, Atropine should be given until respiratory symptoms improves.

San Mateo County Emergency Medical Services

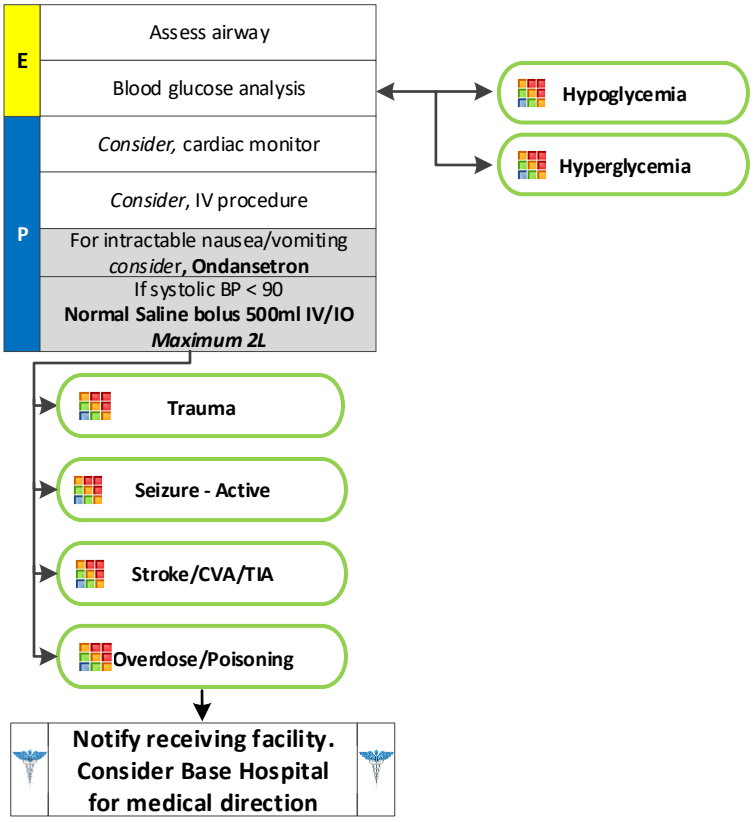
Alcohol Intoxication

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

History
- Known or suspected alcohol use

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

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



Adult Toxic Exposure Treatment Protocols

Pearls
- Use caution when considering administration of opioids for pain control.

San Mateo County Emergency Medical Services

Overdose/Poisoning/Ingestion

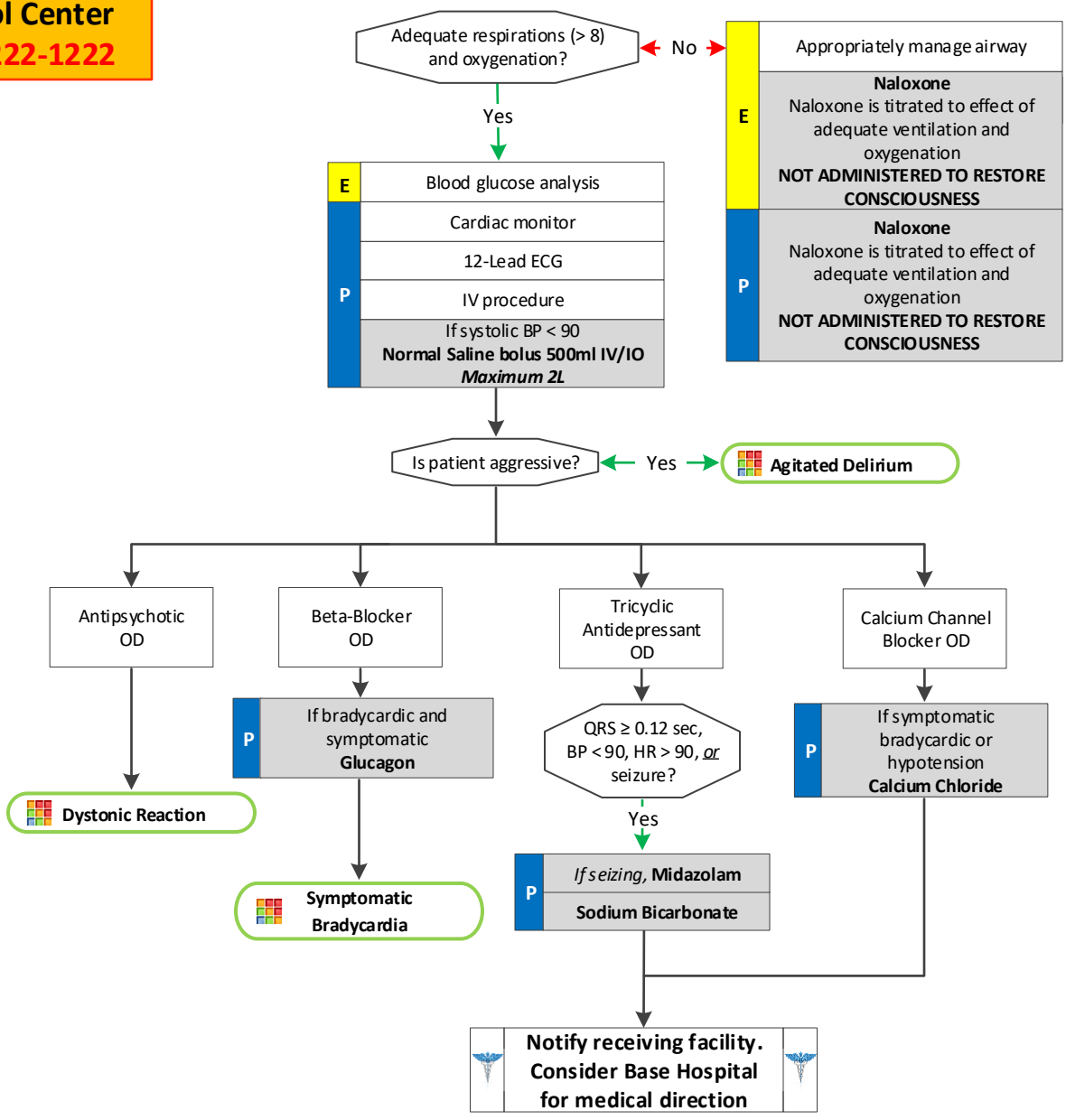
For any intentional or unintentional overdose/poisoning by any route, includes illicit substances and prescription medications, overdose and/or adverse reactions.

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

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

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

California Poison Control Center
(800) 222-1222



Adult Toxic Exposure Treatment Protocols

Overdose/Poisoning/Ingestion

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

Toxidrome	Vital Signs	Mental Status	Pupils	Other Findings	Examples
Anticholinergic (ie a huge dose of atropine)	Hyperthermia (hot as hades), tachycardic, hypertensive, tachypnea	Hypervigilant, agitated (mad as a hatter), hallucinating	Mydriasis (blind as a bat)	Dry flushed skin (dry as a bone, red as a beet), urinary retention	Antihistamines, TCAs, atropine, scopolamine, antispasmodics
Cholinergic	Bradycardia (muscarinic), Tachycardia and hypertension (nicotinic)	Confused, coma	Miosis	SLUDGE (Salivation, lacrimation, urination, diarrhea, GI upset, emesis)	Organophosphate pesticides, nerve agents, physostigmine
Hallucinogen	Hyperthermia, tachycardia, hypertension	Hallucination, synesthesia, agitation	Mydriasis	Nystagmus	PCP, LSD, mescaline
Opioid	Hypothermia, bradycardia, hypotension, bradypnea	CNS depression, coma	Miosis	Hyporeflexia, pulmonary edema	Opioids (heroin, morphine, methadone, dilaudid, etc)
Sedative-Hypnotic	Hypothermia, bradycardia, hypotension, bradypnea	CNS depression, confusion, coma	Miosis	Hyporeflexia	Benzos, barbiturates, alcohols
Serotonin Syndrome	Hyperthermia, tachycardia, hypertension, tachypnea	Confused, agitated, coma	Mydriasis	Tremor, myoclonus, diaphoresis, hyperreflexia, trisumus, rigidity	MAOIs, SSRIs, meperidine, dextromethorphan
Sympathomimetic	Hyperthermia, tachycardia, tachypnea	Agitated, hyperalert, paranoia	Mydriasis	Diaphoresis, tremors, hyperreflexia, seizures	Cocaine, amphetamines, pseudoepherdine

Pearls

- Overdose or toxic ingestion patients with significant ingestion/exposures should be monitored very closely and aggressively treated as indicated. Do not hesitate to contact the Base Hospital or Poison Control for advice as certain critically ill overdose patients may quickly overwhelm medication supplies. For example, a tricyclic overdose with a wide QRS and altered mental status may need to receive multiple Sodium Bicarbonate boluses until QRS narrowing and clinical improvement. Note: Poison Control offers advice, not medical direction.
- Bring medication with the patient to the hospital.
- Tricyclic: Progression of toxicity include decreased mental status, dysrhythmias, seizures, hypotension then coma and death; onset can occur within 5 minutes.
- Acetaminophen: Initially normal or with nausea/vomiting.
- Aspirin: Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure or cerebral edema among other things can present later.
- Depressants: Decreased heart rate, blood pressure or temperature, decreased respirations, and non-specific pupils.
- Stimulants: Increased heart rate, blood pressure or temperature, dilated pupils, and seizures.
- Anticholinergics: Increased heart rate or temperature, dilated pupils, and mental status changes.
- Cardiac medications: Dysrhythmias and mental status changes.
- Solvents: Nausea, vomiting, coughing, and mental status changes.
- Insecticides: Increased or decreased heart rate, increased secretions, nausea, vomiting, diarrhea, and pinpoint pupils. Consider restraints if necessary for patient's or personnel's protection per Restraint Procedure. See Hazmat protocol for insecticide treatment.

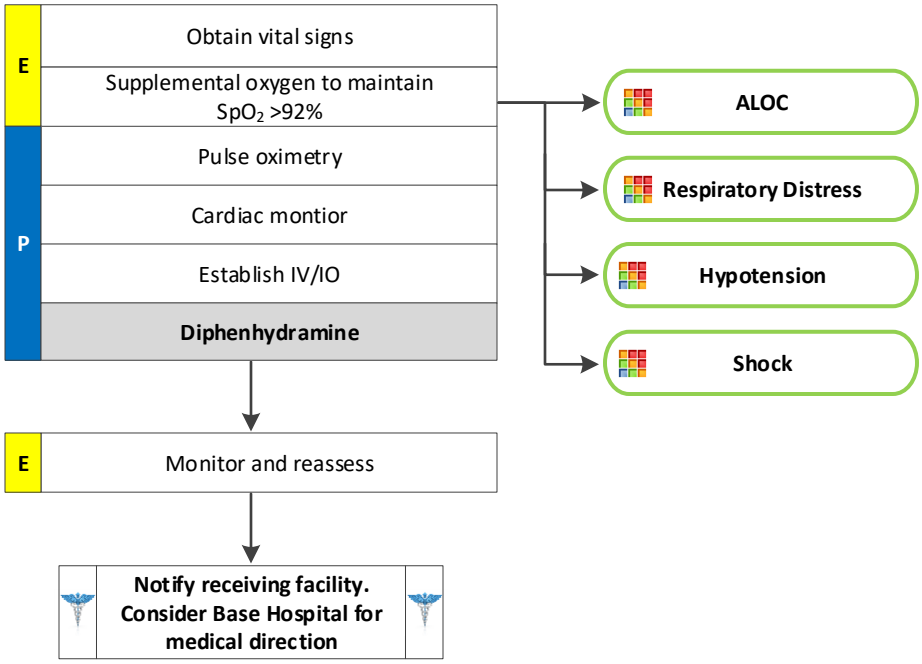
Dystonic Reaction

For suspected dystonic reaction (i.e., reaction, typically from antipsychotic medications, causing abnormal contraction of head and neck muscles)

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

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

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



Pearls
- Common drugs implicated in dystonic reactions include many anti-emetics and anti-psychotic medications including, but not limited to:
  - Prochlorperazine (Compazine)
  - Haloperidol (Haldol)
  - Metoclopromide (Reglan)
  - Promethazine (Phenergan)
  - Fluphenazine (Prolixin)
  - Chlorpromazine (Thorazine)
  - Many other anti-psychotic and anti-emetic drugs

San Mateo County Emergency Medical Services

Agitated Delirium

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

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

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

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

Ensure scene safety. Law enforcement should be present.

Extremely aggressive or violent?

No → **Behavioral/ Psychiatric Crisis**

Yes

P	**Midazolam IN/IM** May repeat to maximum of 10mg
E	*Consider* restraints
E	Monitor restraints and PMS ***if indicated***
E	*Consider* external cooling measures
E	Monitor and reassess
E	Blood glucose analysis → **Hypoglycemia**; **Hyperglycemia**
P	Cardiac monitor
P	$EtCO_2$ monitoring
P	Establish IV/IO
P	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
P	For wide QRS > 0.12mm **Sodium Bicarbonate**

Exit to appropriate TP, *if indicated*

Assume patient has medical cause of behavioral change

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

Notify receiving facility. Consider Base Hospital for medical direction

Adult Toxic Exposure Treatment Protocols

Agitated Delirium

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

Excited Delirium Syndrome:

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

Pearls

- Crew/responder safety is the main priority.
- Any patient who is handcuffed by Law Enforcement and to remain handcuffed and transported by EMS must be accompanied by Law Enforcement in the ambulance.
- Caution using Midazolam for patients with alcohol intoxication.
- All patients who receive either physical or chemical restraint must be continuously observed by EMS personnel. This includes direct visualization of the patient as well as cardiac and $EtCO_2$ monitoring.
- Consider all possible medical/trauma causes for behavior (e.g., hypoglycemia, overdose, substance abuse, hypoxia, seizure, head injury, etc.).
- Do not overlook the possibility of associated domestic violence or child abuse.
- Do not position or transport any restrained patient in a way that negatively affects the patient's respiratory or circulatory status (e.g., hog-tied or prone positions). Do not place backboards, splints, or other devices on top of the patient.
- If restrained, the extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This shall be documented in the PCR.

San Mateo County Emergency Medical Services

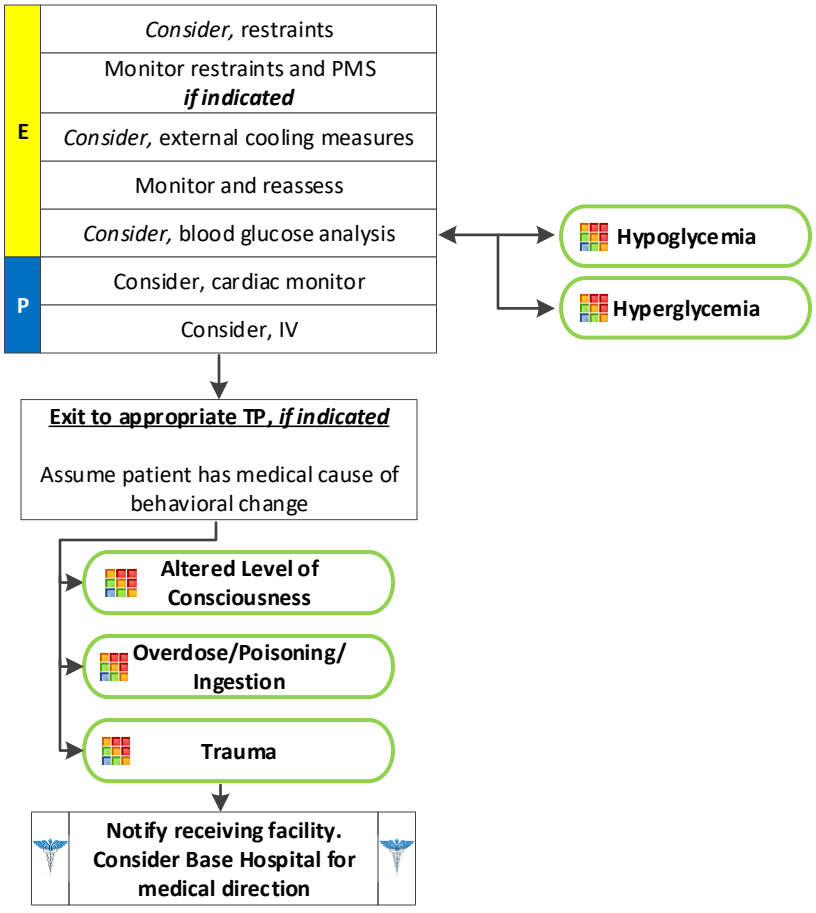
Behavioral/Psychiatric Crisis

For psychiatric crisis that is the primary problem. NOT for anxiety/agitation secondary to medical etiology, use primary impression related to medical issue

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

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

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



Adult Behavioral Treatment Protocols

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

San Mateo County Emergency Medical Services

Abdominal Pain/Problems (GI/GU)

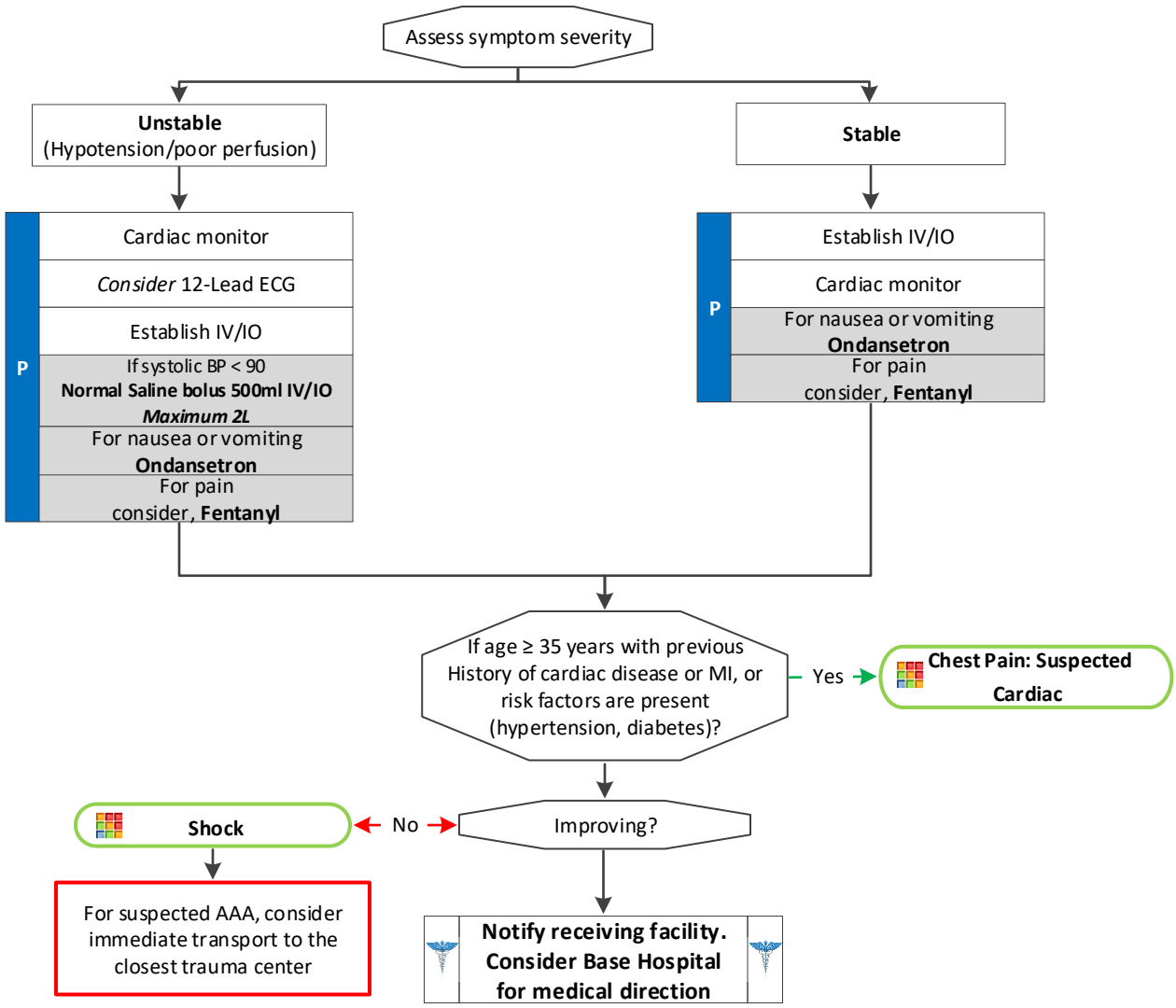
For any pain or problem in the abdominal/flank region that does not have a more specific primary impression; includes post-surgical complications

History
- Age
- Past medical/surgical history
- Medications
- **O**nset
- **P**rovocation
- **Q**uality (e.g., crampy, constant, sharp, dull, etc.)
- **R**egion/radiation/referred
- **S**everity (0 – 10 scale)
- **T**ime (duration/repetition)
- Fever
- Last meal eaten
- Last bowel movement/emesis
- Menstrual history (pregnancy)

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

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

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



Adult Medical Treatment Protocols

Abdominal Pain/Problems (GI/GU)

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

Pearls

- Diabetic, females, and geriatric patients often have atypical pain, or only generalized complaints. Suspect cardiac etiology in these patients, perform a 12-Lead ECG, and investigate until proven otherwise.
- Ondansetron is not indicated or useful for motion sickness.
- Abdominal pain in women of childbearing age should be treated as pregnancy-related until proven otherwise.
- An abdominal aneurysm should be considered with severe abdominal or non-traumatic back pain, especially in patients > 50 years of age or patients with shock/poor perfusion. Reroute to the closest trauma center for immediate access to surgical services.

San Mateo County Emergency Medical Services

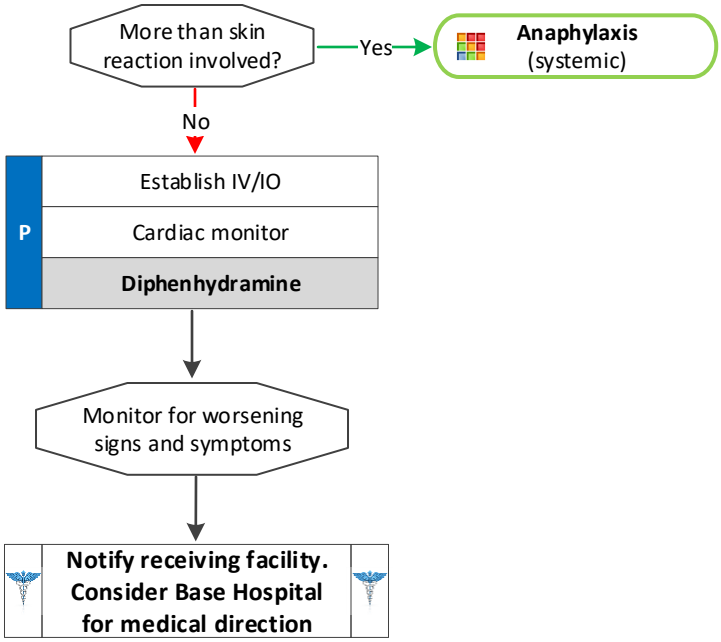
Allergic Reaction

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

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

Signs and Symptoms
- Itching or hives
- Erythema

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



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

San Mateo County Emergency Medical Services

Anaphylaxis

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

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

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

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

E	Assist patient or administer Epinephrine Auto-Injector *if available*
	Epinephrine Auto-Injector
P	**Epinephrine 1:1,000 IM**
	Establish IV/IO
	Cardiac monitor
	$EtCO_2$ monitoring
	Diphenhydramine
	Albuterol
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
	If hypotensive or no improvement, **Epinephrine 1:1,000 IM**
	If hypotensive or no improvement, **Epinephrine 1:10,000 IV**
	Consider, 12-Lead ECG

↓

Airway Procedure *if indicated*

↓

Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Anaphylaxis

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

Pearls

- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Epinephrine is the drug of choice and the first drug that should be administered in acute anaphylactic reactions. IM Epinephrine should be administered as priority before or during attempts at IV or IO access.
- Anaphylaxis that is unresponsive to initial treatment of IM Epinephrine may require IV Epinephrine administration.
- Fluid bolus for patients demonstrating signs and symptoms of shock.
- Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash or skin involvement.
- Angioedema is seen in moderate to severe reactions and is swelling involving the face, lips, or airway structures. This can also be seen in patients taking ACE-inhibitor blood pressure medications such as Prinivil, Zesteril, or Lisinopril; medications typically ending in -il.
- Adult patients who receive Epinephrine should receive a 12-Lead ECG at some point during their care, but this should NOT delay the administration of Epinephrine.
- All patients with respiratory symptoms must have continuous $EtCO_2$ measurement.

San Mateo County Emergency Medical Services

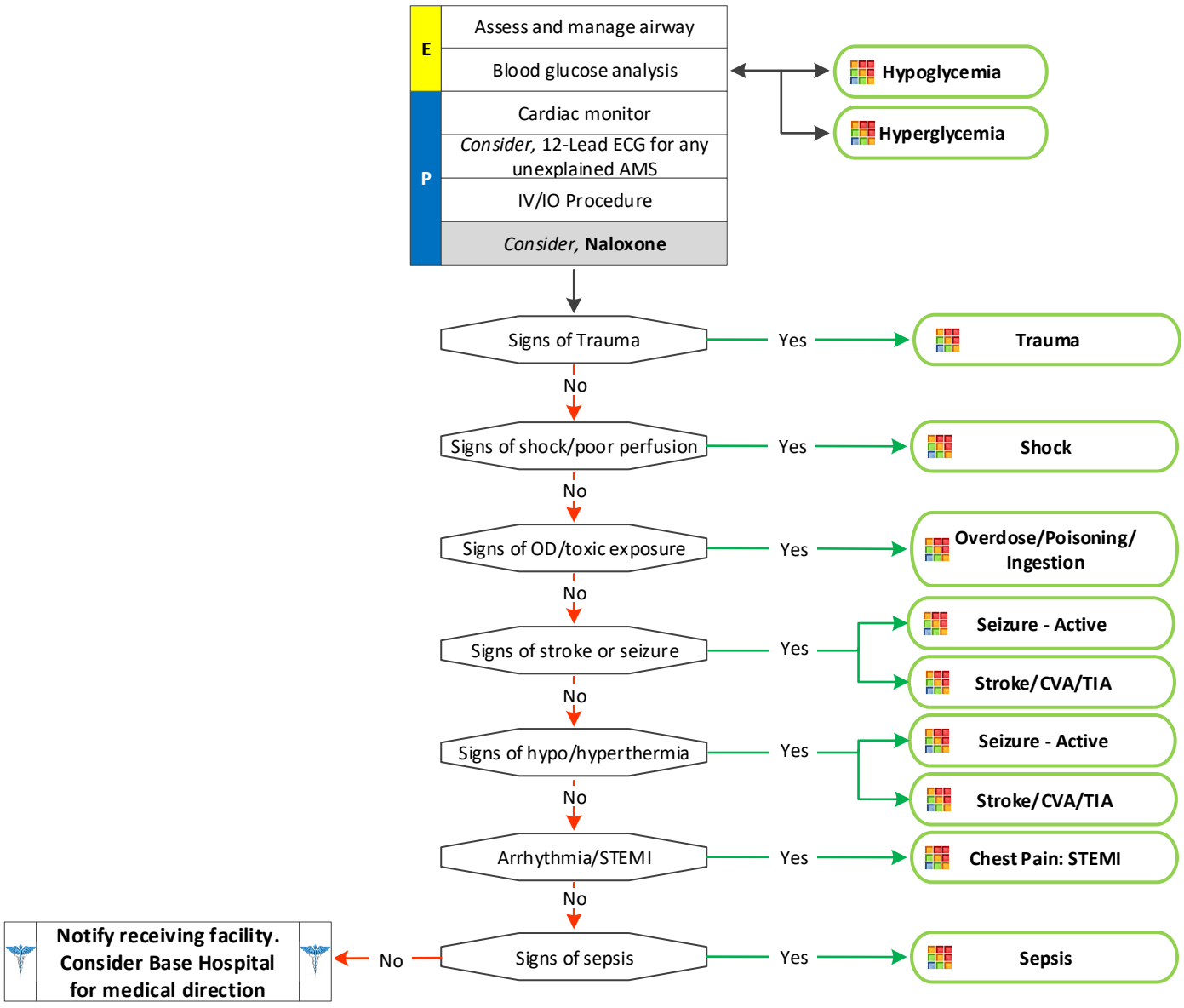
Altered Level of Consciousness (ALOC)

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

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

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

Differential
- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Thyroid
- Electrolyte abnormality
- **A**cidosis or alkalosis
- **E**nvironmental exposure
- **I**nfection or sepsis
- **O**verdose or toxicological
- **U**nder dose of prescribed medications
- **T**rauma
- **I**nsulin or diabetic emergency
- **P**sychiatric disorder
- **S**epsis or shock



Adult Medical Treatment Protocols

SAN MATEO COUNTY HEALTH
EMERGENCY MEDICAL SERVICES

Treatment Protocol A04

Effective April 2020

Altered Level of Consciousness (ALOC)

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

Pearls

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

San Mateo County Emergency Medical Services

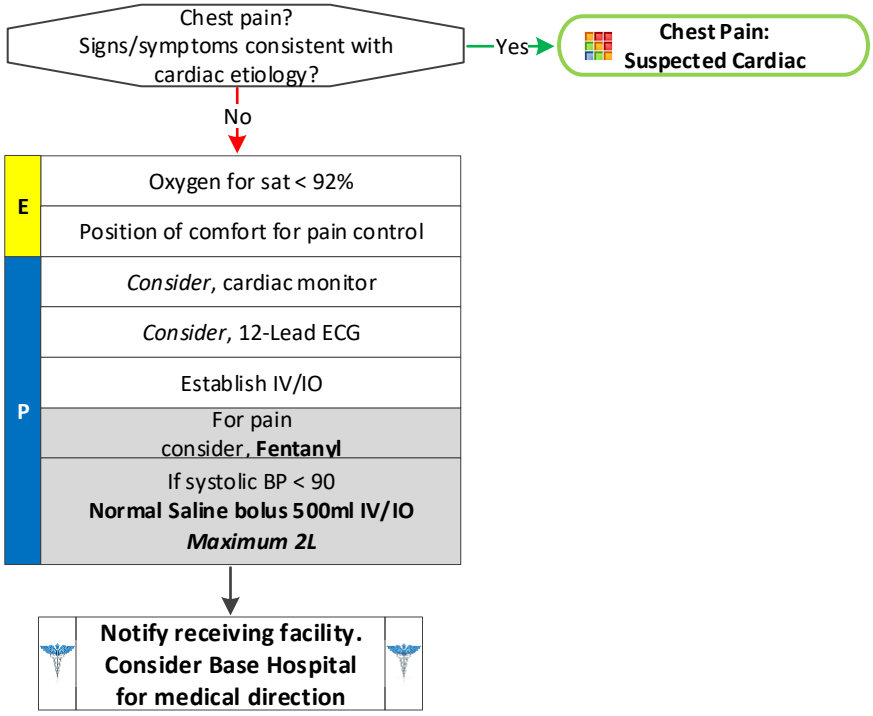
Chest Pain: Not Cardiac

For musculoskeletal and pleuritic pain and any chest pain that is NOT of possible cardiovascular etiology

History
- Age
- Medications (Erectile dysfunction medications)
- Past medical history (e.g., MI, angina, diabetes, or post menopausal)
- Allergies
- Recent physical exertion
- **O**nset
- **P**rovocation
- **Q**uality (e.g., pressure, constant, sharp, dull, etc.)
- **R**egion/Radiation/Referred
- **S**everity (0 – 10 scale)
- **T**ime (onset/duration/repetition)

Signs and Symptoms
- Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
- Respiratory distress
- Hypotension or shock
- Altered mental status
- Syncope
- Nausea
- Abdominal Pain
- Diaphoresis

Differential
- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (e.g., 1°, 2°, or 3°)
- Overdose



Pearls
- Many STEMIs evolve during prehospital care and may not be noted on the initial 12-Lead ECG.
- An ECG should be obtained prior to treatment for bradycardia if patient condition permits.
- If a patient has taken their own Nitroglycerin without relief, consider potency of medication. Provider maximum doses do not include patient administered doses.
- Monitor for hypotension after administration of nitroglycerin and opioids.
- Diabetics, geriatric, and female patients often have atypical pain, or only generalized complaints. Suspect cardiac etiology in these patients, and perform a 12-Lead ECG.

Adult Medical Treatment Protocols

San Mateo County Emergency Medical Services

Chest Pain: STEMI

For any suspected STEMI, with or without chest pain

History
- Age
- Medications (Erectile dysfunction medications)
- Past medical history (e.g., MI, angina, diabetes, or post menopausal)
- Allergies
- Recent physical exertion
- **O**nset
- **P**rovocation
- **Q**uality (e.g., pressure, constant, sharp, dull, etc.)
- **R**egion/Radiation/Referred
- **S**everity (0 – 10 scale)
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Signs and Symptoms
- Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
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- Hypotension or shock
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Differential
- Acute myocardial infarction
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- Pacemaker failure
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- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (e.g., 1°, 2°, or 3°)
- Overdose

Chest pain?
Signs/symptoms consistent with cardiac etiology?

Yes

E	Oxygen for sat < 92%
	Aspirin
P	Cardiac monitor
	12-Lead ECG (within 5 mins of arrival)

Acute MI/STEMI
(STEMI = 1mm ST segment elevation ≥ 2 contiguous leads; See 12-Lead Procedure)
EKG Reads ****ACUTE MI SUSPECTED****
or equivalent

Approved
STEMI Receiving Centers

Kaiser Redwood City
Mills - Peninsula Medical Center
Sequoia Hospital
Seton Hospital
Stanford Hospital

No

P	Establish IV/IO
	Nitroglycerin (Hold for BP < 110)
	For pain *consider*, **Fentanyl**
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***

Yes

Declare a STEMI Alert & Transmit EKG

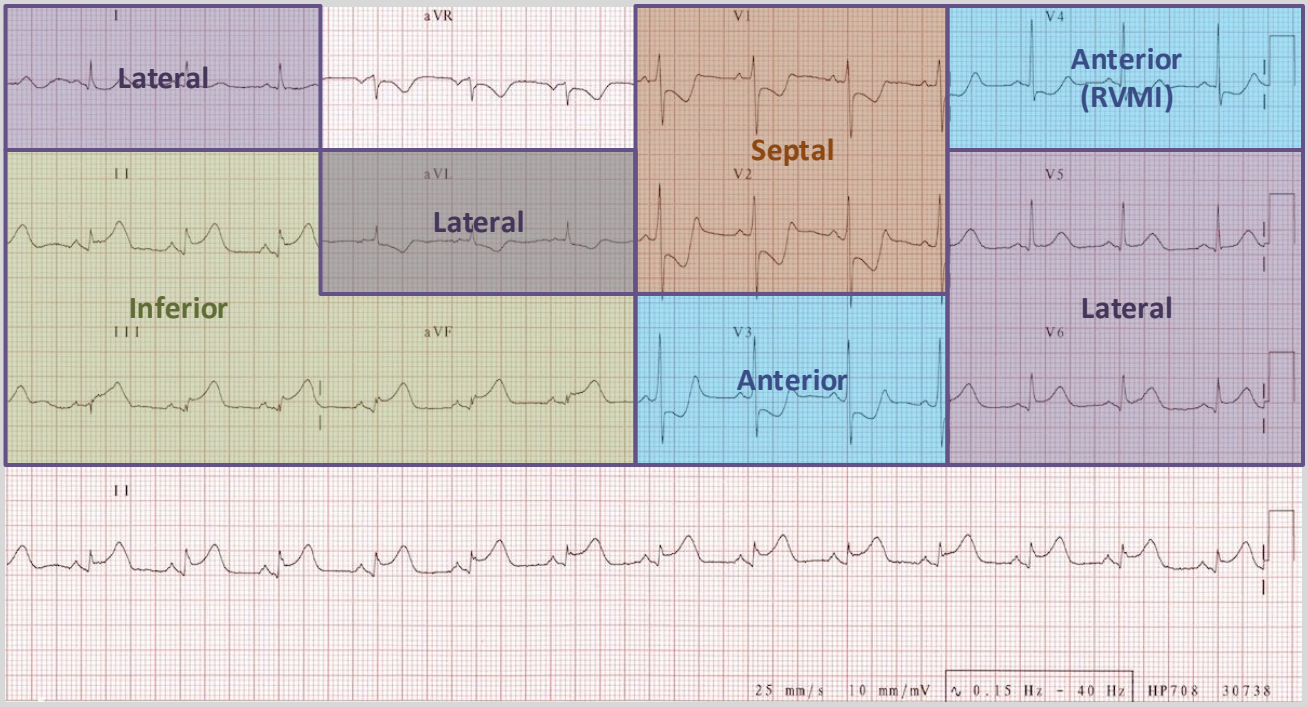
P	Establish IV/IO
	Nitroglycerin (Hold for BP < 110)
	For pain *consider*, **Fentanyl**
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***

Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Chest Pain: STEMI

For any suspected STEMI, with or without chest pain



ST Elevation in 2 or more leads: Leads II, III, aVF → Inferior wall MI (vessel likely RCA or LCx)
ST Elevation in 2 or more leads: Leads I, aVL, V_5, V_6 → Lateral wall MI (vessel likely LCx or LAD branch)
ST Elevation in 2 or more leads: Leads V_1, V_2 → Septal wall MI (vessel likely LCx or LAD branch)
ST Elevation in 2 or more leads: Leads V_3, V_4 → Anterior wall MI (vessel likely LCx or LAD branch)

**Look for ST DEPRESSION in reciprocal leads (opposite wall) to confirm diagnosis.

**Isolated ST elevation in aVR with ST depression in all other leads should raise suspicion for a proximal LAD Artery injury or Left Main Coronary Artery abnormality. This is not STEMI criteria, but the 12-Lead ECG should be transmitted to the ED for consultation. Consider transport to a STEMI receiving center.

Pearls

- If there is question about a 12-Lead ECG, transmit it to the closest STEMI Center for physician interpretation.
- Avoid Nitroglycerin in any patient who has used Viagra (Sildenafil) or Levitra (Vardenafil) in the past 24 hours or Cialis (Tadalafil) in the past 36 hours due to the potential of severe hypotension.
- Avoid Nitroglycerin in patients who are having an inferior STEMI
- Many STEMIs evolve during prehospital care and may not be noted on the initial 12-Lead ECG.
- An ECG should be obtained prior to treatment for bradycardia if patient condition permits.
- If a patient has taken their own Nitroglycerin without relief, consider potency of medication. Provider maximum doses do not include patient administered doses.
- Monitor for hypotension after administration of nitroglycerin and opioids.
- Diabetics, geriatric, and female patients often have atypical pain, or only generalized complaints. Suspect cardiac etiology in these patients, and perform a 12-Lead ECG.

San Mateo County Emergency Medical Services

Chest Pain: Suspected Cardiac

For any chest pain that is of possible cardiovascular etiology, but NOT STEMI (e.g., non-STEMI, pericarditis, dissection)

History
- Age
- Medications (Erectile dysfunction medications)
- Past medical history (e.g., MI, angina, diabetes, or post menopausal)
- Allergies
- Recent physical exertion
- **O**nset
- **P**rovocation
- **Q**uality (e.g., pressure, constant, sharp, dull, etc.)
- **R**egion/Radiation/Referred
- **S**everity (0 – 10 scale)
- **T**ime (onset/duration/repetition)

Signs and Symptoms
- Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
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Differential
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Chest pain?
Signs/symptoms consistent with cardiac etiology?

Yes

E	Oxygen for sat < 92%
	Aspirin
P	Cardiac monitor
	12-Lead ECG (within 5 mins of arrival)

Acute MI/STEMI
(STEMI = 1mm ST segment elevation ≥ 2 contiguous leads; See 12-Lead Procedure)
EKG Reads ****ACUTE MI SUSPECTED****
or equivalent

No

P	Establish IV/IO
	Nitroglycerin (Hold for BP <110)
	For pain consider, **Fentanyl**
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***

Yes

Declare a STEMI Alert & Transmit EKG

P	Establish IV/IO
	Nitroglycerin (Hold for BP < 110)
	For pain consider, **Fentanyl**
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***

Notify receiving facility. Consider Base Hospital for medical direction

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Adult Medical Treatment Protocols

Chest Pain: Suspected Cardiac

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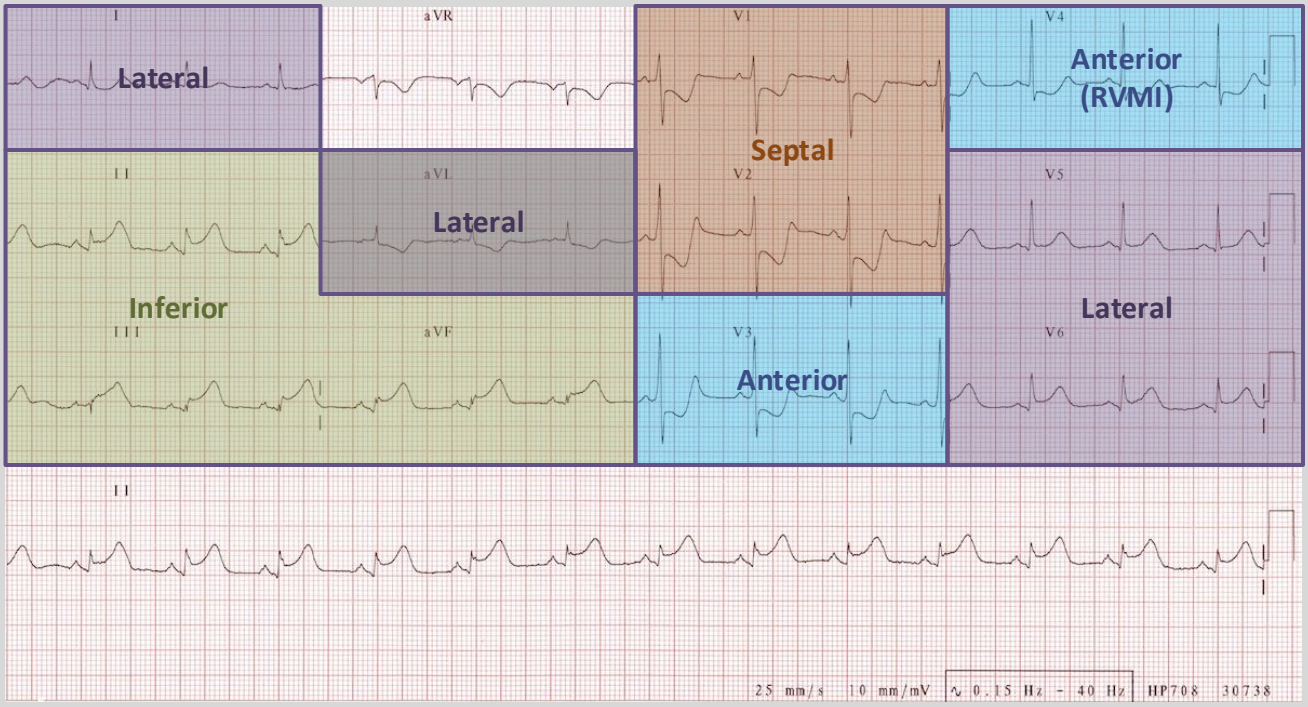

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Pearls

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San Mateo County Emergency Medical Services

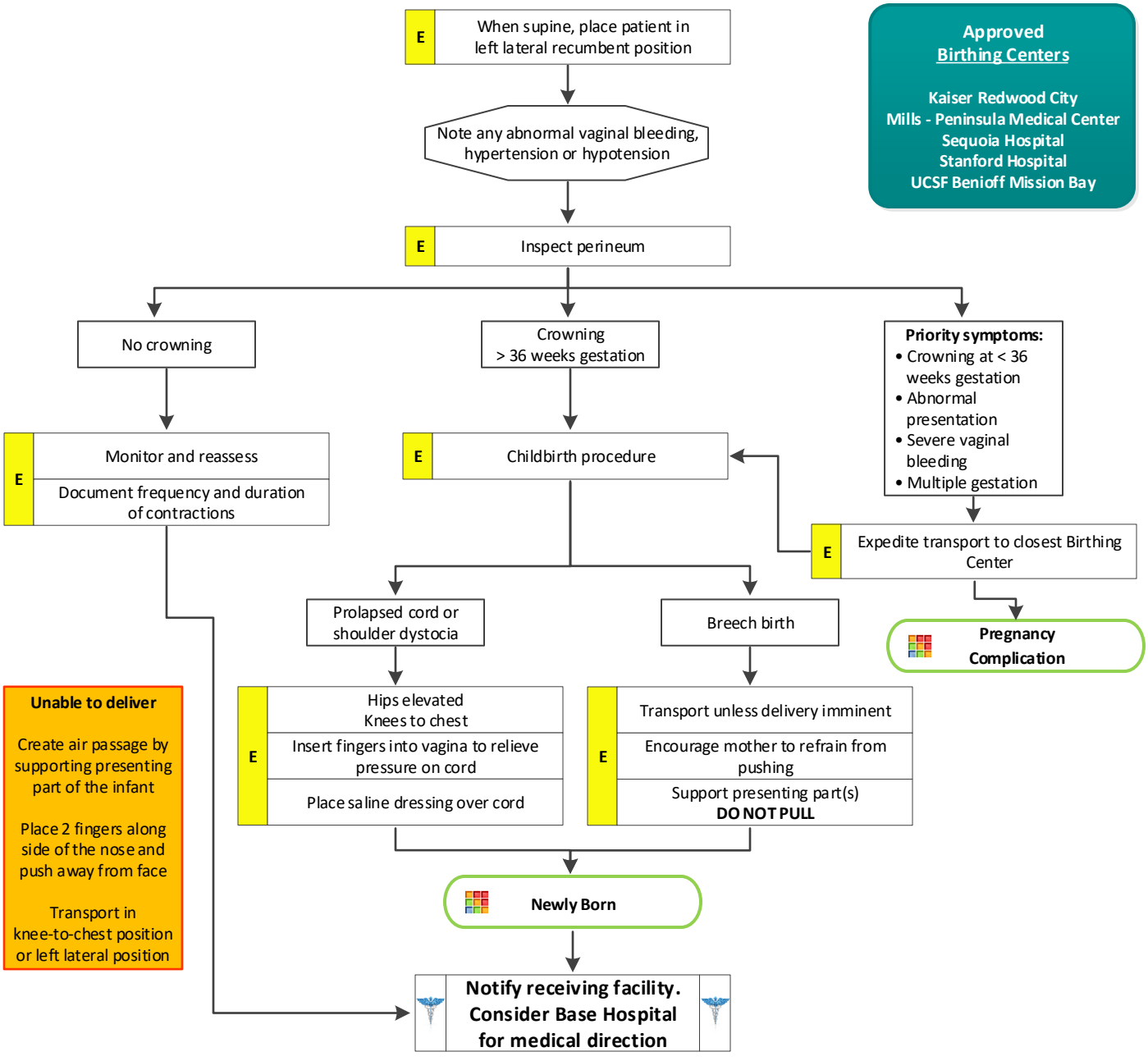
Childbirth (Mother)

For delivery or imminent delivery of a fetus beyond the first trimester (12 weeks). For < 12 weeks use Pregnancy Complications

History
- Due date
- Time contractions started/how often
- Rupture of membranes
- Time/amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Gravida/Para status
- High risk pregnancy

Signs and Symptoms
- Contractions
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

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



Adult Medical Treatment Protocols

Childbirth (Mother)

For delivery or imminent delivery of a fetus beyond the first trimester (12 weeks). For < 12 weeks use Pregnancy Complications

Pearls

- Do not perform digital vaginal exam
- Document all times (delivery, contraction frequency and length, and time cord was cut).
- Document the name of the prehospital provider who cut the cord.
- 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.
- For prolapsed cord, wrap cord in saline soaked gauze cover to keep warm.

San Mateo County Emergency Medical Services

Diarrhea

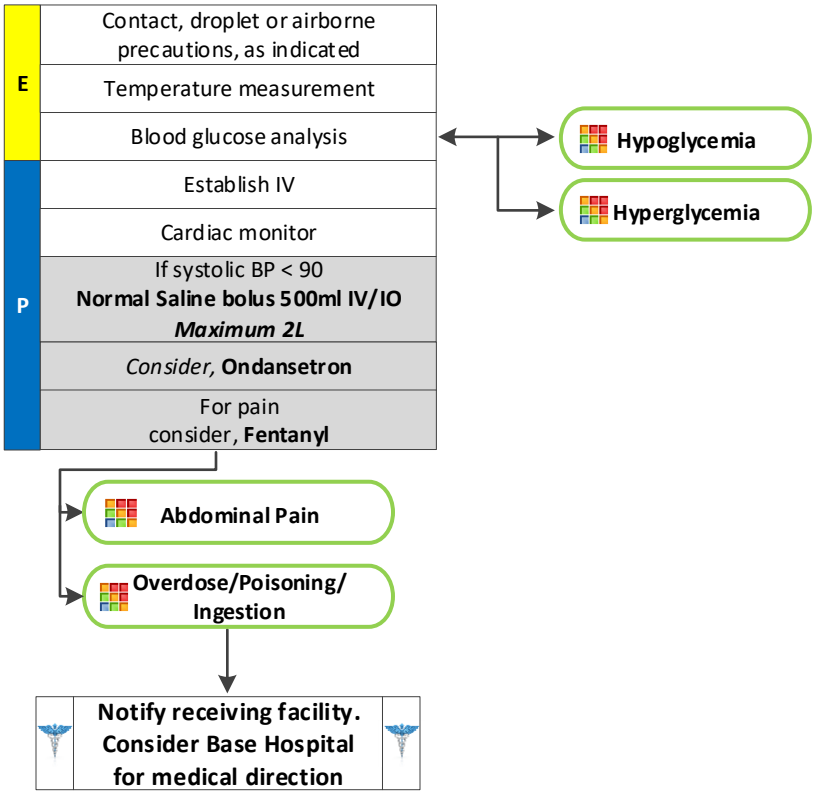
For diarrhea without bleeding. NOT for melena, use Upper GI Bleeding

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

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

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

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



Adult Medical Treatment Protocols

Pearls
- Consider Ebola and obtain recent travel history.
- When you have a concern for a contagious infectious disease (i.e., measles, SARS, Ebola), contact your supervisor.

Dizziness/Vertigo

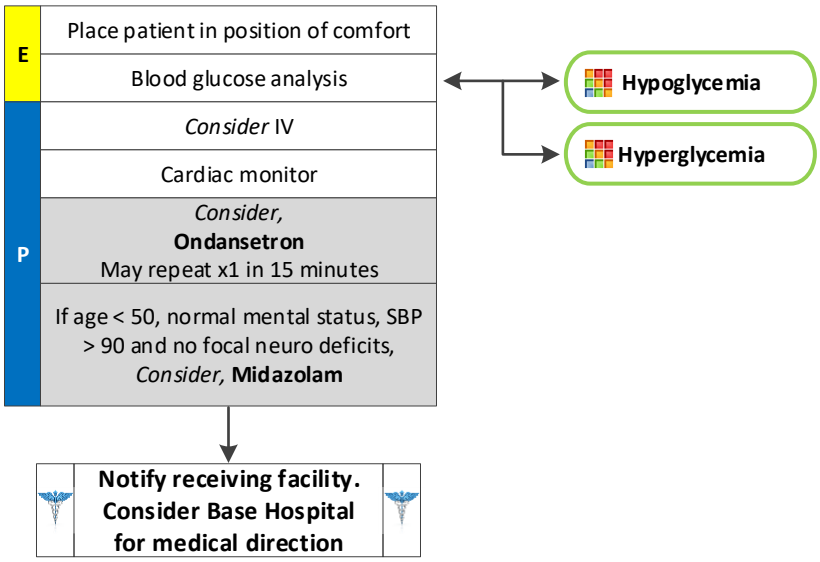
For lightheadedness or vertigo without syncope

History
- Age
- Duration of symptoms
- Severity of symptoms
- Past medical history
- Medications/changes in medications
- History of head or recent trauma
- Headache
- Tinnitus or hearing loss

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

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

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



Adult Medical Treatment Protocols

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

San Mateo County Emergency Medical Services

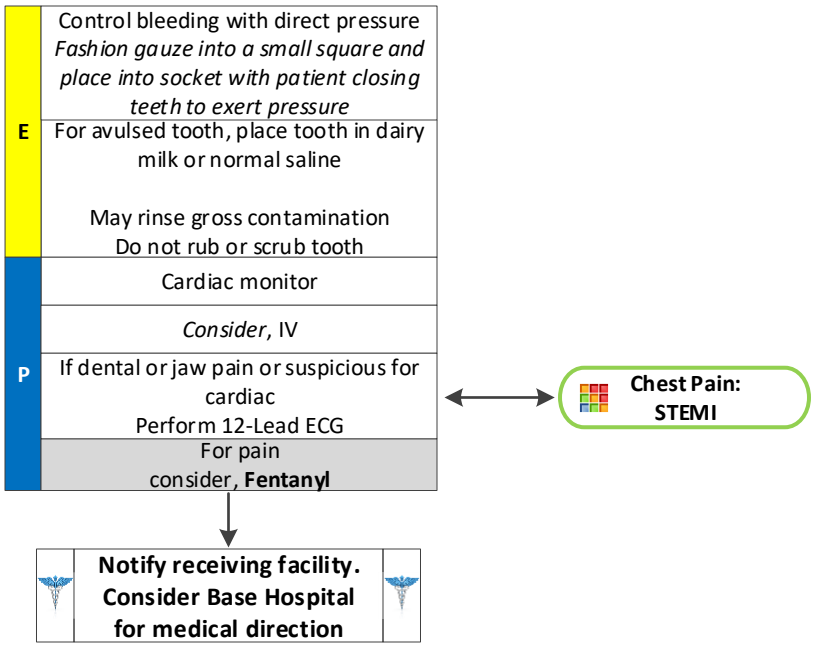
ENT/Dental Problem - Unspecified

For a problem located in the ear, nose, throat area; NOT epistaxis – use PI Epistaxis; NOT airway obstruction – use Airway Obstruction

History
- Age
- Past medical history
- Medications
- Onset of pain/injury
- Trauma with "knocked out" tooth
- Location of tooth
- Whole vs. partial tooth injury

Signs and Symptoms
- Bleeding
- Pain
- Fever
- Swelling
- Tooth missing or fractured

Differential
- Tooth decay
- Infection
- Fracture
- Avulsion
- Abscess
- Facial cellulitis
- Impacted tooth (wisdom)
- TMJ Syndrome
- Myocardial infarction



Adult Medical Treatment Protocols

Pearls
- Significant soft tissue swelling to the face or oral cavity can represent a cellulitis or abscess.
- Scene and transport times should be minimized in complete tooth avulsions. Reimplantation is possible within 4 hours if the tooth is properly cared for.
- Occasionally, cardiac chest pain can radiate to the jaw.
- All pain associated with teeth should be associated with a tooth which is tender to tapping or touch, or sensitivity to hot or cold.

San Mateo County Emergency Medical Services

Epistaxis

For any bleeding from the nares

History
- Age
- Past medical history (hemophilia, Von Willebrand)
- Medications (HTN, anticoagulants, aspirin, NSAIDs)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding (mild or severe)

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

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

E	Control bleeding with direct pressure Compress nostrils with direct pressure with head tilted forward in position of comfort
P	Cardiac monitor
	Consider, IV
	Consider, **Ondansetron**
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***

↓

Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Pearls
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.
- Direct pressure is defined as constant, firm pressure for 20 minutes with head positioned forward without reexamining the affected nares(s).
- Anticoagulants include warfarin (Coumadin), apixaban (Elequis), heparin, enoxaparin (Lovenox), dabigatran (Pradaxa), and rivaroxaban (Xarelto).
- Anti-platelet agents like aspirin and many over-the-counter headache relief powders (i.e., Excedrin Migraine),

San Mateo County Emergency Medical Services

Eye Problem - Unspecified

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

History
- Age
- Past medical history (glaucoma or retinal detachment)
- Medications (HTN, anticoagulants, aspirin, NSAIDs)
- Trauma or exposure to chemicals
- Time of injury
- Onset of symptoms
- Previous eye surgery, including LASIX
- Contact lenses

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

Differential
- Glaucoma
- Retinal detachment
- Multi-system trauma
- Head trauma
- Orbital cellulitis
- Chemical burn
- Welding burn
- Corneal abrasion
- Conjunctivitis
- Parasite

	Temporary, complete vision loss?	↔ **Stroke/CVA/TIA**
E	If suspected chemical burn, immediately and continuously irrigate with Normal Saline for 15 minutes	
E	If impaled object, foreign body, or globe rupture suspected, do not irrigate. Do not remove impaled object. Cover eye with a loose, protective dressing (eye cup), putting no pressure on the globe. Cover BOTH eyes if practical to reduce eye movement	
P	If possible, keep the patient's face upward and head of bed elevated greater than 30°	
P	Cardiac monitor	
P	*Consider*, IV	
P	*Consider*, **Ondansetron**	
P	For pain consider, **Fentanyl**	

↓

Notify receiving facility. Consider Base Hospital for medical direction

Pearls
- Suspect an eye injury if any significant facial trauma.
- Normal Saline is the preferred solution for irrigation, but sterile water may be used if Normal Saline is not immediately available.
- If globe rupture is suspected (high velocity mechanism, impaled object, irregular pupil, significantly decreased vision in the acute setting), the eye should be protected from environment and NO irrigation should be administered.
- Do not remove impaled objects. Protect them from movement with a protective dressing (eye cup) and cover BOTH eyes to reduce eye movement. Explain to patient that the injured eye moves with the other eye and movement can worsen injury.
- Protect the patient from further eye injury/increases in intraocular pressure by elevating the head of the gurney, keeping the patient's face upward, consider Ondansetron for nausea.

Adult Medical Treatment Protocols

Fever

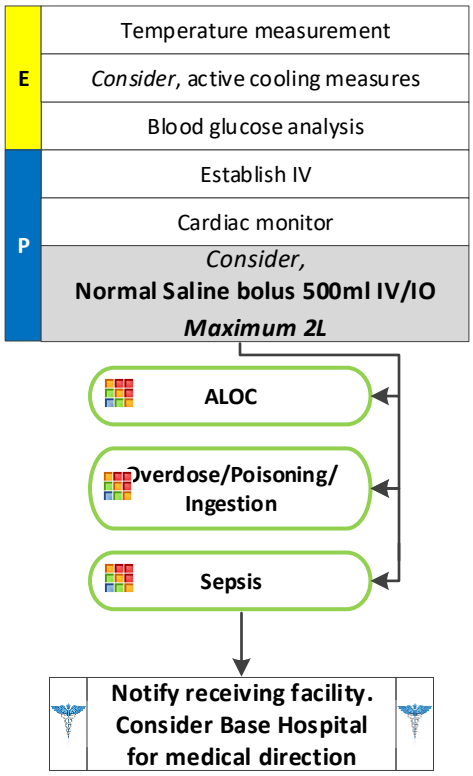
For reported or tactile fever that is NOT suspected sepsis. For sepsis, use primary impression Sepsis

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

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

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

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



Pearls
- Rehydration with fluids increases the patient's ability to sweat and facilitates natural heat loss.
- Consider Ebola and obtain recent travel history.
- When you have a concern for a contagious infectious disease (i.e., measles, SARS, Ebola), contact your supervisor.

Adult Medical Treatment Protocols

San Mateo County Emergency Medical Services

General Weakness

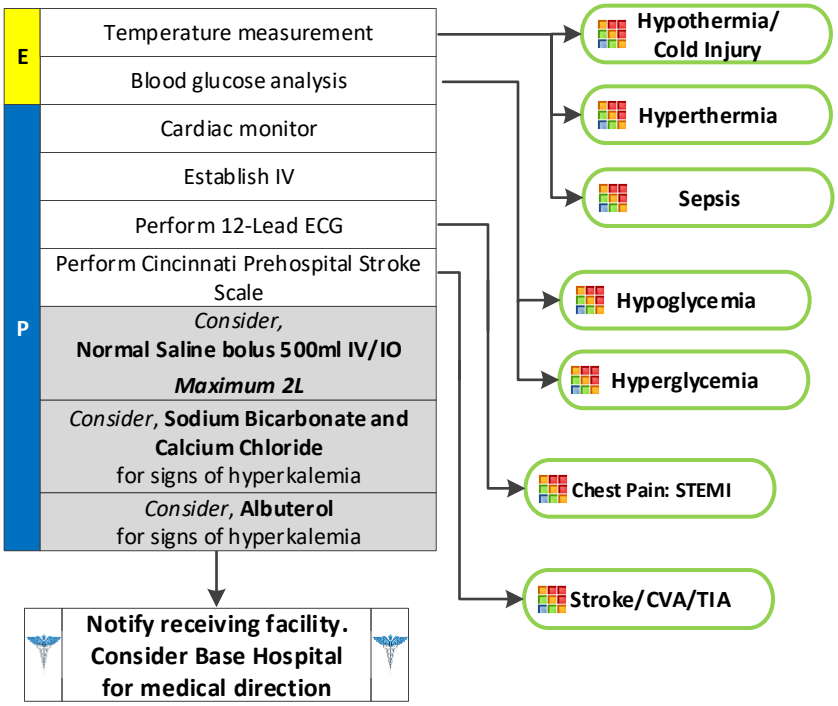
For non-focal weakness, general malaise, and any nonspecific 'sick' symptoms

History
- Age
- Duration of symptoms
- Severity of symptoms
- Past medical history (e.g., cancer, heart disease, adrenal disease, diabetes, thyroid, dialysis)
- Medications (hypoglycemic agents/diuretics)

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

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

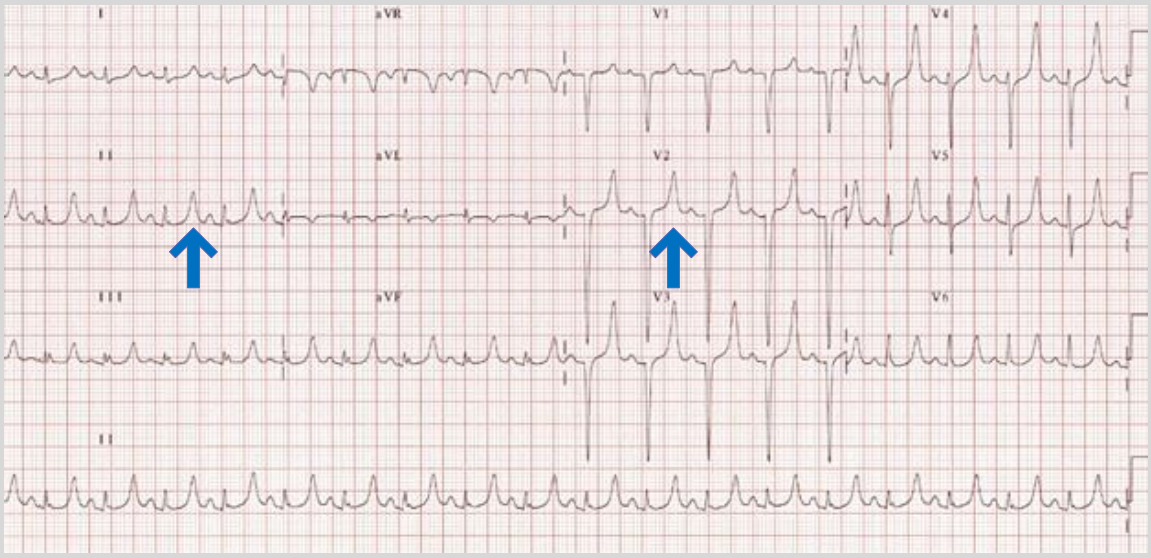
Differential
- Infection/sepsis
- Medication/drug/toxin reaction
- Myocardial infarction
- Hypothermia/hyperthermia
- Electrolyte imbalance (i.e., hyperkalemia)
- Hypoglycemia/hyperglycemia
- Thyroid disorder
- Stroke/TIA
- Dehydration
- Myasthenia gravis/Guillain-Barre



Adult Medical Treatment Protocols

General Weakness

For non-focal weakness, general malaise, and any nonspecific 'sick' symptoms



Peaked T-waves or bradycardia are signs of hyperkalemia. Increased extracellular potassium reduces myocardial excitability, which results in the depression of both pace making and conducting tissues. Progressively worsening hyperkalemia leads to suppression of impulse generation by the SA node and reduced conduction by the AV node and HIS-Purkinje system, resulting in bradycardia and conduction blocks that ultimately lead to cardiac arrest.

In order to treat hyperkalemia in the prehospital setting, the QRS must be ≥ 0.12 seconds. If the patient has not yet arrested, be prepared for the patient to do so. Early recognition and treatment is essential to helping reverse this critical condition.

Pearls

- Diabetics, geriatric, and female patients often have atypical pain, or only generalized complaints. Suspect cardiac etiology in these patients, and perform a 12-Lead ECG.
- Patients taking potassium supplements or who are on dialysis or with a history of severe renal disfunction have a higher risk of hyperkalemia.

San Mateo County Emergency Medical Services

Genitourinary Disorder – Unspecified

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

History
- Past medical/surgical history
- Previous episodes
- Medications
- Duration of symptoms
- Sexual activity/last menstrual period/pregnancy
- Severity of symptoms
- IVF or hormonal injections for pregnancy
- History of back pain/surgery

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

Differential
- Urinary retention
- Urinary tract infection/pyelonephritis
- Endometriosis
- Sexually transmitted infections/pelvic inflammatory disease
- Ectopic pregnancy
- Kidney stones
- Gonadal torsion
- Hemorrhagic cysts

E	*Apply heat pack(s) as tolerated*
P	Cardiac monitor
	Consider, IV
	Consider, **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
	Consider, **Ondansetron**
	For pain consider, **Fentanyl**

Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Pearls
- Vaginal bleeding does not determine the likelihood of an ectopic pregnancy.
- If ectopic pregnancy is suspected, strongly consider starting two large bore IVs.

San Mateo County Emergency Medical Services

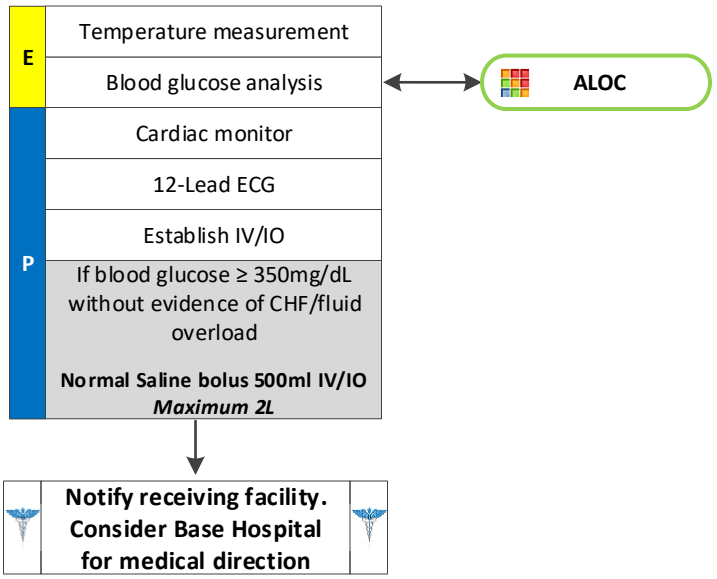
Hyperglycemia

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

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

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

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



Pearls
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not place IV in lower extremities.
- Quality control checks should be maintained per manufacturer's recommendation for all glucometers.

Adult Medical Treatment Protocols

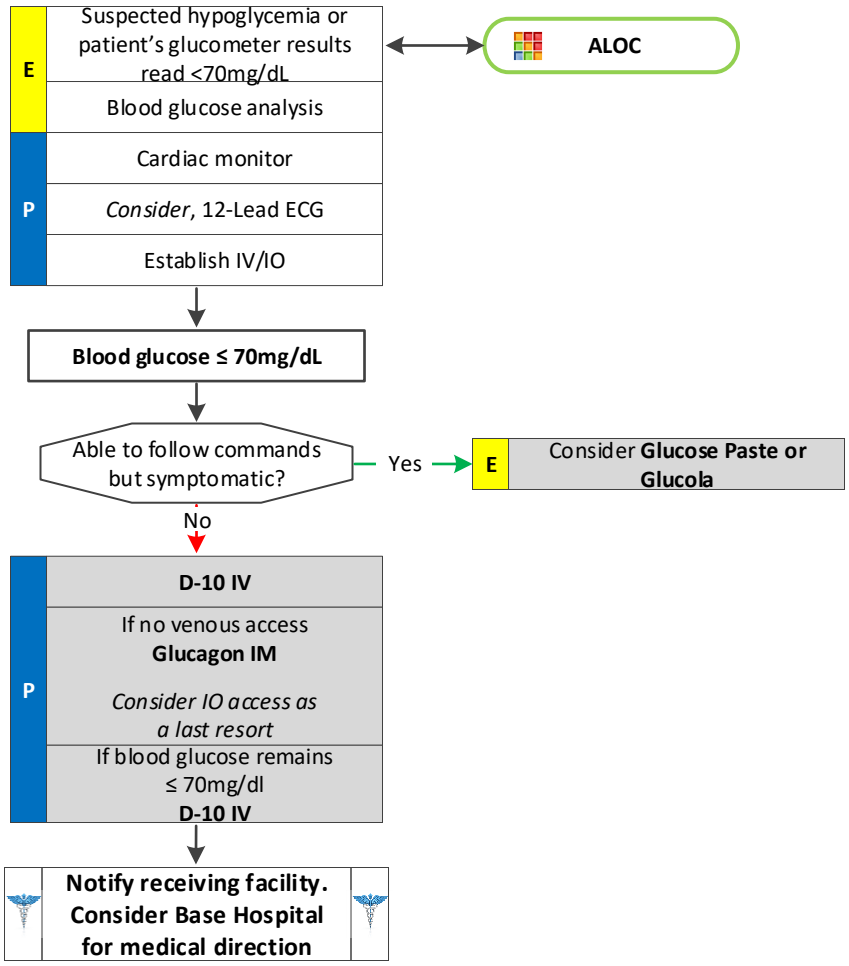
Hypoglycemia

For glucose < 70mg/dl

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

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

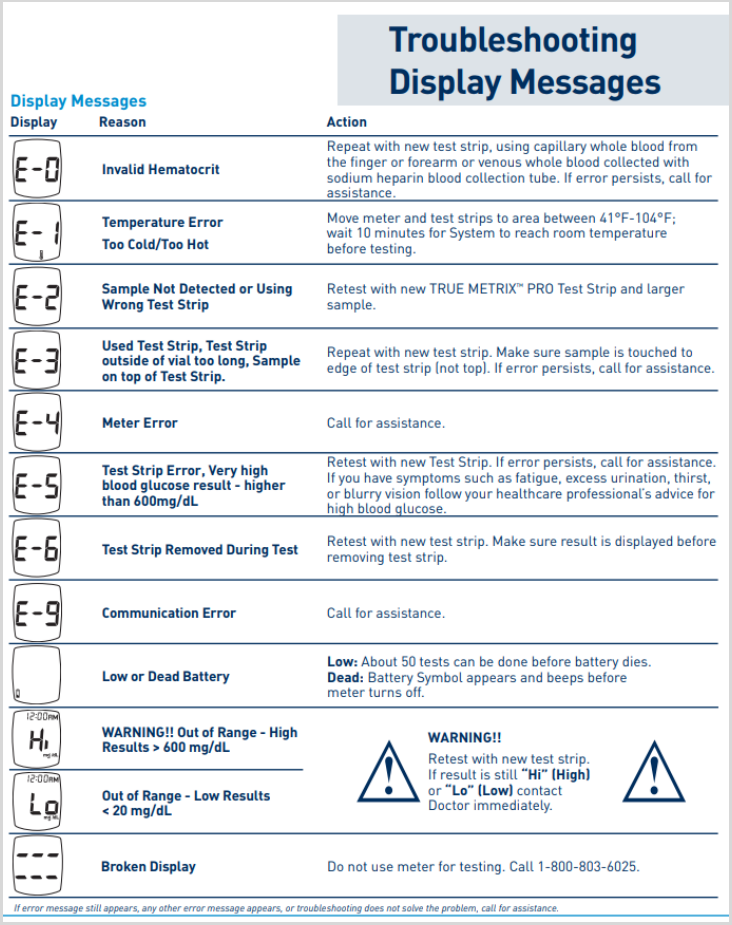
Differential
- Alcohol or drug use
- Toxic ingestion
- Trauma or head injury
- Seizure
- Stroke
- Altered mental status
- Sepsis



Adult Medical Treatment Protocols

Hypoglycemia

For glucose < 70mg/dl



Troubleshooting Display Messages

Display Messages

Display	Reason	Action
E-0	Invalid Hematocrit	Repeat with new test strip, using capillary whole blood from the finger or forearm or venous whole blood collected with sodium heparin blood collection tube. If error persists, call for assistance.
E-1	Temperature Error Too Cold/Too Hot	Move meter and test strips to area between 41°F-104°F; wait 10 minutes for System to reach room temperature before testing.
E-2	Sample Not Detected or Using Wrong Test Strip	Retest with new TRUE METRIX™ PRO Test Strip and larger sample.
E-3	Used Test Strip, Test Strip outside of vial too long, Sample on top of Test Strip.	Repeat with new test strip. Make sure sample is touched to edge of test strip (not top). If error persists, call for assistance.
E-4	Meter Error	Call for assistance.
E-5	Test Strip Error, Very high blood glucose result - higher than 600mg/dL	Retest with new Test Strip. If error persists, call for assistance. If you have symptoms such as fatigue, excess urination, thirst, or blurry vision follow your healthcare professional's advice for high blood glucose.
E-6	Test Strip Removed During Test	Retest with new test strip. Make sure result is displayed before removing test strip.
E-9	Communication Error	Call for assistance.
	Low or Dead Battery	**Low:** About 50 tests can be done before battery dies. **Dead:** Battery Symbol appears and beeps before meter turns off.
Hi	WARNING!! Out of Range - High Results > 600 mg/dL	**WARNING!!** Retest with new test strip. If result is still **"Hi" (High)** or **"Lo" (Low)** contact Doctor immediately.
Lo	Out of Range - Low Results < 20 mg/dL	
--- ---	Broken Display	Do not use meter for testing. Call 1-800-803-6025.

If error message still appears, any other error message appears, or troubleshooting does not solve the problem, call for assistance.

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

Pearls

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

Hypertension

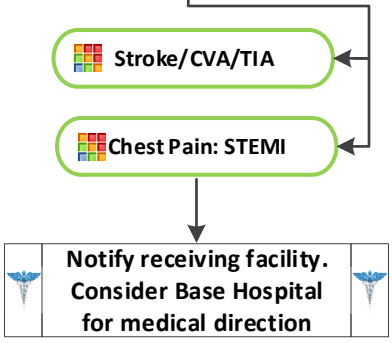
For patients with primary concern for hypertension without symptoms related to a more specific primary impression. For symptomatic patients, use related primary impression as primary (e.g., headache) and hypertension as secondary. DO NOT use for incidental finding of hypertension

History
- Age
- Past medical history
- Drug allergies and medications
- Tobacco use
- Use of over-the-counter medications
- Illicit drug use

Signs and Symptoms
- Tinnitus
- Hypertension

Differential
- Hyperthyroidism, thyroid storm, Graves Disease
- Heart failure
- Stroke (hemorrhagic or ischemic)
- Drugs of abuse (amphetamines, cocaine, PCP)
- Sleep apnea
- Anxiety disorder
- MI
- Primary Aldosteronism
- Hypertrophic cardiomyopathy

E	Place patient in position of comfort
P	Cardiac monitor
	Consider, IV
	Consider, 12-Lead ECG



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

San Mateo County Emergency Medical Services

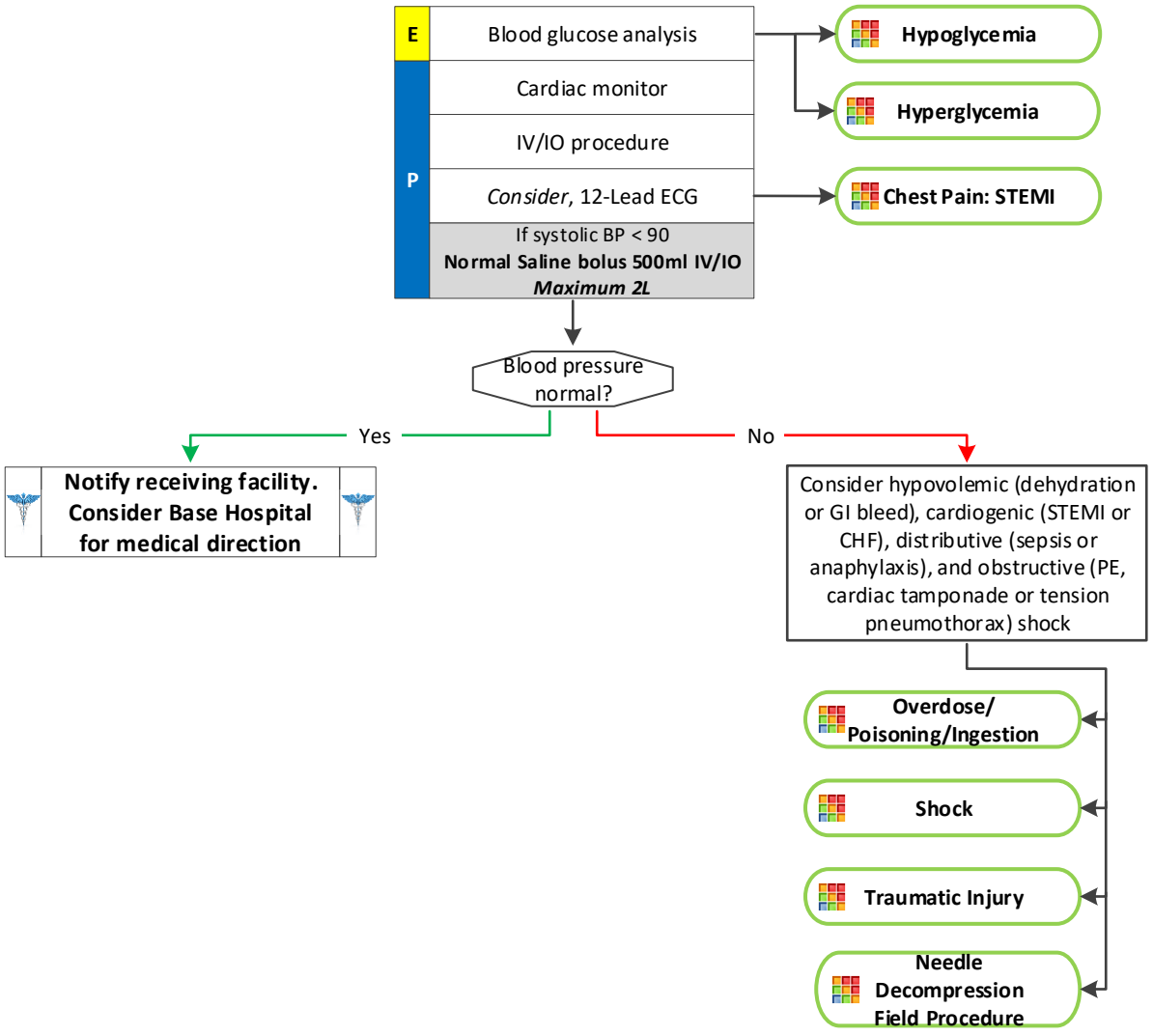
Hypotension

For systolic BP < 90mmHg in adults with transient low BP or rapidly responds to fluid resuscitation and without signs of shock

History
- Volume loss (vomiting, diarrhea or blood)
- Infection (e.g., UTI, pneumonia, etc.)
- Cardiac ischemia (MI or CHF)
- Pregnancy
- Poor oral intake
- Allergic reaction
- Medications (diuretics, beta blockers)
- End stage renal disease/dialysis

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

Differential
- Shock (neurogenic vs. hemorrhagic vs. obstructive (tension pneumothorax))
- Ectopic pregnancy
- Sepsis
- Cardiac (cardiogenic shock, arrhythmia, ACS)
- Medication
- Hypovolemia
- Anaphylaxis
- Vasovagal event



Pearls
- Hypotension is defined as a patient with a systolic blood pressure < 90.
- This primary impression is reserved only for patients who respond to a single 500ml fluid bolus or less or who have a transient low blood pressure reading.

Adult Medical Treatment Protocols

Lower GI Bleeding

For bleeding from the rectum and/or bright red bloody stools

History
- Age
- Past medical history
- Renal disease
- Medications (pepto bismol, NSAID, ASA, warfarin, lovenox, etc.)
- Number of episodes
- Alcohol use/abuse
- Weight loss

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

Differential
- Diverticulosis
- Cancer
- Inflammatory diarrhea (Crohn's)
- Peptic/gastric ulcer(s)
- Mallory Weiss tear
- Gastritis/esophagitis
- Vascular malformation
- Infectious diarrhea

E	Oxygen for sat < 92%
P	Cardiac monitor
	Consider, 12-Lead ECG
	Establish 2 large bore IVs
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
	Consider, **Ondansetron**
	For pain *consider,* **Fentanyl**

↓

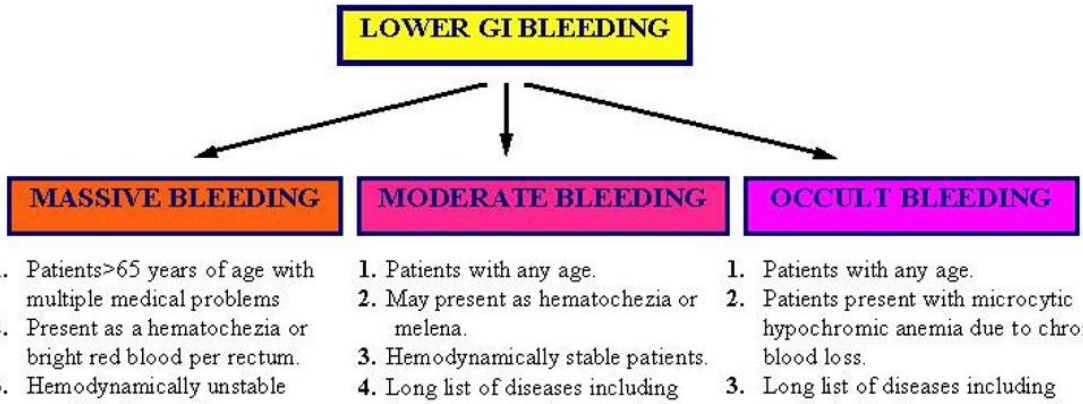
Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Lower GI Bleeding

For bleeding from the rectum and/or bright red bloody stools

Figure 1: Types of lower GI bleeding



MASSIVE BLEEDING

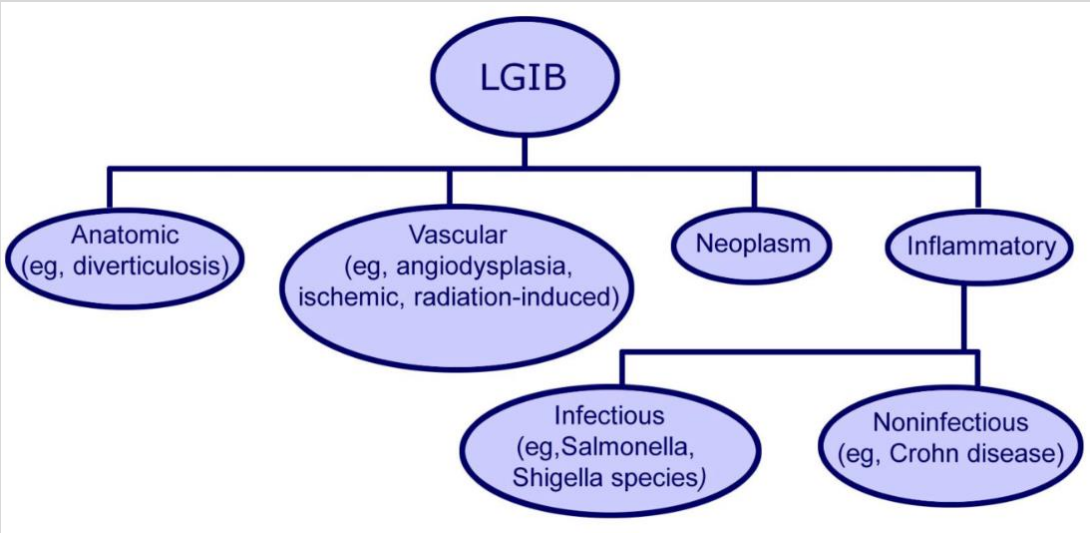
1. Patients>65 years of age with multiple medical problems
2. Present as a hematochezia or bright red blood per rectum.
3. Hemodynamically unstable
   - SBP=90 mmHg
   - HR>100/min
   - Low urine output
4. Hemoglobin level=6g/dl
5. Most commonly due to
   - Diverticulosis
   - Angiodysplasias
6. Mortality rate may be as high as 21%.

MODERATE BLEEDING

1. Patients with any age.
2. May present as hematochezia or melena.
3. Hemodynamically stable patients.
4. Long list of diseases including benign anorectal, congenital, inflammatory, and neoplastic diseases may cause moderate amount of acute or chronic bleeding.

OCCULT BLEEDING

1. Patients with any age.
2. Patients present with microcytic hypochromic anemia due to chronic blood loss.
3. Long list of diseases including congenital, inflammatory, and neoplastic diseases may cause chronic occult bleeding.



Pearls

- Risk factors for a higher incidence of bleeding include age > 65 and multiple medical problems leads.
- Permissive hypotension is encouraged for massive GI bleeds. See Trauma protocol for additional information.
- Massive blood loss decreases the amount of blood available to the heart, therefore increases the risk for a MI.

San Mateo County Emergency Medical Services

Nausea/Vomiting

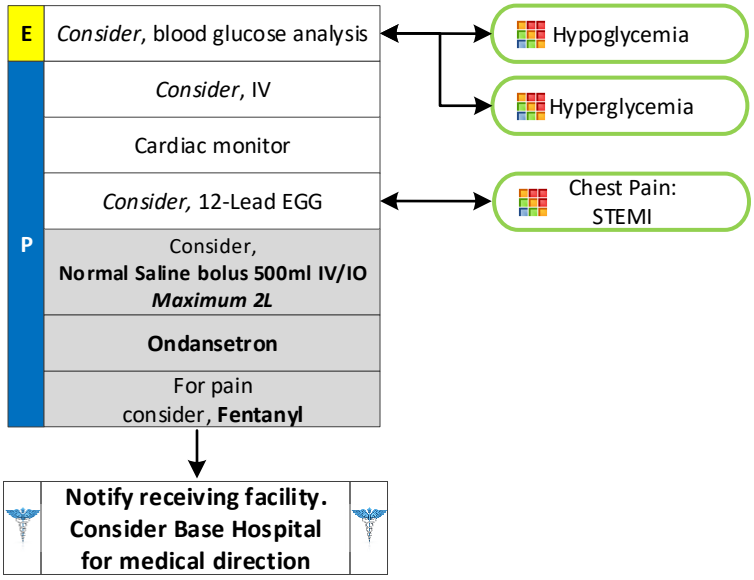
For any nausea or vomiting without blood. Not for adverse reaction to opiate administration by EMS; manage with primary impression

History
- Age
- Time of last meal
- Last emesis/bowel movement
- Improvement or worsening with food or activity
- Duration of problem
- Contact with other sick person
- Past medical history
- Past surgical history
- Medications
- Allergies
- Menstrual history (Pregnancy)
- Travel history
- Bloody emesis/diarrhea

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

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

Differential
- CNS (increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage, vestibular)
- MI
- Drugs (NSAIDs, antibiotics, narcotics, chemotherapy)
- GI or renal disorders
- Diabetic ketoacidosis
- Gynecologic disease (ovarian torsion, PID)
- Infections (pneumonia, influenza)
- Electrolyte abnormalities
- Food or toxin induced
- Medication or substance abuse
- Pregnancy
- Psychological



Adult Medical Treatment Protocols

Pearls
- Document the mental status and vital signs prior to administration of anti-emetics and pain medications.
- Nausea and vomiting are common symptoms but can be symptoms of uncommon and serious pathology, such as stroke, CO poisoning, acute MI, new onset diabetes, DKA, and organophosphate poisoning. Maintain a high index of suspicion.

San Mateo County Emergency Medical Services

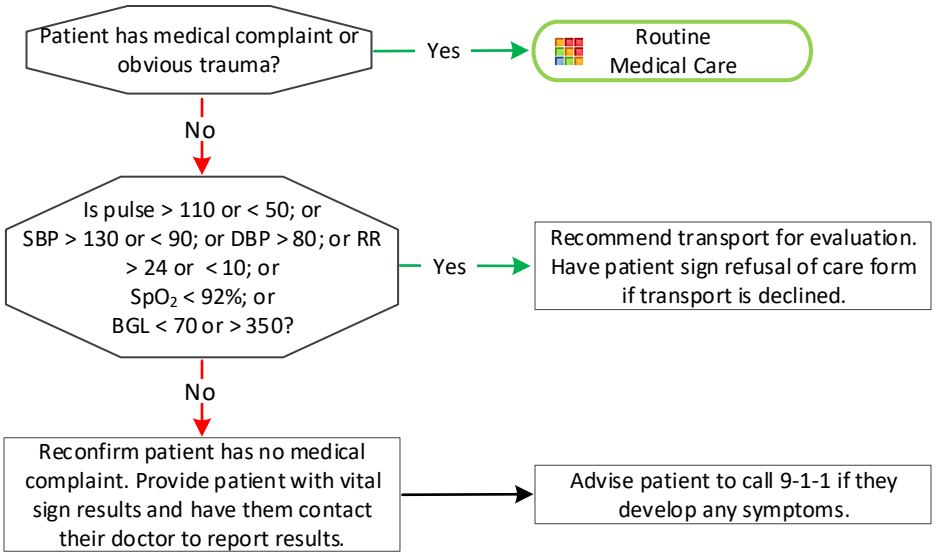
No Medical Complaint

For patients without any medical, psychiatric or traumatic complaint and no signs of illness on assessment. Usually reserved for non-transports

History
- Someone else called 911; patient did not request services
- EMS responds to "assist invalid"
- Patient presents requesting 'blood pressure check"
- Other situation in which patient does not have a medical complaint or obvious injury

Signs and Symptoms
- Assess for medical complaint
- For patients with hypertension, particularly check for chest pain, shortness of breath, or neurological changes
- For assist invalid calls, particularly check for syncope, trauma from a fall, or inability to ambulate

Differential
- Hypertensive urgency
- Hypertensive emergency
- Syncope
- Cardiac ischemia
- Cardiac dysrhythmia
- Fracture
- Head trauma



Adult Medical Treatment Protocols

Pearls
- Patients who are denying more severe symptoms may initially present for a "routine check." Confirm with the patient at least twice that they have no medical complaint.
- All persons who request medical evaluation or treatment are considered patients and shall have a ePCR completed.
- Should a patient refuse evaluation or decline further evaluation once begun, document as much as you can. Even patients who refuse vital signs can be observed and respirations measured. The ePCR narrative in these cases is key and must accurately and thoroughly describe the patient encounter.

San Mateo County Emergency Medical Services

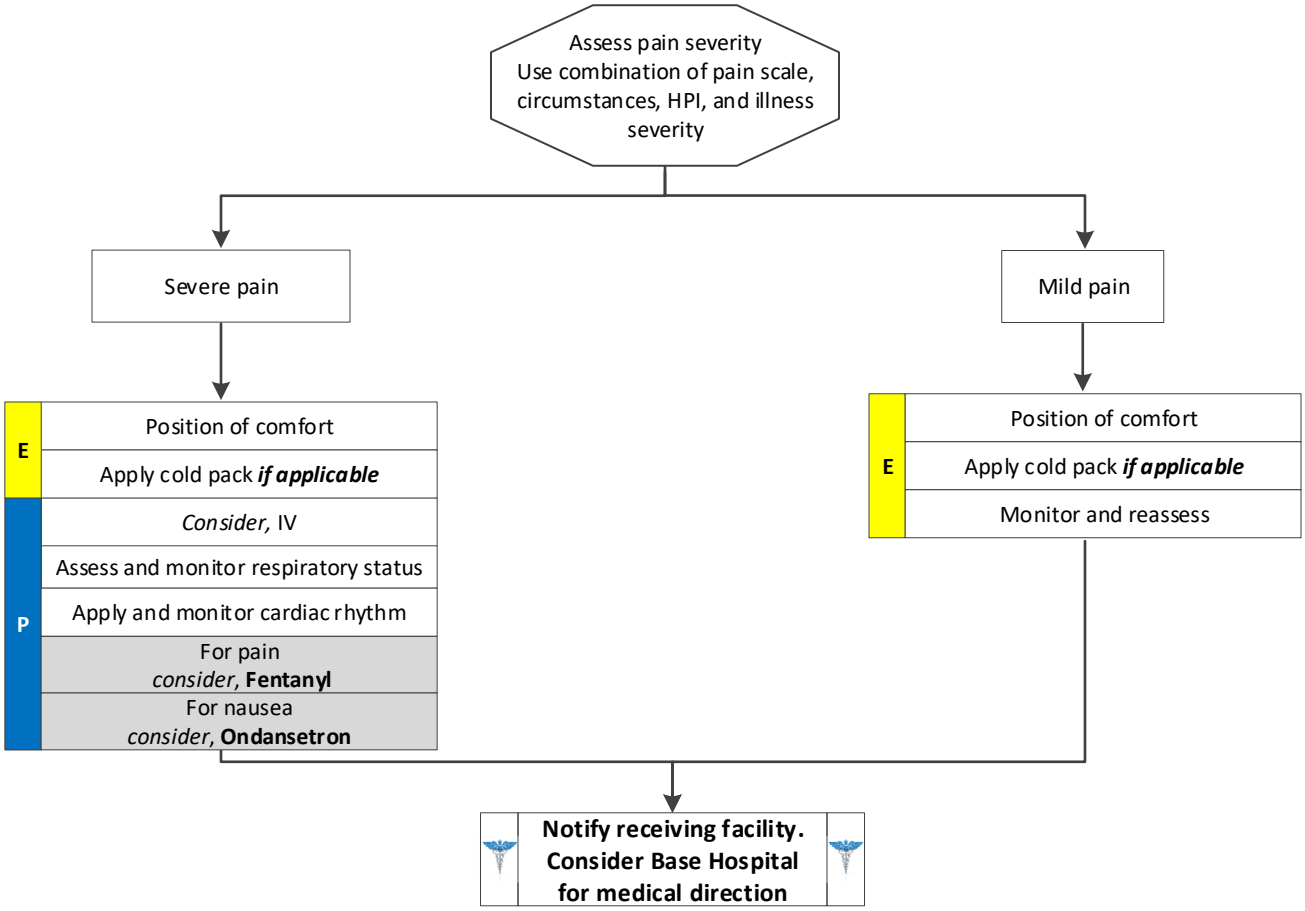
Non-Traumatic Body Pain

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

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

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

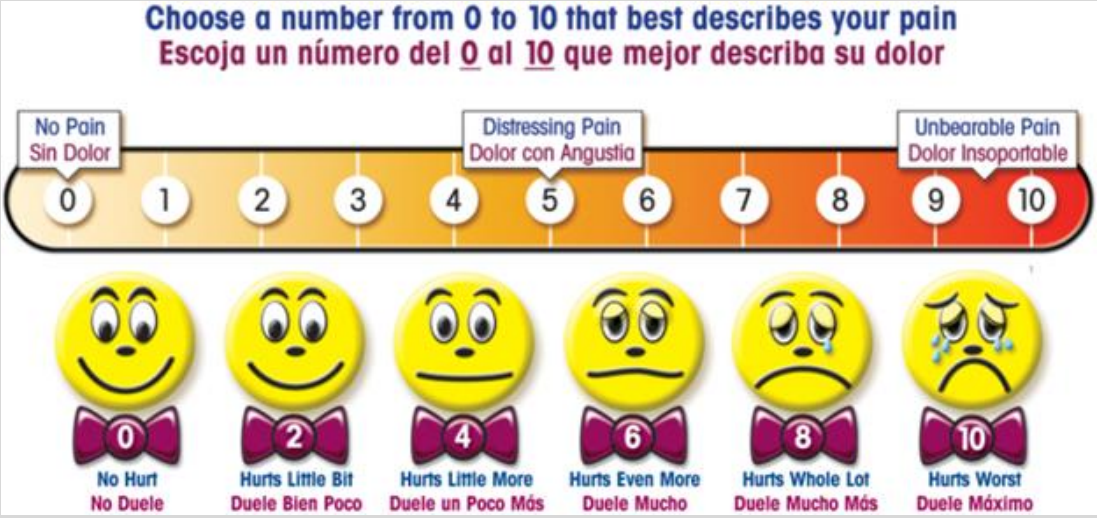
Differential
- Musculoskeletal
- Rheumatologic/Hematologic
- Pleural/respiratory
- Neurogenic
- Renal (colic)
- Gynecological/obstetrical
- Acute pain not elsewhere classified



Adult Medical Treatment Protocols

Non-Traumatic Body Pain

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



Pearls

- Use judgment in assessing pain and consider circumstances and history of narcotic use before administering narcotics.
- Pain severity (0 – 10 scale) shall be recorded before and after all BLS pain control measures and ALS pain medication delivery. Monitor blood pressure and respirations closely as pain control medications may cause hypotension or respiratory distress.
- Patients may display a wide variation of response to opioid pain medication (Fentanyl). Consider the patient's age, weight, clinical condition, other recent drugs, or alcohol and prior exposure to opiates when determining initial dosing.
- Minimal doses of opioids may cause respiratory depression and hypotension in the elderly or those patients who weigh less.
- USE EXTREME CAUTION when administering opioids together with benzodiazepines; this combination results in a deeper level of anesthesia with a significant risk for airway and respiratory compromise.
- It is strongly recommended that vascular access be established for patients who receive IM or IN medication.
- Have Naloxone available to reverse respiratory depression should it occur.
- Contact the base hospital for additional orders of Fentanyl beyond 200mcg.

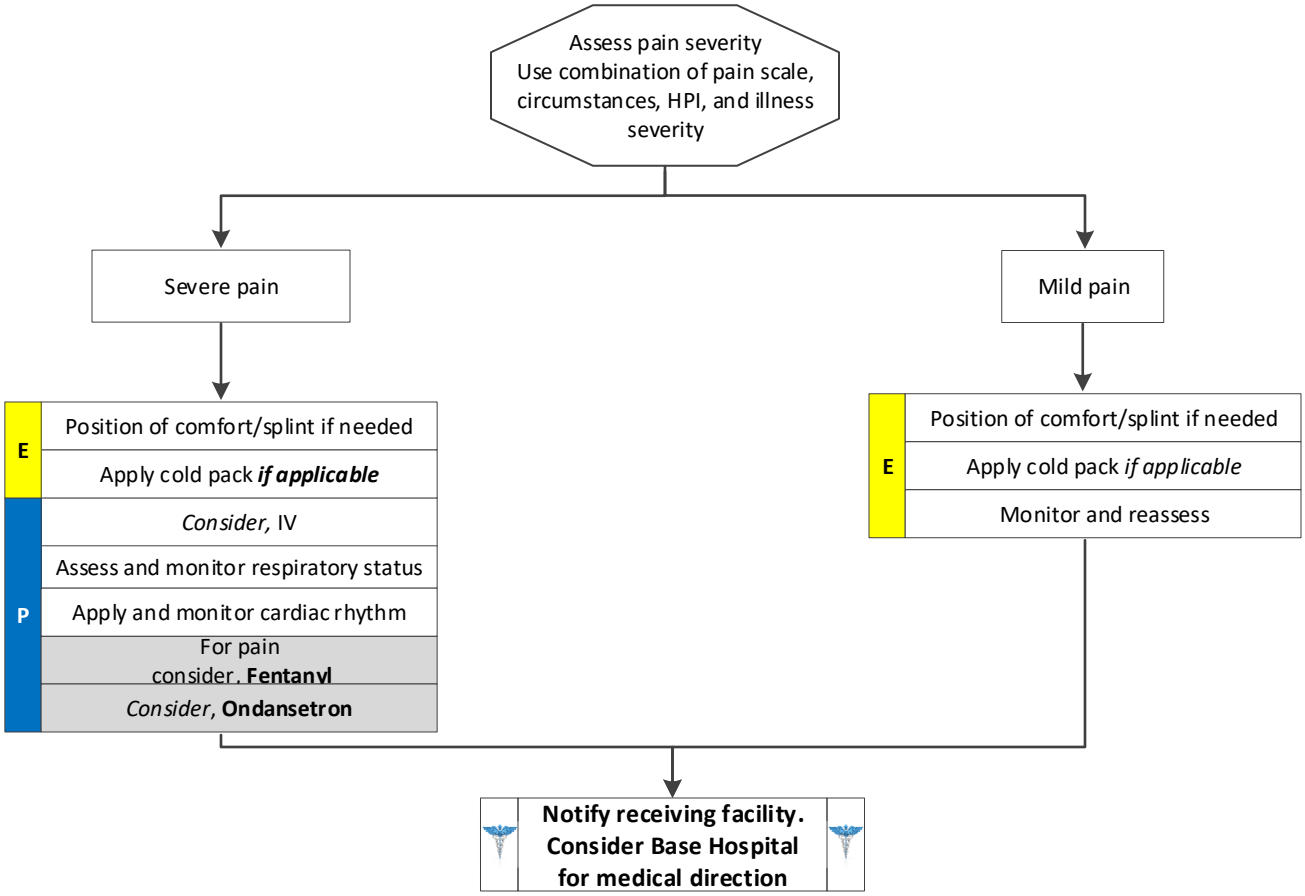
Non-Traumatic Extremity Pain/Swelling

For pain, swelling, or other non-traumatic problem of an extremity; includes rashes and non-traumatic bleeding (e.g., varicose vein bleed)

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

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

Differential
- Arthritis
- Deep venous thrombosis
- Gout/pseudogout/septic joint
- Back pain/sciatica
- Bursitis/Baker's cyst
- Tendonitis/Carpal Tunnel
- Pain in limb, not otherwise specified
- Cellulitis



Non-Traumatic Extremity Pain/Swelling

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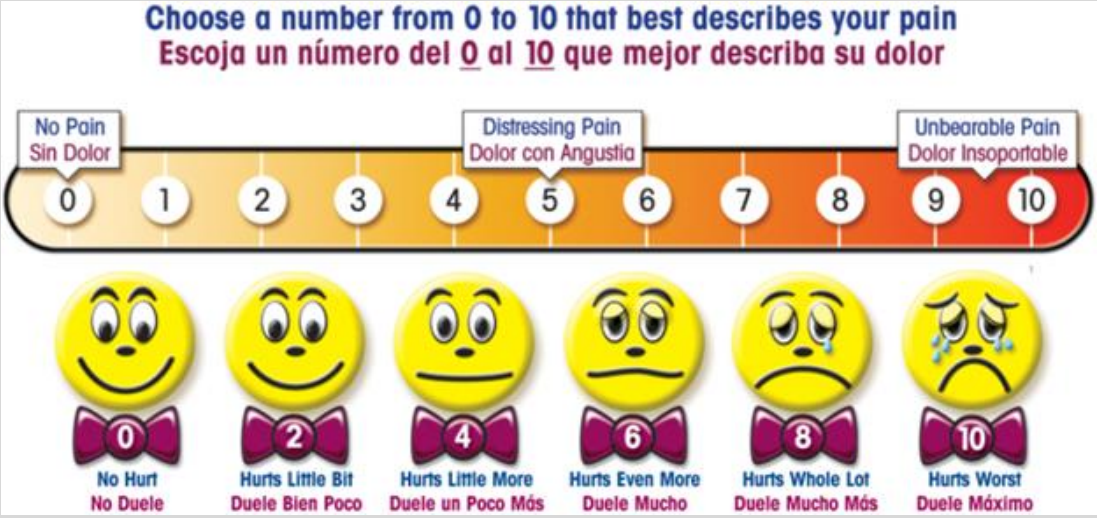

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- It is strongly recommended that vascular access be established for patients who receive IM or IN medication.
- Have Naloxone available to reverse respiratory depression should it occur.
- Contact the base hospital for additional orders of Fentanyl beyond 200mcg.

San Mateo County Emergency Medical Services

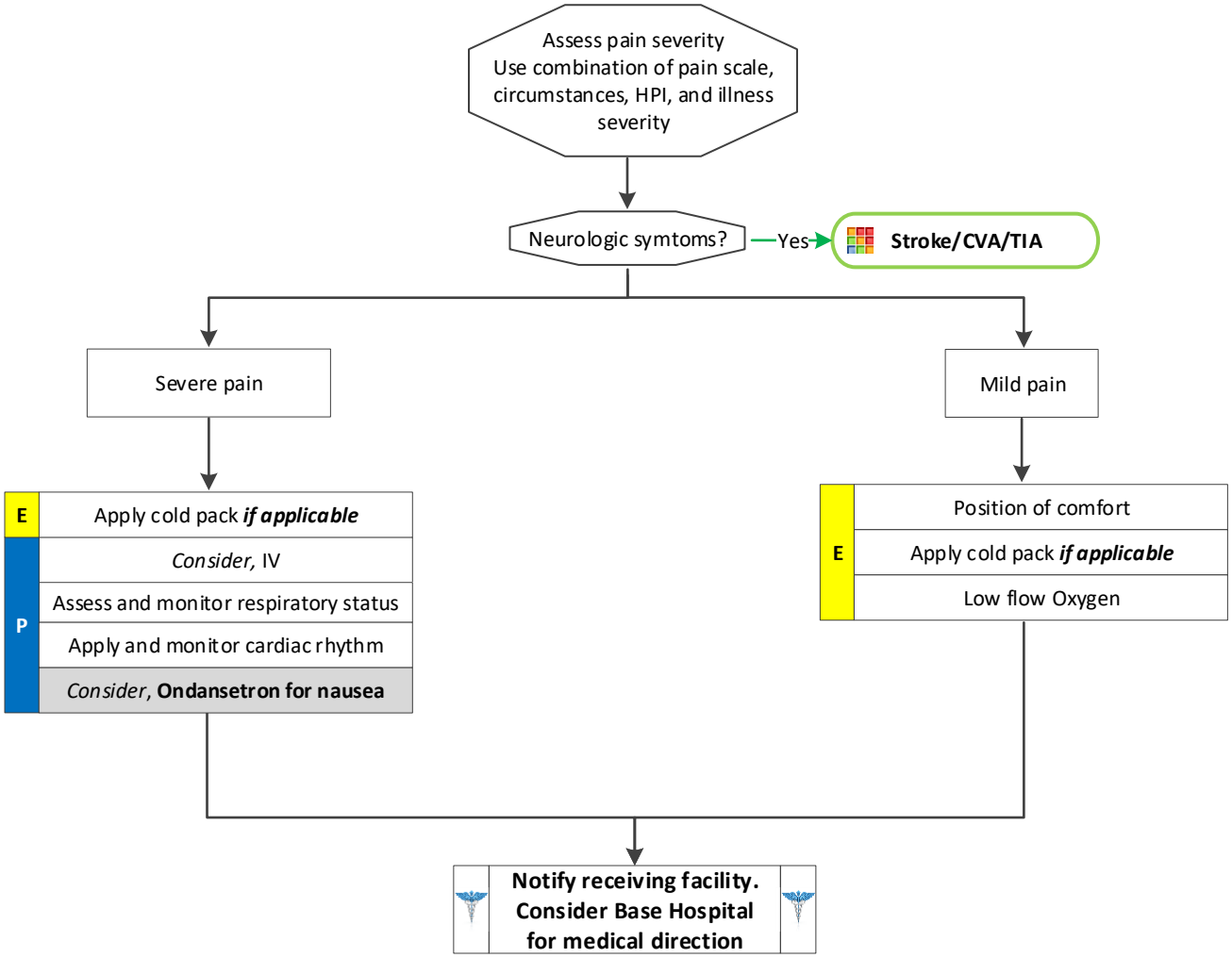
Non-Traumatic Headache

For non-traumatic headache or head pain

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

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

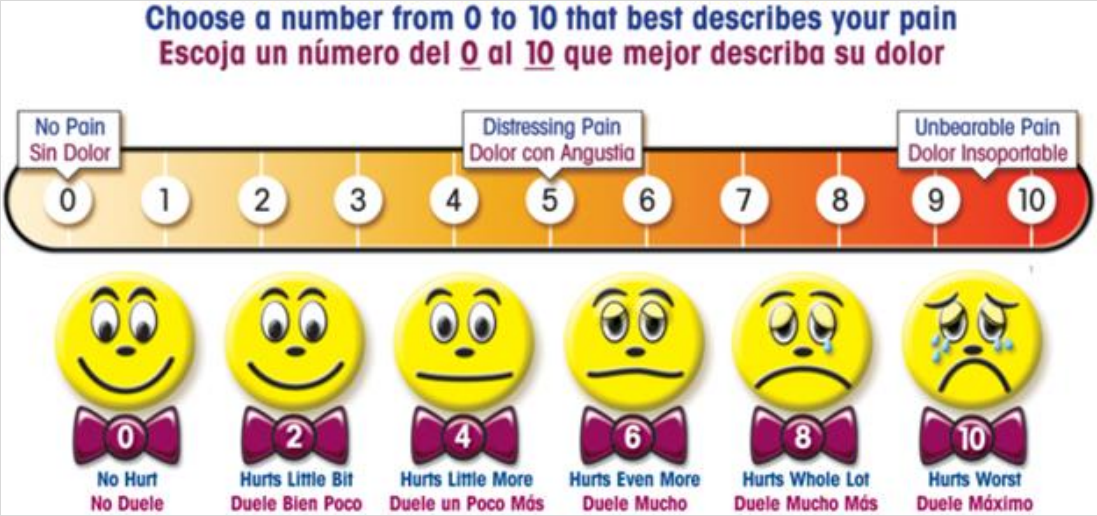
Differential
- Migraine
- Head trauma
- Intracranial hemorrhage
- Arterial hypertension
- Substance use withdrawal
- Viral/bacterial infection
- Hypoxia
- Hypercapnia



Adult Medical Treatment Protocols

Non-Traumatic Headache

For non-traumatic headache or head pain



Pearls

- Use judgement in assessing pain and consider circumstances and history of narcotic use before administering narcotics.
- Pain severity (0 – 10 scale) shall be recorded before and after all BLS pain control measures and ALS pain medication delivery. Monitor blood pressure and respirations closely as pain control medications may cause hypotension or respiratory distress.
- Low flow oxygen can be used to treat cluster-type headaches.
- Patients may display a wide variation of response to opioid pain medication (Fentanyl). Consider the patient's age, weight, clinical condition, other recent drugs, or alcohol and prior exposure to opiates when determining initial dosing.

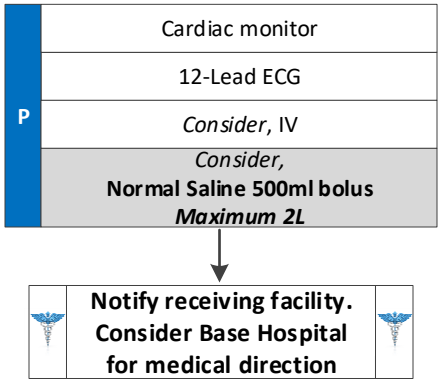
Palpitations

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

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

Signs and Symptoms
- Anxiety
- Irregular heart beat
- O_2 sat > 92%
- Jittery
- Heart rate < 120
- Normotensive blood pressure
- Normal mental status
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter

Differential
- PVC/PAC
- A-Fib/A-Flutter
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypovolemia or anemia
- Drug effect/overdose (see **History**)
- Hypoxia
- Sick Sinus Syndrome



Pearls
- If the patient has an identifiable dysrhythmia (e.g., narrow or wide complex tachycardia), exit to appropriate treatment protocol.
- For ASYMPTOMATIC patients (or those with only minimal symptoms, such as palpitations) and any tachycardia with a rate of approximately 100 – 120 with a normal blood pressure, strongly consider CLOSE OBSERVATION or fluid bolus rather than immediate treatment with an anti-arrhythmic medication. For example, a patient's "usual" atrial fibrillation may not require emergent treatment.

Pregnancy Complication

For any pregnancy-related condition that is not labor. Includes vaginal bleeding in pregnancy, hypertension, and complications of delivery

History
- Due date
- Time contractions started/how often
- Rupture of membranes
- Time/amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Gravida/Para status
- High risk pregnancy

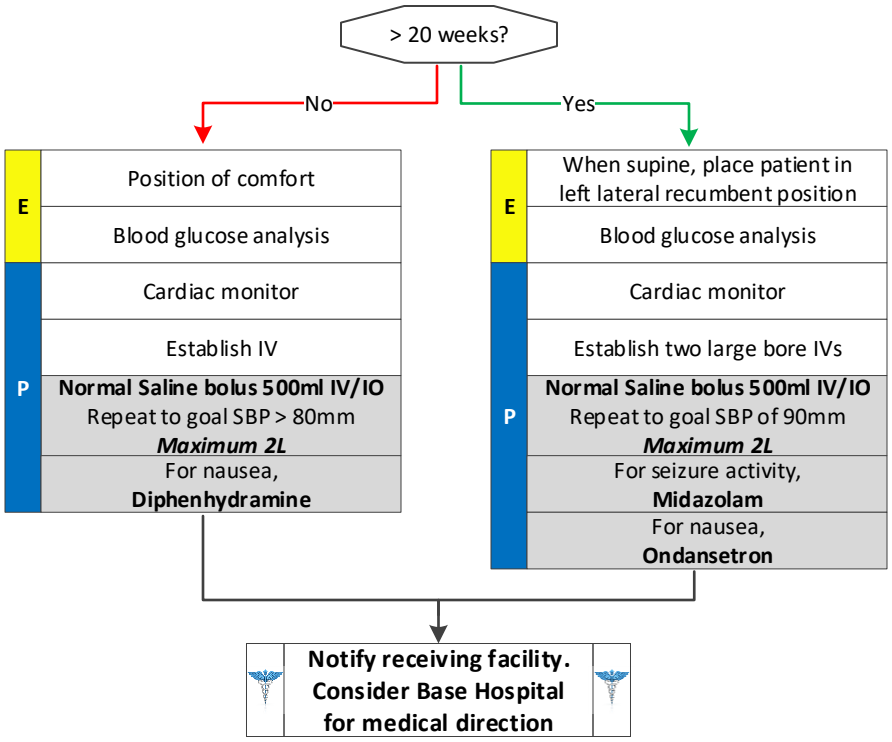
Signs and Symptoms
- Contractions (frequency and duration)
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

Priority symptoms
- Crowning at < 36 weeks gestation
- Abnormal presentation
- Severe vaginal bleeding
- Multiple gestation

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

Approved Birthing Centers

Kaiser Redwood City
Mills - Peninsula Medical Center
Sequoia Hospital
Stanford Hospital
UCSF Benioff Mission Bay



Adult Medical Treatment Protocols

Pregnancy Complication

For any pregnancy-related condition that is not labor. Includes vaginal bleeding in pregnancy, hypertension, and complications of delivery

Abruptio Placentae:

Abruptio Placentae is the premature separation of the placenta from the uterus. During second half of pregnancy < 5 % of patients will have vaginal bleeding. About 30 % of vaginal bleeding during this period may result from Abruptio Placenta. Bleeding during this period may result in fetal distress and is considered an emergency.

Trauma, preeclampsia or maternal hypertension typically precipitate Abruptio Placenta. Other risk factors are women < 20 years of age, advanced maternal age (>35), smoking, prior Abruptio Placenta, multiparity or cocaine use.

Patients with vaginal bleeding, contractions, uterine/abdominal tenderness and decreased or no fetal movement may have this condition.

Placenta Previa:

Placenta Previa occurs when the placenta implants over the cervical os (opening.) This is a leading cause of vaginal bleeding in the second half of pregnancy. Bleeding is usually bright and painless though about 20 % will have some uterine irritability.

Advanced maternal age (>35), multiparity, smoking and prior C-section are risk factors for this condition.

Uterine Rupture:

Often occurs with onset of labor though more commonly after trauma. This is usually signaled with severe abdominal pain and shock.

Active Seizure with no IV access:

Midazolam is preferred agent, give IM or IN first while you are trying to establish IV access.

Pearls

- Do not perform digital vaginal exam.
- Document all times (delivery, contraction frequency and length, and time cord was cut).
- Any pregnant patient involved in an MVC should be immediately evaluated by a physician.
- There is uncertainty whether Ondansetron can cause harm to the developing fetus; therefore, use of Diphenhydramine as an antiemetic is recommended.
- Hyperemesis gravidarum (HG) is a pregnancy complication that is characterized by severe nausea, vomiting, weight loss, and possibly dehydration. Feeling faint may also occur. It is considered more severe than morning sickness. Symptoms often get better after the 20th week of pregnancy but may last the entire pregnancy duration
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.
- For prolapsed cord, wrap cord in saline soaked gauze cover to keep warm.

Pregnancy/Labor

For contractions without imminent childbirth

History
- Due date
- Time contractions started/how often
- Rupture of membranes
- Time/amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Gravida/Para status
- High risk pregnancy

Signs and Symptoms
- Contractions
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

Priority symptoms
- Crowning at < 36 weeks gestation
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- Severe vaginal bleeding
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Differential
- Abnormal presentation
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  - Foot
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- Prolapsed cord
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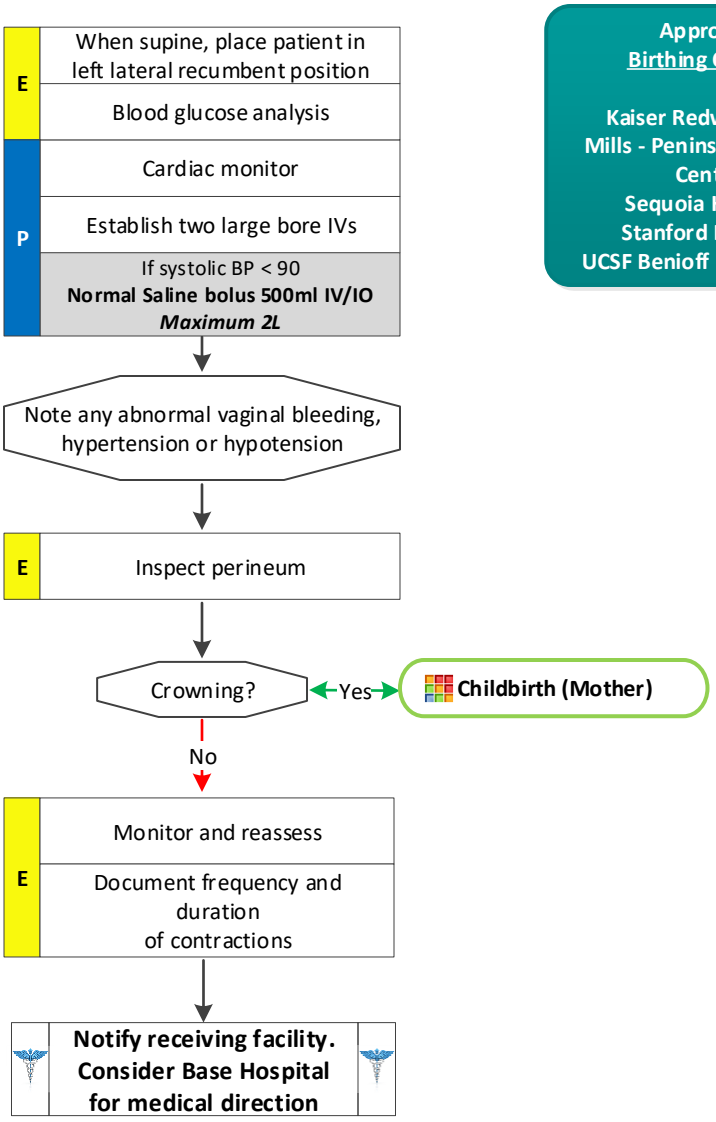


Approved Birthing Centers

Kaiser Redwood City
Mills - Peninsula Medical Center
Sequoia Hospital
Stanford Hospital
UCSF Benioff Mission Bay

Adult Medical Treatment Protocols

Pregnancy/Labor

For contractions without imminent childbirth

Pearls

- Decision to transport versus remain and deliver is multifactorial and difficult. Generally it is preferable to transport. Factors that will impact decision include: number of previous deliveries; length of previous labors; frequency of contractions; urge to push; and presence of crowning.
- Position mother supine with head flat or elevated per mother's choice. Maintain flexion of both knees and hips. Elevated buttocks slightly with towel. If delivery not imminent, place mother in the left, lateral recumbent position with right side up about 10 – 20°.
- Twins occur about 1/90 births. Typically manage the same as single gestation. If imminent delivery call for additional resources, if needed. Most twins deliver at about 34 weeks so lower birth weight and hypothermia are common. Twins may share a placenta so clamp and cut umbilical cord after first delivery. Notify receiving facility immediately.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.

San Mateo County Emergency Medical Services

Seizure – Active

For seizure witnessed by EMS, whether treated or not

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

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

Differential
- Head trauma
- Metabolic, hepatic or renal failure
- Tumor
- Hypoxia
- Electrolyte abnormality
- Drugs or medication non-compliance
- Alcohol withdrawal
- Eclampsia
- Stroke

E
- High-flow Oxygen while seizing
- Loosen any constrictive clothing and protect airway
- Blood glucose analysis ↔ **Hypoglycemia**
- Temperature measurement

P
- If patient is seizing upon EMS arrival, give **Midazolam IM**; do not wait to obtain IV or IO access
- Establish IV/IO
- Cardiac monitor
- $EtCO_2$ monitoring
- SMR procedure *if indicated* ↔ **SMR Field Procedure**
- If patient seizes again **Midazolam IM IV/IO** *or* **Midazolam IM if no IV/IO**

↓

Notify receiving facility. Consider Base Hospital for medical direction

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

Adult Medical Treatment Guidelines

San Mateo County Emergency Medical Services

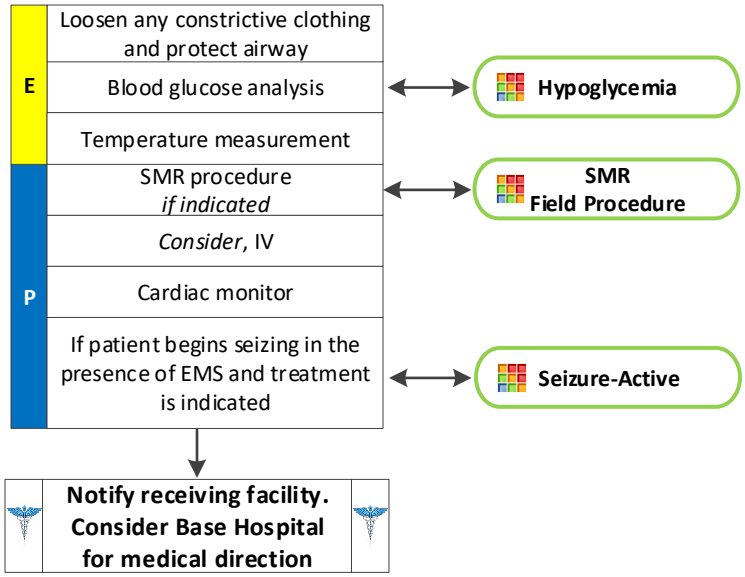
Seizure – Post

For any seizure that stopped prior to EMS arrival and there is no further seizure activity during EMS contact

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

Signs and Symptoms
- Altered mental status
- Sleepiness
- Incontinence
- Evidence of trauma
- Unconscious
- Incontinence
- Bitten tongue/oral trauma

Differential
- Head trauma
- Metabolic, hepatic or renal failure
- Tumor
- Hypoxia
- Electrolyte abnormality
- Drugs or medication non-compliance
- Infection or sepsis
- Alcohol withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypoglycemia
- Epilepsy
- Syncope



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

Adult Medical Treatment Guidelines

San Mateo County Emergency Medical Services

Sepsis

For patients with suspected sepsis (i.e., signs suggestive of sepsis including fever, tachycardia, suspected infection)

History
- Age (common in elderly and very young)
- Presence and duration of fever
- Previously documented infection or illness (UTI, pneumonia, meningitis, encephalitis, cellulitis, or abscess)
- Recent surgery or invasive procedure
- Immunocompromised
- Bedridden or immobile patients
- Prosthetic or indwelling devices
- Immunization status

Signs and Symptoms
- Hyper or hypothermia
- Rash or excessive bruising
- Chills
- Myalgia
- Markedly decreased urine output
- AMS
- Delayed capillary refill
- Hypo/Hyperglycemia

Differential
- Shock (hypovolemic or cardiogenic)
- Dehydration
- Hyperthyroidism
- Hypothyroidism
- Medication or drug interaction
- Non-septic infection
- Allergic reaction or anaphylaxis
- Toxicological emergency
- Hyperthermia/heat stroke
- DKA/HHS

E	Consider appropriate PPE and infection control measures
E	Temperature measurement
E	Blood Glucose
P	Establish IV/IO
P	Cardiac monitor
P	$EtCO_2$ monitoring, if available

Blood Glucose → **Hypoglycemia**

Blood Glucose → **Hyperglycemia**

Obvious or suspected infection ***AND*** any ***TWO*** of the following criteria:
- $EtCO_2 \leq 25$
- AMS with GCS ≤ 13
- Systolic blood pressure ≤ 100mmHg

Yes → *Declare a Sepsis Alert*

P **Normal Saline bolus 500ml IV/IO**
Reassess patient for criteria above
Repeat 500ml bolus to a
Maximum 2L *as long as criteria above exists, unless concern for fluid overload*
See Pearls

Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Pearls
- Early recognition of sepsis allows for attentive care and early administration of antibiotics.
- Aggressive IV fluid therapy is the most important prehospital treatment for sepsis. Suspected sepsis patients should receive repeated fluid boluses (to a Maximum of 2L) while being checked frequently for signs of pulmonary edema, especially in patients with a known history of CHF or ESRD on dialysis. STOP fluid administration in the setting of pulmonary edema.
- Attempt to identify source of infection (e.g., skin, respiratory, etc.).

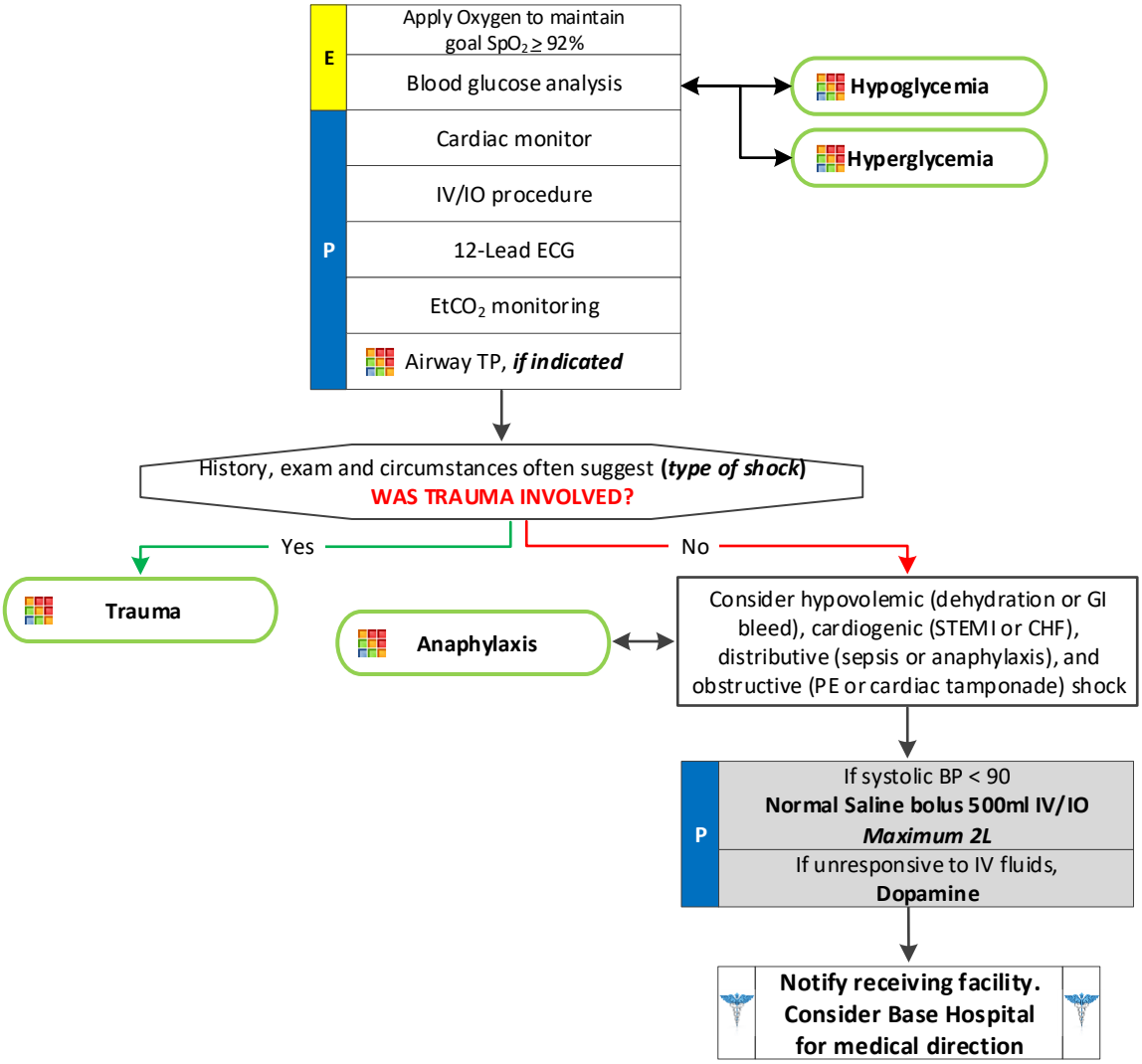
Shock

For patients with poor perfusion not rapidly responsive to IV fluids

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

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

Differential
- Shock (hypovolemic, cardiogenic, septic, neurogenic or anaphylaxis)
- Ectopic pregnancy
- Cardiac dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect or overdose
- Vasovagal effect
- Physiologic (pregnancy)



Adult Medical Treatment Protocols

Shock

For patients with poor perfusion not rapidly responsive to IV fluids

Pearls

- Hypotension can be defined as a systolic blood pressure of less than 90mmHg. 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.
- Shock is often present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.
- Beta blockers and other blood pressure medications can mask tachycardia and skin signs.
- For patients with suspected cardiogenic shock who are not responsive to an initial fluid bolus, limit additional IV fluids and avoid Dopamine. Contact Base Hospital for medical direction.
- Consider all causes of shock and treat per appropriate Treatment Protocol.
- Hypovolemic shock:
  - Hemorrhage, trauma, GI bleeding, ruptured abdominal aortic aneurysm (AAA), or pregnancy-related bleeding. For suspected AAA, consider immediate transport to the closest trauma center.
- Cardiogenic shock:
  - Heart failure, MI, cardiomyopathy, myocardial contusion, ruptured ventricle/septum/valve or toxins.
- Distributive shock:
  - Sepsis, anaphylactic, neurogenic, or toxins.
  - Neurogenic shock generally presents with warm, dry, and pink skin with normal capillary refill time; patient typically alert.
- Obstructive shock:
  - Pericardial tamponade, pulmonary embolus (PE), or tension pneumothorax.
  - Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart tones.

San Mateo County Emergency Medical Services

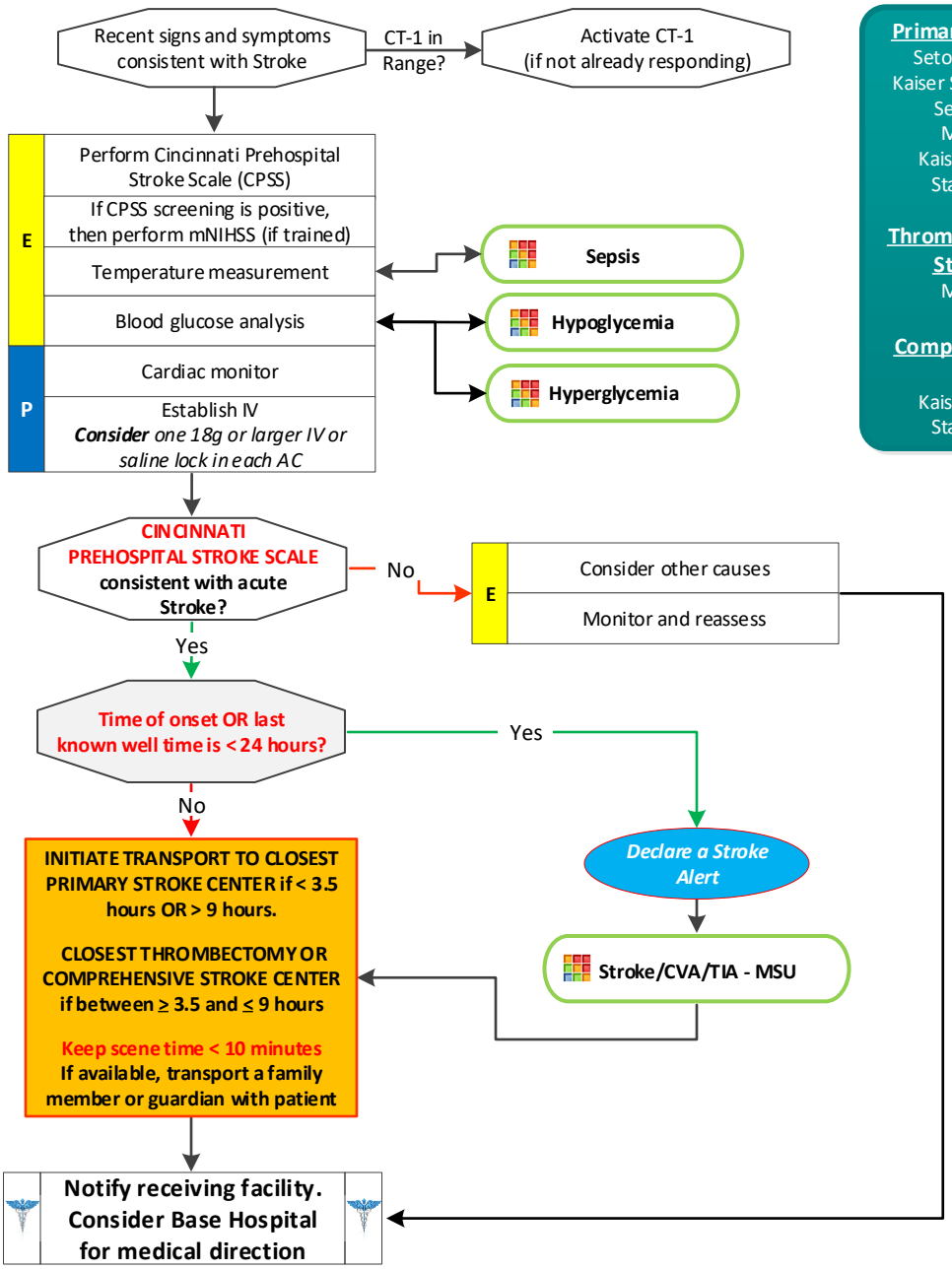
Stroke/CVA/TIA

For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly)

History
- Last seen normal
- A&O Status and GCS
- Family members phone number
- Previous stroke or TIA or brain hemorrhage
- Major surgery within last 2 weeks
- Signs of active bleeding, including Melena
- Associated diseases (DM, HTN, CAD)
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma
- History of brain tumor, aneurysm, or AVM.

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

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



Primary Stroke Centers
Seton Medical Center
Kaiser South San Francisco
Sequoia Hospital
Mills-Peninsula
Kaiser Redwood City
Stanford Hospital

Thrombectomy Capable Stroke Centers
Mills-Peninsula

Comprehensive Stroke Centers
Kaiser Redwood City
Stanford Hospital

Adult Medical Treatment Protocols

Stroke/CVA/TIA

For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly)

A Stroke Alert is indicated when the Cincinnati Prehospital Stroke Scale findings are abnormal and onset (time last seen normal) is less than 24 hours from time of patient contact. Make hospital contact following the format described in Routine Medical Care G01 for Stroke.

If a family member or guardian is available, assure their availability by either transporting them in the ambulance or obtain their name and phone number to allow the receiving physician to contact them. Encourage a family member to be available to speak with hospital staff.

- If any of portion of the Cincinnati Prehospital Stroke Scale is abnormal and it is a new finding, the stroke screen is positive and may indicate an acute stroke.
- Early hospital notification is necessary for the receiving facility to make rapid treatment and potential transfer decisions.
- Because the patient may need to receive thrombolytic therapy, avoid multiple IV attempts.
- Avoid distal placement of IVs, if possible, as this is a preferred access site by Interventionalists.
- When turning over patient care to hospital staff, make sure to include common anticoagulants taken by the patient. Known use of these medications may affect the course of hospital treatment:
  - Warfarin (Coumadin)
  - Heparin
  - Fondaparinux (Arixtra)
  - Apixaban (Eliquis)
  - Enoxaparin (Lovenox)
  - Dabigatran (Pradaxa)
  - Rivaroxaban (Xarelto)

Cincinnati Prehospital Stroke Scale	
Finding	**Interpretation**
Facial Droop	Normal: Symmetrical smile or face **Abnormal: Asymmetry**
Arm Weakness	Normal: Both arms move symmetrically **Abnormal: Asymmetrical arm movement**
Speech Abnormality	Normal: Correct words; no slurring **Abnormal: Slurred or incorrect words**

Supplementary Tabel 2: The Modified National Institutes of Health Stroke Scale (mNIHSS)

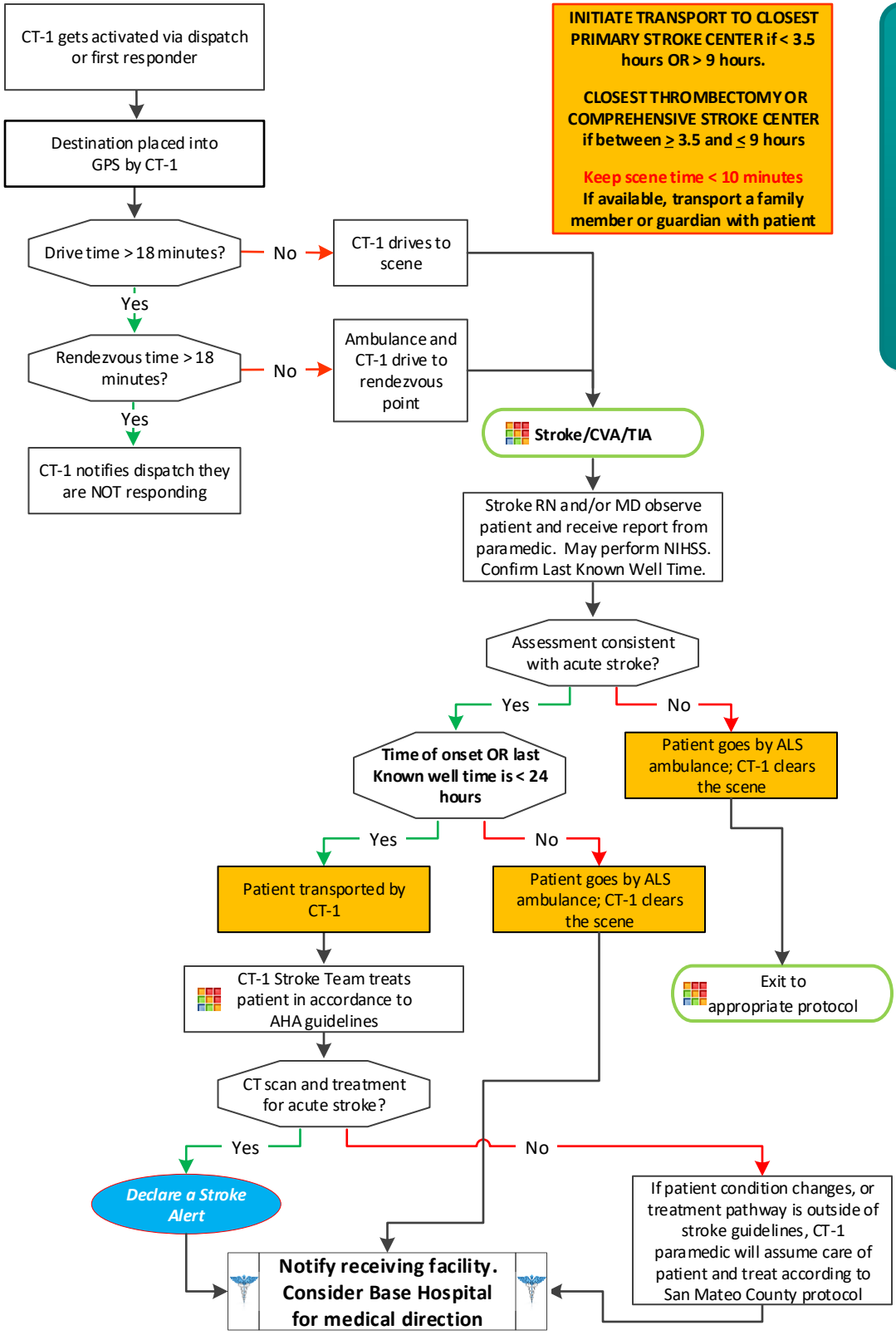
Tested Item	Description	Responses & Scores
1B	LOC (orientated questions)	0 Answers both correctly 1 Answers one correctly 2 Answers neither correctly
1C	LOC (response to commands)	0 Performs both tasks correctly 1 Performs one task correctly 2 Performs neither
2	Gaze	0 Normal horizontal movements 1 Partial gaze palsy 2 Complete gaze palsy
3	Bidang visual	0 No visual field defect 1 Partial hemianopia 2 Complete hemianopia 3 Bilateral hemianopia
5	Motor function (arm) a. Left b. Right	0 No drift 1 Drift before 5 seconds 2 Falls before 10 seconds 3 No effort against gravity 4 No movement
6	Motor function (leg) a. Left b. Right	0 No drift 1 Drift before 5 seconds 2 Falls before 5 seconds 3 No effort against gravity 4 No movement
8	Sensory	0 Normal 1 Abnormal
9	Language	0 Normal 1 Mild aphasia 2 Severe aphasia 3 Mute or global aphasia
11	Neglect	0 Absent 1 Mild (loss 1 sensory modality) 2 Severe (loss 2 modalities)
TOTAL (0-31)		

Pearls

- Acute stroke care is evolving rapidly.
- CT-1 should be alerted if you arrive on scene and determine a stroke is occurring. Based on their ETA, decide if waiting on scene, rendezvous, or transport to the hospital is what is best for the patient. Discussion with MSU can help with this decision.
- Time last known well: One of the most important items that prehospital providers can obtain, on which all treatment decisions are based. Be very precise in gathering data to establish the time of onset and report as an actual time (i.e., "13:45," NOT "about 45 minutes ago"). Without this information, patients may not be able to receive thrombolytics at the hospital. For patients who "woke up and noticed stroke symptoms," time starts when the patient was last awake.
- The differential listed on the Altered Mental Status TP should also be considered.
- Be alert for airway problems (difficulty swallowing, vomiting and aspiration). PO meds are not appropriate.
- Hypoglycemia or hyperglycemia can present as a LOCALIZED neurologic deficit, especially in the elderly.
- Document the Cincinnati Prehospital Stroke Scale in the ePCR.

Stroke/CVA/TIA – Mobile Stroke Unit (CT-1)

For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly)



Adult Medical Treatment Protocols

Stroke/CVA/TIA – Mobile Stroke Unit (CT-1)

For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly)

CT-1 Rendezvous Point Locations

Call Location	Rendezvous Point	Alternate Rendezvous Points
Brisbane	Station 81 3445 Bayshore Blvd.	None
Colma	Serramonte Center 3 Serramonte Center *(at Cost Plus World Market)*	None
Daly City	Serramonte Center 3 Serramonte Center *(at Cost Plus World Market)*	None
El Granada	Upper Lakes Vista Hwy. 35/Hwy. 92	1. Station 40 – 1191 Main St. 2. Half Moon Bay Airport – 9850 Cabrillo Hwy.
Foster City	San Mateo Fairgrounds 2495 S. Delaware St.	1. Bridgepoint Center – 2205 Bridgepoint Pkwy.
Half Moon Bay	Upper Lakes Vista Hwy. 35/Hwy. 92	1. Station 40 – 1191 Main St.
Miramar	Upper Lakes Vista Hwy. 35/Hwy. 92	1. Station 40 – 1191 Main St. 2. Half Moon Bay Airport – 9850 Cabrillo Hwy.
Montara	Tri-County Bank 1450 Linda Mar Blvd.	1. Station 72 – 1100 Linda Mar Blvd. 2. Lunardi's – 2801 San Bruno Ave.
Moss Beach	Tri-County Bank 1450 Linda Mar Blvd.	1. Tri-County Bank – 1450 Linda Mar Blvd. 2. Station 72 – 1100 Linda Mar Blvd. 3. Half Moon Bay Airport – 9850 Cabrillo Hwy.
Pacifica	Sharp Golf Course 1 Sharp Park Rd.	1. Tri-County Bank – 1450 Linda Mar Blvd. 2. Station 72 – 1100 Linda Mar Blvd. 3. Lunardi's – 2801 San Bruno Ave.
Princeton	Tri-County Bank 1450 Linda Mar Blvd.	1. Tri-County Bank – 1450 Linda Mar 2. Station 72 – 1100 Linda Mar Blvd. 3. Half Moon Bay Airport – 9850 Cabrillo Hwy.
San Bruno	Lunardi's 2801 San Bruno Blvd.	1. Tanforan Mall – 1151 El Camino Real
San Mateo	San Mateo Fairgrounds 2495 S. Delaware St.	1. Bridgepoint Center – 2205 Bridgepoint Pkwy.
South Coast *(Pescadero/ San Gregorio/ La Honda)*	Station 40 1191 Main St.	1. Half Moon Bay Airport – 9850 Cabrillo Hwy. 2. Upper Lakes Vista – Hwy. 35/Hwy. 92

CT-1 Leveling Locations

Call Location	Rendezvous Point	Alternate Rendezvous Points
Brisbane	Station 81 3445 Bayshore Blvd.	None
Daly City (Cow Palace Area)	Station 81 3445 Bayshore Blvd.	None
Millbrae	Station 37 511 Magnolia Ave.	None
Burlingame	*Inquire with Fire*	None
Hillsborough	Hillsborough Police Station 1600 Floribunda Ave.	1. Station 33 – 835 Chateau Dr.

San Mateo County Emergency Medical Services

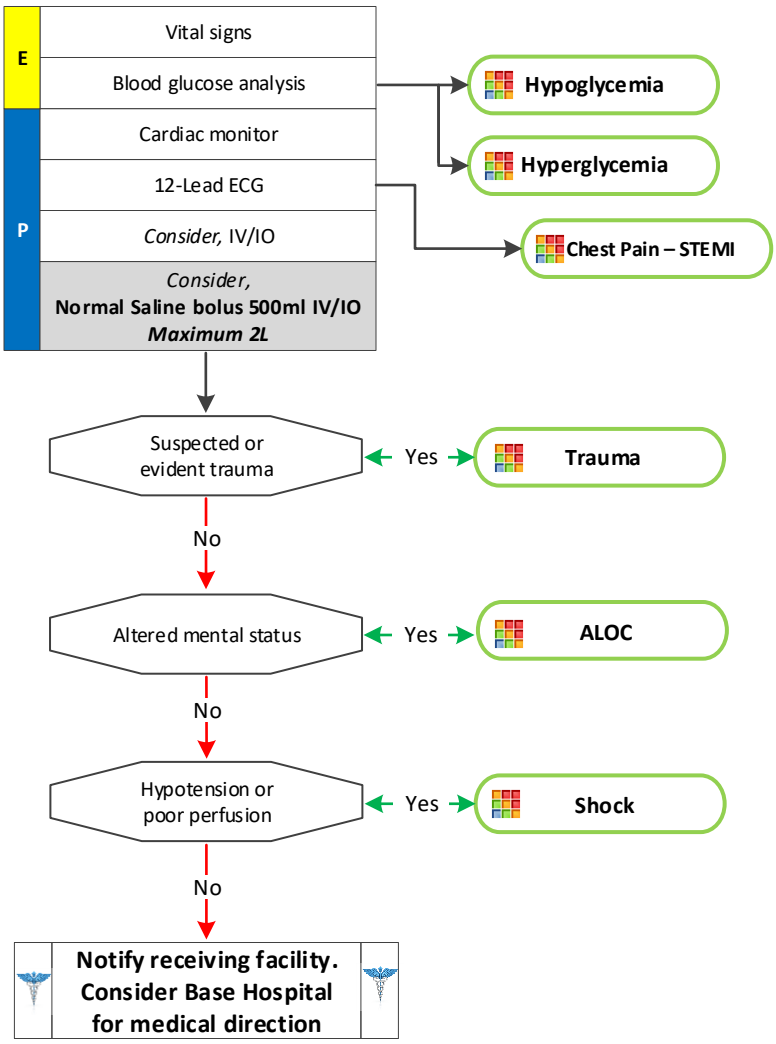
Syncope/Near Syncope

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

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

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

Differential
- Vasovagal
- Orthostatic hypotension
- Cardiac syncope
- Micturition or defecation syncope
- Psychiatric
- Stroke
- Hypoglycemia
- Seizure
- Shock
- Toxicological, including alcohol
- Medication effect (hypotension)
- Pulmonary embolism
- AAA



Adult Medical Treatment Protocols

Pearls
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and seizure as possible cause of syncope.

Upper GI Bleeding

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

History
- Alcohol use
- Varices
- Medications (e.g., ibuprofen, ASA, steroids)
- Stress
- GERD
- Ulcers
- Vomiting
- Liver disease

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

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

P	Cardiac monitor
	Consider, 12-Lead ECG
	Establish two large bore IVs if hemodynamically unstable
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
	For nausea *consider*, **Ondansetron**
	For pain *consider*, **Fentanyl**

Notify receiving facility. Consider Base Hospital for medical direction

Pearls
- Hemoptysis and epistaxis can appear to be an upper GI bleed. Perform a thorough history and assessment.
- Limit time on scene and transport quickly.

San Mateo County Emergency Medical Services

Vaginal Bleeding

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

History
- Last menstrual period
- Age
- Amount of bleeding (volume and duration)
- Trauma/sexual assault
- Comorbid illnesses/medications (e.g., hormone replacement, anticoagulants)
- Other bleeding/bruising
- Pregnancy possibility
- OB history
- Birth control use

Signs and Symptoms
- Dysuria
- Abdominal pain
- Vaginal discharge
- Fever/chills

Differential
- Pelvic inflammatory disease
- UTI/cystitis
- Endometrial cancer
- Pregnancy-related bleeding, including ectopic
- Dysfunctional uterine bleeding
- Genitourinary injury/laceration
- Retained product(s) of conception
- Fibroids

P	Cardiac monitor
	Consider 12-Lead ECG
	Establish two large bore IVs if hemodynamically unstable
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
	For nausea *consider*, **Ondansetron**
	For pain *consider*, **Fentanyl**

↓

Notify receiving facility. Consider Base Hospital for medical direction

Adult Medical Treatment Protocols

Pearls
- Amount of bleeding best determined by number of fully saturated pads per hour.
- If patient has passed tissue, collect and properly secure for transport.

San Mateo County Emergency Medical Services

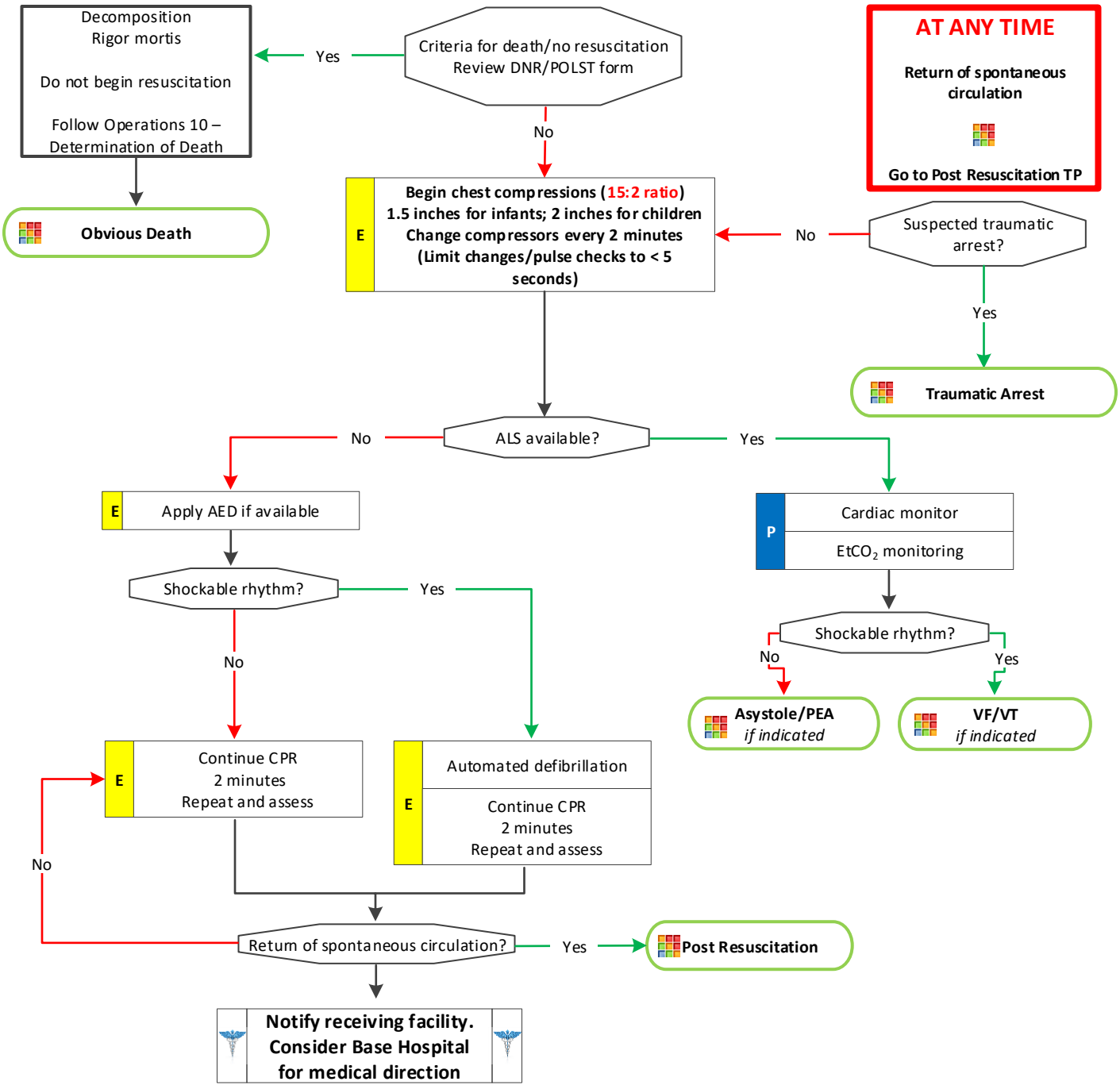
Pediatric Cardiac Arrest

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

History
- Code status (DNR or POLST)
- Events leading to arrest
- Estimated downtime
- History of current illness
- Past medical history
- Medications
- Existence of terminal illness

Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

Differential
- Airway obstruction/respiratory disease
- Medical vs. trauma
- VF vs. pulseless VT
- Asystole
- PEA
- Primary cardiac event vs. respiratory arrest or drug overdose



Pediatric Cardiac Arrest Treatment Protocols

Pediatric Cardiac Arrest

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

Pearls

- Airway is a more important intervention in pediatric arrests. This should be accomplished quickly with a BVM, airway adjunct, and appropriately sized mask. Patient survival is often dependent on proper ventilation and oxygenation.
- Efforts should be directed at high quality chest compressions with limited interruptions.
- Use appropriately sized pediatric BVM with $EtCO_2$.
- Do not delay chest compressions while applying any device or intervention.
- Use a metronome during chest compression to ensure proper rate.
- Provide resuscitative efforts for 30 minutes to maximize chance of ROSC.
- If resuscitative efforts do not attain ROSC, consider cessation of efforts per Operations 10 – Determination of Death.
- Resuscitation is based on proper planning and organized execution. Procedures require space and patient access. Make room to work. Utilize a team focused approach assigning responders to predetermined tasks.
- Reassess airway and document $EtCO_2$ frequently.
- Defibrillation vests should be removed by EMS personnel before compressions, but do not cut vests. Once removed, disengage battery to prevent alarming.
- Pediatric pads should be used in children < 10kg or measurement of Purple.

San Mateo County Emergency Medical Services

Pediatric Asystole/PEA

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

History
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- End stage renal disease
- Suspected hypothermia
- Suspected overdose
  - Tricyclic
  - Digitalis
  - Beta blockers
  - Calcium channel blockers
- DNR, POLST, or Living Will

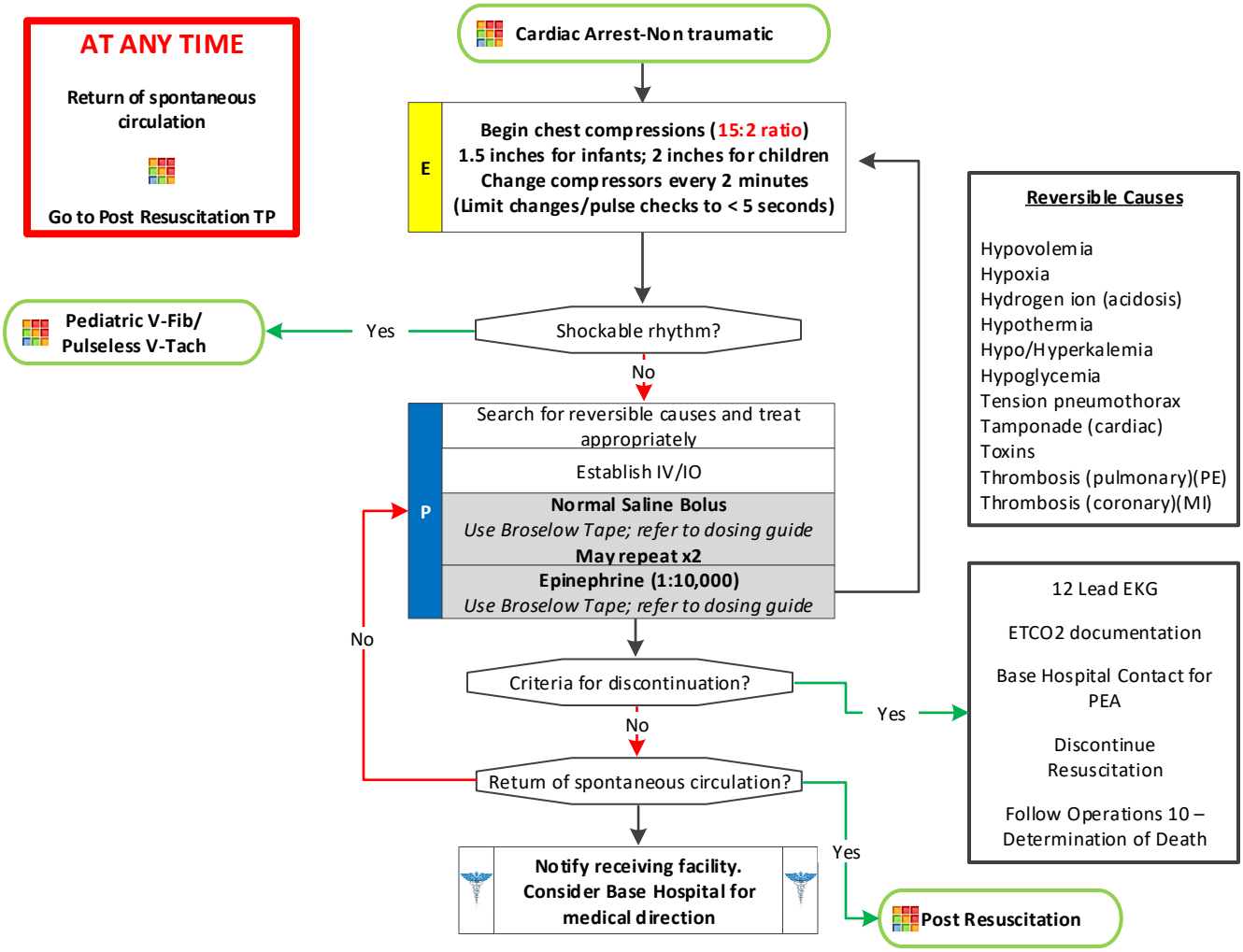
Signs and Symptoms
- Pulseless
- Apneic or agonal respirations
- No electrical activity on ECG
- No heart tones on auscultation

Differential
- Airway obstruction/respiratory disease
- Hypovolemia (e.g., trauma or other)
- Cardiac tamponade
- Hypothermia
- Drug overdose (e.g., tricyclic, digitalis, beta blockers, or calcium channel blockers)
- Myocardial infarction
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia

AT ANY TIME

Return of spontaneous circulation

Go to Post Resuscitation TP



Pediatric Cardiac Arrest Treatment Protocols

Pediatric Asystole/PEA

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- Pediatric pads should be used in children < 10kg or measurement of Purple.

San Mateo County Emergency Medical Services

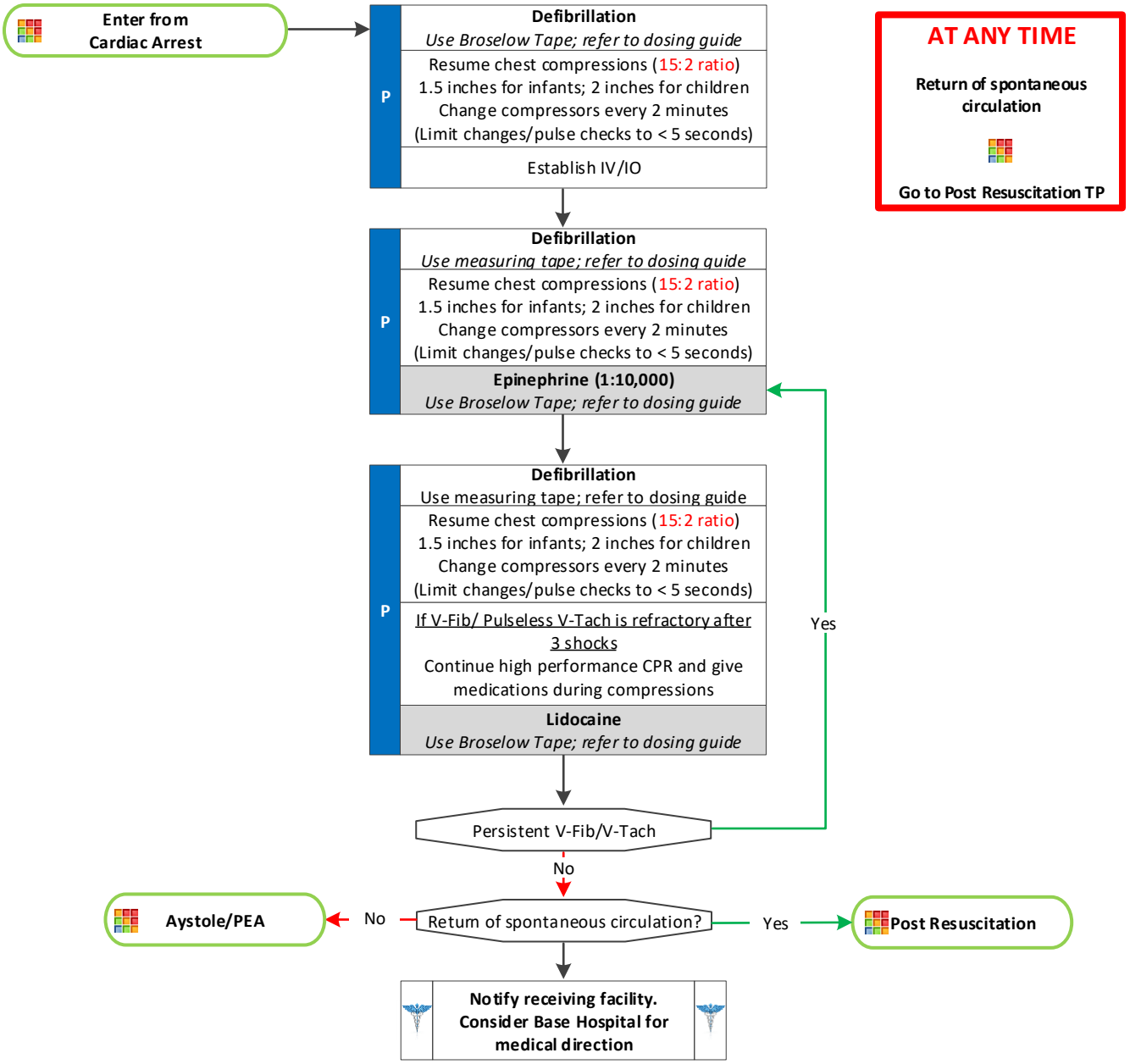
Pediatric V-Fib/Pulseless V-Tach

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

History
- Events leading to arrest
- Estimated downtime
- Prior resuscitation attempts
- Past medical history
- Medications
- Known terminal illness

Signs and Symptoms
- Pulseless
- Apneic

Differential
- Airway obstruction/respiratory disease
- Medical vs. trauma
- VF vs. pulseless VT
- Asystole
- PEA
- Primary cardiac event vs. respiratory arrest or drug overdose



Pediatric Cardiac Arrest Treatment Protocols

Pediatric V-Fib/Pulseless V-Tach

For non-traumatic cardiac arrest in which any resuscitation is initiated, NOT dead on arrival

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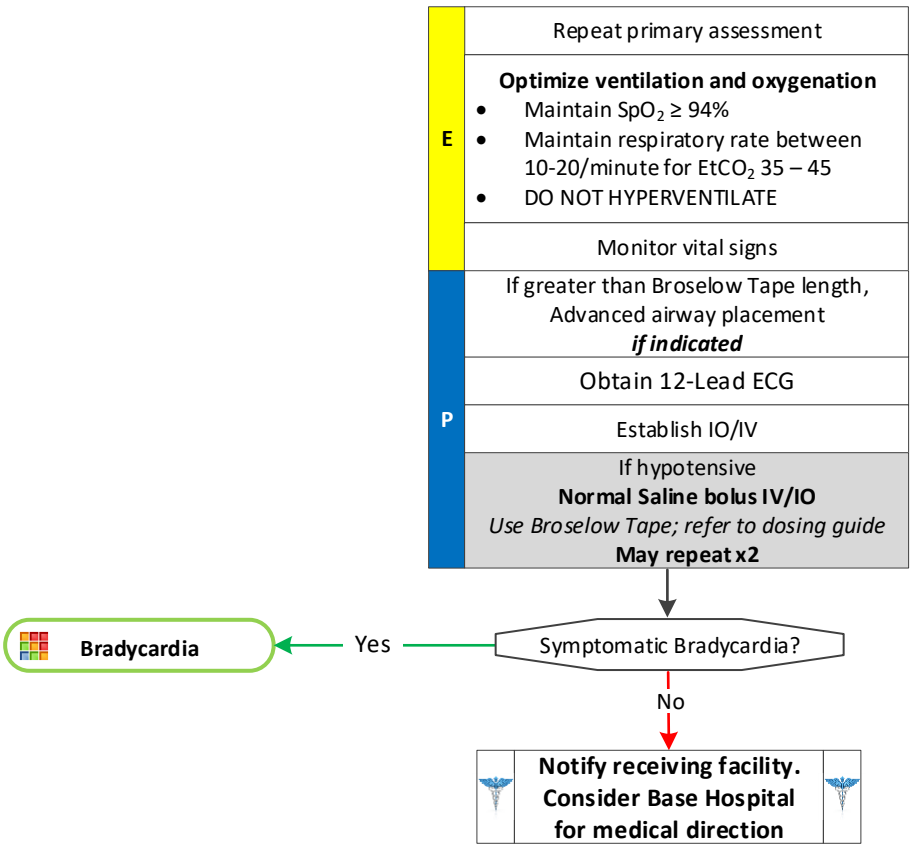
San Mateo County Emergency Medical Services

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



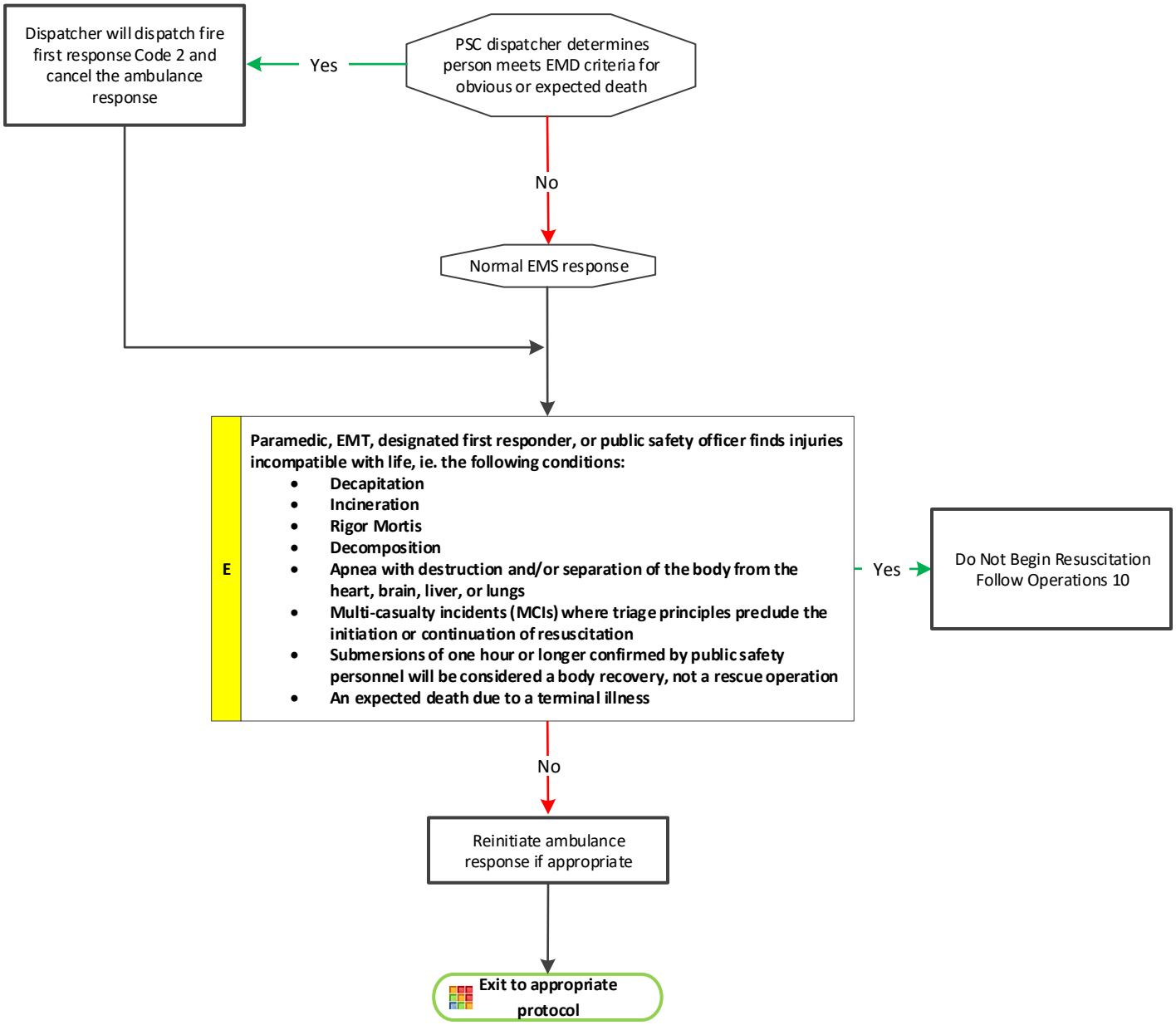
Hospitals with Pediatric Critical Care Units

Stanford
UCSF Mission Bay
CPMC Van Ness Campus

Pediatric Cardiac Arrest Treatment Guidelines

Pearls
- Hyperventilation is a significant cause of hypotension/recurrence of cardiac arrest in the post resuscitation phase and should be avoided.
- 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 is defined as:
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x2)
  - Over 10 years: < 90mmHg

Obvious Death



San Mateo County Emergency Medical Services

Pediatric Bradycardia

For any bradycardic rhythm <60bpm

History
- Past medical history
  - Heart transplant
- Medications
  - Beta blockers
  - Calcium channel blockers
  - Clonidine
  - Digoxin
- Pacemaker

Signs and Symptoms
- Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope or shock secondary to bradycardia
- Age dependent hypotension
- Chest pain
- Respiratory distress
- Hypotension or shock
- Altered mental status
- Syncope

Differential
- Airway obstruction/respiratory disease
- Acute myocardial infarction
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (e.g., 1°, 2° or 3°)
- Overdose

HR < 60 and symptomatic:
Hypoperfusion, hypotension, respiratory difficulty or altered mental status

No →
- Support ABCs
- Give Oxygen
- Observe

Yes ↓

E
- High flow oxygen via non-rebreather mask or ventilate with BVM
- If HR remains < 60 with instability after O_2 and ventilation, begin chest compressions (15:2 ratio)
  1.5 inches for infants; 2 inches for children

P
- Cardiac monitor
- Establish IV/IO

P
- If HR remains < 60 with instability after CPR
  Epinephrine (1:10,000)
  Use Broselow Tape; refer to dosing guide
- *Consider*, 12-Lead ECG
- For increased vagal tone or primary AV block
  Consider, **Atropine**
  Use Broselow Tape; refer to dosing guide
- *Consider*, **Normal Saline bolus**
  Use Broselow Tape; refer to dosing guide
  May repeat x2
- $EtCO_2$ monitoring (if available)

Notify receiving facility. Consider Base Hospital for medical direction

Pearls
- The majority of pediatric bradycardia is due to airway problems.
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia.
- Most maternal medications pass through breast milk to the infant. Obtain medication use and history of nursing mother.

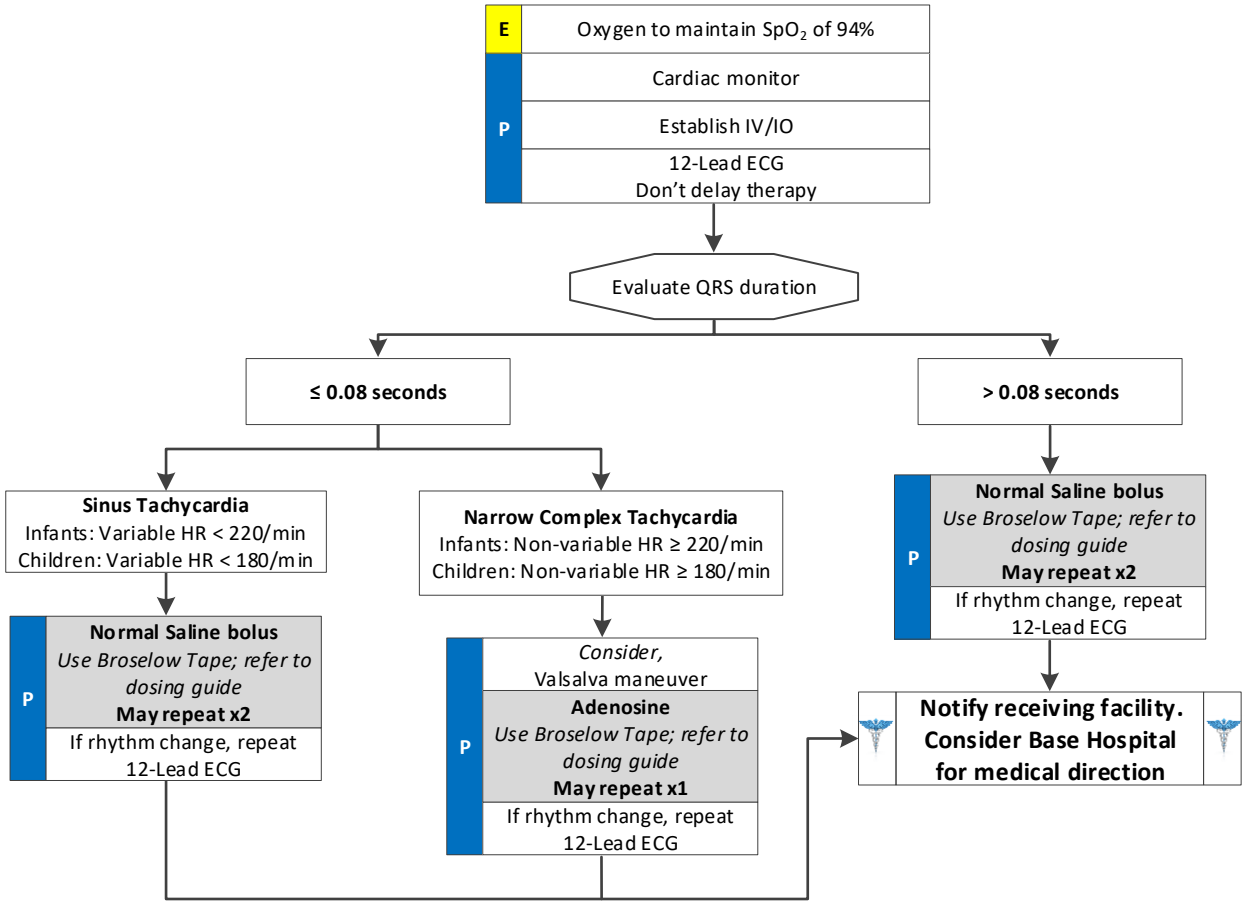
San Mateo County Emergency Medical Services

Pediatric Tachycardia (Stable)

History
- Medications (e.g., Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
- Diet
- Drugs (e.g., nicotine and illegal drugs)
- Past medical history
- History of palpations/heart racing
- Syncope/near syncope

Signs and Symptoms
- Heart rate > 180 with narrow, regular complexes
- Age dependent hypotension
- Dizziness, chest pain, shortness of breath, altered mental status, or diaphoresis
- Acute Pulmonary Edema
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter
  - Multifocal atrial tachycardia
  - Ventricular tachycardia

Differential
- Heart disease (e.g., WPW or valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypoxia
- Hypovolemia or anemia
- Drug effect/overdose (see **History**)
- Hypothyroidism
- Pulmonary embolus



Pearls
- Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.
- Unstable is defined by poor perfusion, hypotension, respiratory difficulty and altered mental status.
- If at any point the patient becomes unstable, move to the unstable protocol.
- Early transport is always appropriate in unstable patients.
- Consider presentation and known history. Search for and treat cause(s).
- For ASYMPTOMATIC patients (or those with only minimal symptoms, such as palpitations) and any tachycardia with a rate of < 180 in children and < 220 in infants with a normal blood pressure, consider CLOSE OBSERVATION or fluid bolus rather than immediate treatment with an anti-arrhythmic medication.
- Separating the child from the caregiver may worsen the child's clinical condition.

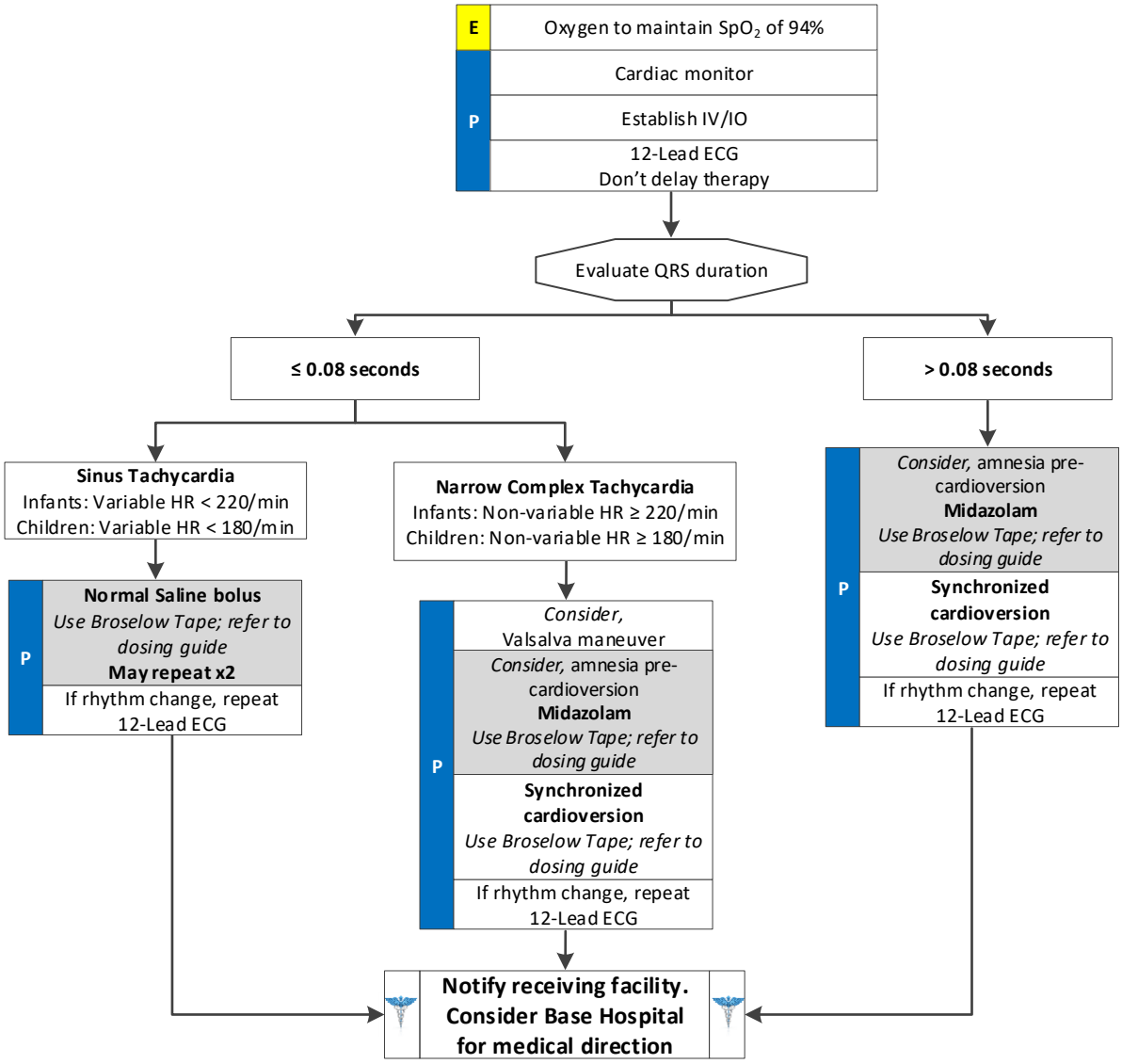
Pediatric Cardiac Dysrhythmia Treatment Protocols

Pediatric Tachycardia (Unstable)

History
- Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
- Diet (e.g., caffeine and chocolate)
- Drugs (e.g., nicotine and illegal drugs)
- Past medical history
- History of palpations/heart racing
- Syncope/near syncope
- Renal failure
- Missed dialysis

Signs and Symptoms
- Heart rate > 150
- Systolic BP < 90
- Dizziness, chest pain, shortness of breath, altered mental status or diaphoresis
- Acute pulmonary edema
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter
  - Multifocal atrial tachycardia
  - Ventricular tachycardia

Differential
- Heart disease (e.g., WPW or valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, pain, or emotional stress
- Fever
- Hypoxia
- Hypovolemia or anemia
- Drug effect/overdose (see **History**)
- Hypothyroidism
- Pulmonary embolus



Pediatric Wide Complex Tachycardia

Pearls

- Most important goal is to differentiate the type of tachycardia and if STABLE or UNSTABLE.
- Unstable is defined by poor perfusion, hypotension, respiratory difficulty and altered mental status.
- Early transport is always appropriate in unstable patients.
- Consider presentation and known history. Search for and treat cause(s).
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric pads should be used in children < 10kg or Broselow measurement of Purple.
- Monitor for respiratory depression and associated hypotension associated if Midazolam is used.

San Mateo County Emergency Medical Services

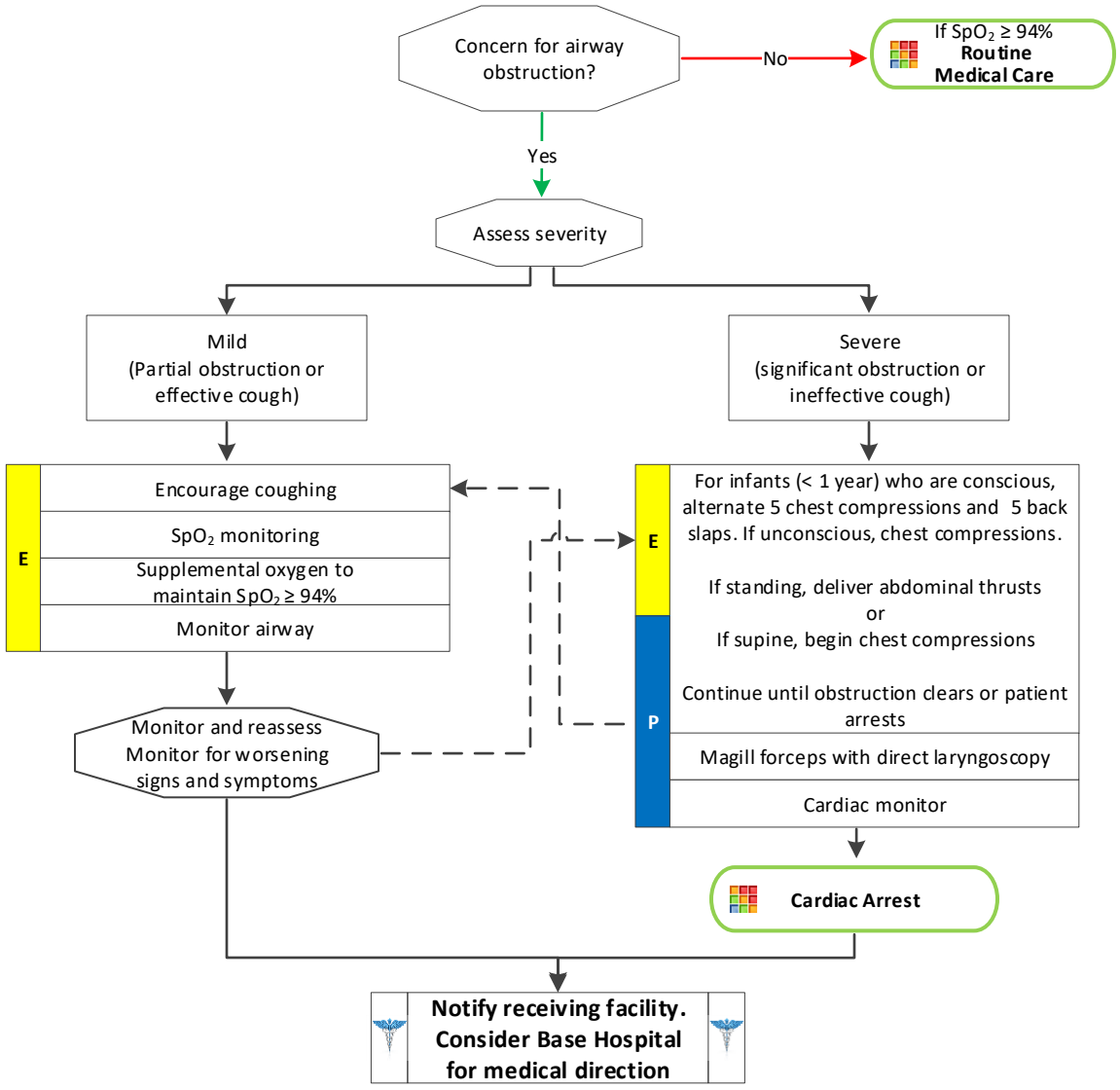
Pediatric Airway Obstruction/Choking

For any upper airway emergency including choking, foreign body, swelling, stridor, croup, and obstructed tracheostomy

History
- Sudden onset of shortness of breath/coughing
- Recent history of eating or food present
- History of stroke or swallowing problems
- Past medical history
- Sudden loss of speech
- Syncope

Signs and Symptoms
- Sudden onset of coughing, wheezing or gagging
- Stridor
- Inability to talk
- Universal sign for choking
- Panic
- Pointing to throat
- Syncope
- Cyanosis

Differential
- Foreign body aspiration
- Food bolus aspiration
- Epiglottitis
- Syncope
- Hypoxia
- Asthma/COPD
- CHF exacerbation
- Anaphylaxis
- Massive pulmonary embolus



Pearls
- Bag valve mask can force the food obstruction deeper.
- If unable to ventilate, consider a foreign body obstruction, particularly after performing proper airway maneuvers.
- Advanced airways are only approved for patients that do not measure on the Broselow Tape. A height of > 4ft is required for the King Airway. Video laryngoscopy is the preferred method in these patients.

Pediatric Respiratory Distress Treatment Protocols

San Mateo County Emergency Medical Services

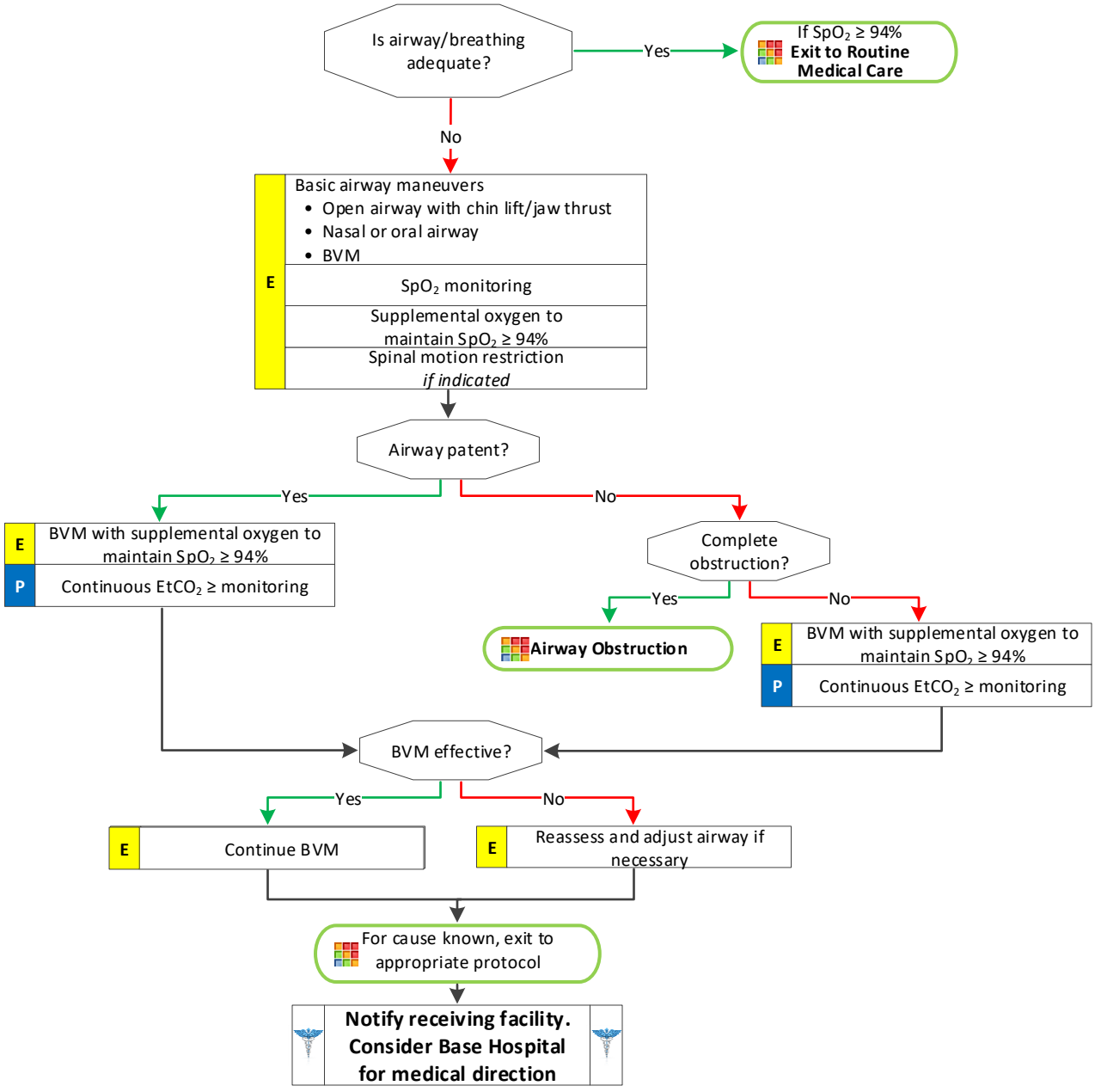
Pediatric Respiratory Arrest/Respiratory Failure

For patients requiring positive-pressure ventilation and/or hypoxia despite 100% oxygen

History
- Sudden onset of shortness of breath/coughing
- Past medical history
- Sudden loss of speech
- Syncope
- COPD/Asthma
- CHF
- Cardiac disease
- Lung disease

Signs and Symptoms
- Sudden onset of coughing, wheezing or gagging
- Stridor
- Inability to talk in complete sentences
- Panic
- Pointing to throat
- Syncope
- Cyanosis

Differential
- Foreign body aspiration
- Seizure
- Epiglottitis
- Syncope
- Hypoxia
- Asthma/COPD
- CHF exacerbation
- Anaphylaxis
- Massive pulmonary embolus



Pediatric Respiratory Distress Treatment Protocols

Pediatric Respiratory Arrest/Respiratory Failure

For patients requiring positive-pressure ventilation and/or hypoxia despite 100% oxygen

Pearls

- Effective use of a BVM is best achieved with two (2) providers.
- Continuous capnometry ($EtCO_2$) is mandatory with BVM. Document results.
- For the purposes of this protocol, a secure airway is achieved when the patient is receiving appropriate oxygenation and ventilation.
- An appropriate ventilatory rate is one that maintains an $EtCO_2$ of 35 to 45.
- The airway should be reassessed with each patient move. Document findings and $EtCO_2$ readings for each.
- Maintain spinal motion restriction for patients with suspected spinal injury.
- In deteriorating patients with head trauma, may adjust ventilation rate to maintain an $EtCO_2$ of 30-35.

San Mateo County Emergency Medical Services

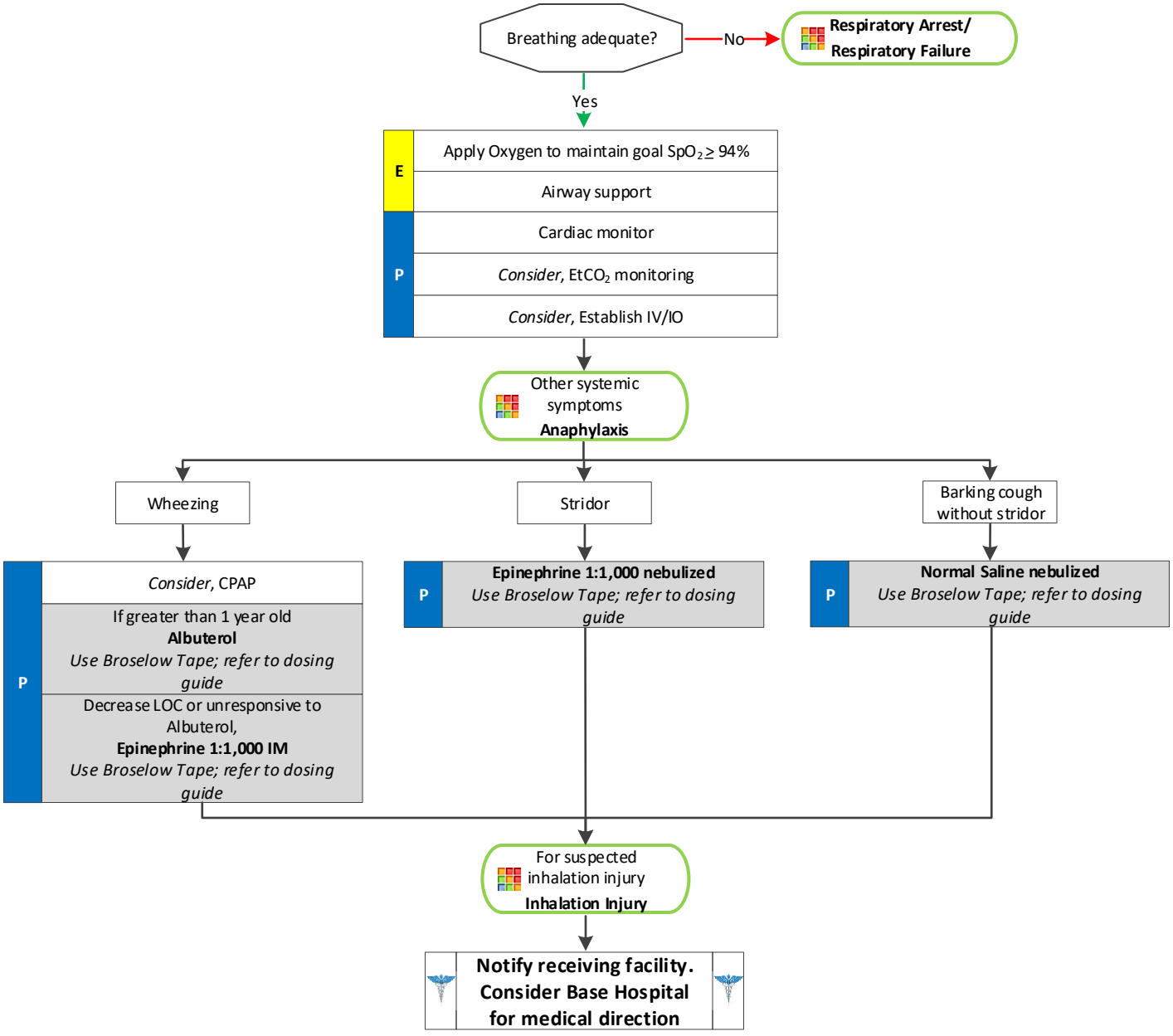
Pediatric Respiratory Distress/Bronchospasm

For asthma exacerbations, epiglottis and any bronchospasms/wheezing not from pulmonary edema

History
- Asthma
- COPD – chronic bronchitis, emphysema
- Home treatment (e.g., oxygen or nebulizer)
- Medications (e.g., Theophylline, steroids, inhalers)
- Frequency of inhaler use

Signs and Symptoms
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing or rhonchi/diminished breath sounds
- Use of accessory muscles
- Cough
- Tachycardia

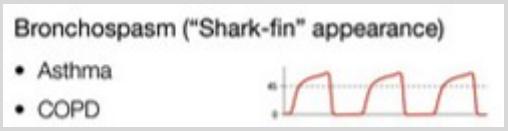
Differential
- Asthma
- Anaphylaxis
- Foreign body aspiration
- Partial airway obstruction (i.e. epiglottitis)
- Croup
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (e.g., carbon monoxide, etc.)



Pediatric Respiratory Distress Treatment Protocols

Pediatric Respiratory Distress/Bronchospasm

For COPD/asthma exacerbations and any bronchospasms/wheezing not from pulmonary edema



Pearls

- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- Diffuse wheezing in patients < 1 year, it is almost always bronchiolitis, not asthma. For these patients, suctioning and supplemental oxygen are appropriate treatments.
- Pulse oximetry monitoring is required for all respiratory patients.

San Mateo County Emergency Medical Services

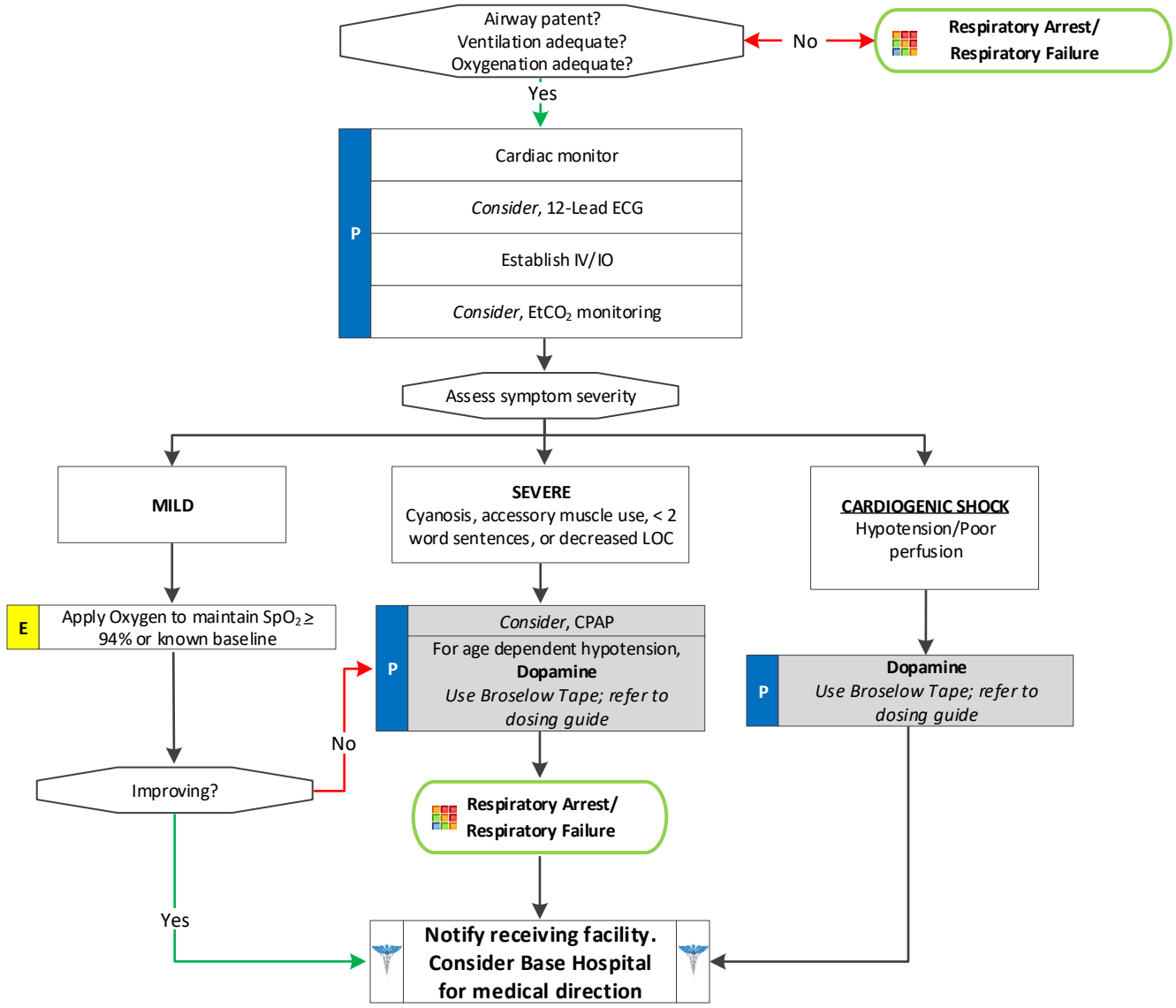
Pediatric Respiratory Distress/CHF/Pulmonary Edema

For congenital heart disease

History
- Congestive heart failure
- Past medical history
- Medications
- Cardiac history and surgeries

Signs and Symptoms
- Hypotension/shock
- Accessory muscle use
- Mottling
- Bilateral rales/crackles
- Anxiety
- Orthopnea
- Jugular vein distension
- Pink, frothy sputum
- Peripheral edema
- Diaphoresis
- Hypertensive
- Wheezing

Differential
- Congenital heart disease
- Myocarditis
- Myocardial infarction
- Congestive heart failure
- Asthma
- Anaphylaxis
- Aspiration
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pericardial tamponade
- Toxic exposure



Pediatric Respiratory Distress Treatment Protocols

SAN MATEO COUNTY HEALTH
EMERGENCY
MEDICAL SERVICES

Treatment Protocol PR04

Effective July 2020

Pediatric Respiratory Distress/CHF/Pulmonary Edema

For congestive heart failure exacerbation

Pearls

- A trial of Albuterol can be considered in the undifferentiated patient.
- 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 is defined as:
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x2)
  - Over 10 years: < 90mmHg
- Congenital heart disease varies by age:
  < 1 month: Tetralogy of Fallot, transposition of the great arteries, and coarctation of the aorta
  2-6 months: Ventricular septal defects (VSD), atrioseptal defects (ASD)
  Any age: Myocarditis, pericarditis, SVT, and heart blocks
- Treatment of congestive heart failure/pulmonary edema may vary depending on the underlying cause and may include the following with consultation of the Base Hospital:
  - Fentanyl
  - Nitroglycerin
- Do not assume all wheezing is pulmonary, especially in a cardiac child. Avoid albuterol unless there is a strong history of recurrent wheezing secondary to pulmonary etiology; consult the Base Hospital.

San Mateo County Emergency Medical Services

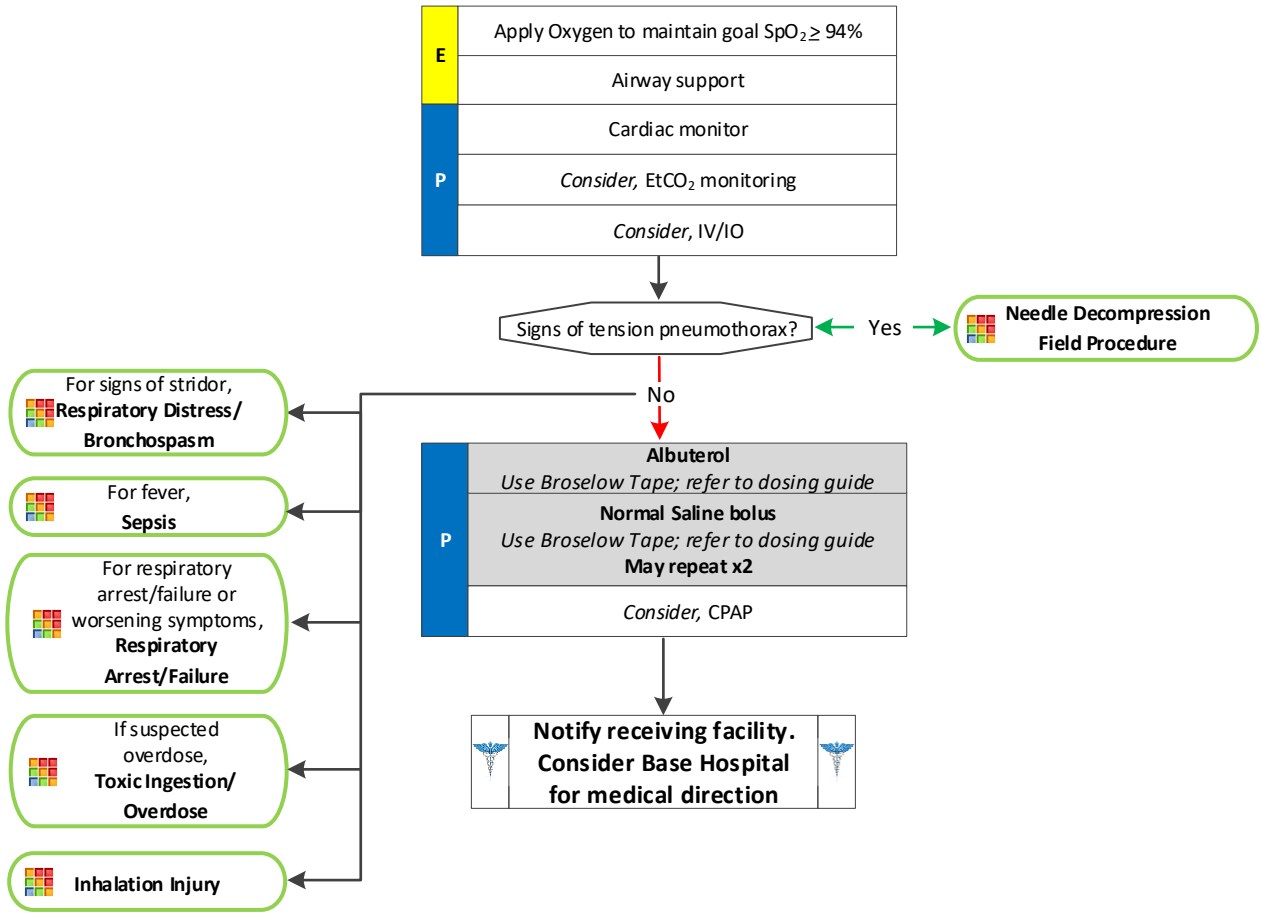
Pediatric Respiratory Distress Other

For patients with pulmonary disease that is not croup, bronchiolitis, congenital heart disease or bronchospasm; includes suspected pneumonia, PE, pneumothorax and non-pulmonary and unknown causes of respiratory distress

History
- Recent respiratory illness, including pneumonia
- Pulmonary embolism
- Pneumothorax
- Medications (e.g., antibiotics, steroids, inhalers)
- Non-pulmonary and unknown causes of respiratory distress
- Anxiety
- Home ventilator/oxygen

Signs and Symptoms
- Shortness of breath
- Decreased ability to speak
- Increased respiratory rate and effort
- Rhonchi/diminished breath sounds
- Use of accessory muscles
- Cough
- Tachycardia
- Fever
- Hypotension

Differential
- Asthma/COPD
- Anaphylaxis
- Aspiration
- Sepsis/Metabolic acidosis
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax/Tension pneumothorax
- Epiglottitis
- Pericardial tamponade
- Hyperventilation
- Toxin (e.g., carbon monoxide, ASA.)



Pearls
- For suspected anxiety, consider calming and coaching to slow breathing prior to starting ALS treatment.
- CPAP is contraindicated for patients with signs/symptoms of a pneumothorax.
- Signs/symptoms of a tension pneumothorax include: AMS; hypotension; increased pulse and respirations; absent breath sounds or hyperresonance to percussion on affected side; jugular vein distension; difficulty ventilating; and tracheal shift.
- Pulse oximetry monitoring is required for all respiratory patients.

Pediatric Respiratory Distress Treatment Protocols

San Mateo County Emergency Medical Services

Pediatric Inhalation Injury

For any signs/symptoms related to inhaling a gas or substance other than smoke or carbon monoxide

History
- Type of exposure (heat, gas, chemical)
- Duration of exposure
- Time of injury
- Past medical history
- Other trauma
- Loss of consciousness

Signs and Symptoms
- Burns, swelling, pain
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/wheezing
- Seizure/AMS after industrial or closed space fire, consider cyanide poisoning

Differential
- Foreign Body Aspiration
- Upper Respiratory Infection
- Asthma exacerbation
- Anaphylaxis
- Cyanide poisoning
- Thermal injury
- Chemical/Electrical injury
- Radiation injury
- Blast injury

Scene safety. Quantify and triage patients. Load and go with assessment and treatment enroute to hospital

Assess Airway

No or Mild Airway Involvement
Airway patent, no signs of edema, no stridor or change in voice, nasal hairs intact, low likelihood of airway involvement

If oxygen saturation ≥ 94%
Routine Medical Care

Moderate Airway Involvement
Suspected inhalation injury with only one of the following: Wheezing, change in voice, increased work of breathing/ tachypnea.

E
- Monitor and reassess
- Apply Oxygen to maintain goal $SpO_2 \geq 94\%$

P
- Cardiac monitor
- *Consider*, IV
- *Consider*, **Albuterol** *Use Broselow Tape; refer to dosing guide*

Notify receiving facility. Consider Base Hospital for medical direction

Severe Airway Involvement
Accessory muscle use or altered breath sounds
OR
Any combination of the following: Airway edema, stridor, change in voice, increased work of breathing/tachypnea.

E
- Monitor and reassess
- **High flow Oxygen** Regardless of SpO_2

P
- Cardiac monitor
- *Consider*, 12-Lead ECG
- *Consider*, IV/IO
- **Albuterol** *Use Broselow Tape; refer to dosing guide*
- **Epinephrine 1:1,000 nebulized** for stridor *Use Broselow Tape; refer to dosing guide*
- CPAP

Closest receiving facility for definitive airway. Consider Base Hospital for medical direction

- **Trauma** *if indicated*
- **Pain** *if indicated*
- **Burn** *if indicated*
- **Carbon Monoxide/ Cyanide** *if indicated*
- **Hazmat** *if indicated*
- **Hypotension** *if indicated*
- **Eye Injury** *if indicated*

Pediatric Respiratory Distress Treatment Protocols

Pediatric Inhalation Injury

For any signs/symptoms related to inhaling a gas or substance other than smoke or carbon monoxide

Pearls

- Consider expedited transport for inhalation injury.
- Ensure patient is properly decontaminated before placing in ambulance and transport to hospital.
- Contact Hazmat or Poison Control Center with questions about chemical or guidance on immediate treatment.
- If able, obtain the name of chemical(s) patient was exposed to pass information along to receiving hospital staff.

San Mateo County Emergency Medical Services

Pediatric Smoke Inhalation Injury

For patients with smoke inhalation

History
- Number and severity of other victims
- Industrial or residential fire
- Duration of inhalation
- Social history - smoking
- Past medical history
- Other trauma
- Odor

Signs and Symptoms
- Facial burns, pain, and/or swelling
- Cherry red skin
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress could be indicated by hoarseness/wheezing
- Seizure/AMS after industrial or closed space fire consider cyanide poisoning

Differential
- Foreign Body Aspiration
- Asthma exacerbation
- Cyanide poisoning
- Carbon monoxide poisoning
- Thermal injury
- Heart failure
- Acute respiratory distress syndrome

Scene safety. Quantify and triage patients. Load and go with assessment and treatment enroute to hospital

Approved Burn Receiving Centers

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

Assess Airway

No or Mild Airway Involvement
Airway patent, no signs of edema, no stridor or change in voice, nasal hairs intact, low likelihood of airway involvement

If oxygen saturation ≥ 94%
Routine Medical Care

Moderate Airway Involvement
Suspected inhalation injury with only one of the following: Wheezing, change in voice, increased work of breathing/ tachypnea.

E
- Monitor and reassess
- Apply Oxygen to maintain goal $SpO_2 \geq 94\%$

P
- Cardiac monitor
- *Consider*, IV
- *Consider*, **Albuterol** *Use Broselow Tape; refer to dosing guide*

Notify receiving facility. Consider Base Hospital for medical direction

Severe Airway Involvement
Accessory muscle use or altered breath sounds
OR
Any combination of the following: Airway edema, stridor, change in voice, increased work of breathing/tachypnea.

E
- Monitor and reassess
- **High flow Oxygen** Regardless of SpO_2

P
- Cardiac monitor
- *Consider*, 12-Lead ECG
- *Consider*, IV/IO
- **Albuterol** *Use Broselow Tape; refer to dosing guide*
- **Epinephrine 1:1,000 nebulized** for stridor *Use Broselow Tape; refer to dosing guide*
- CPAP

Closest receiving facility for definitive airway. Consider Base Hospital for medical direction

- **Trauma** *if indicated*
- **Pain** *if indicated*
- **Burn** *if indicated*
- **Carbon Monoxide/ Cyanide** *if indicated*
- **Hazmat** *if indicated*
- **Hypotension** *if indicated*
- **Eye Injury** *if indicated*

Pediatric Respiratory Distress Treatment Protocols

San Mateo County Emergency Medical Services

Pediatric Smoke Inhalation Injury

For patients with smoke inhalation

Pediatric Respiratory Distress Treatment Protocols

Pearls

- Ensure patient is properly decontaminated before placing in ambulance and transport to hospital.
- Contact Hazmat or Poison Control Center with questions about chemical or guidance on immediate treatment.
- If able, obtain the name of chemical(s) patient was exposed to pass information along to receiving hospital staff.
- If able, remove patient's clothing before placing in ambulance and transport to hospital.

San Mateo County Emergency Medical Services

Pediatric Cold/Flu Symptoms

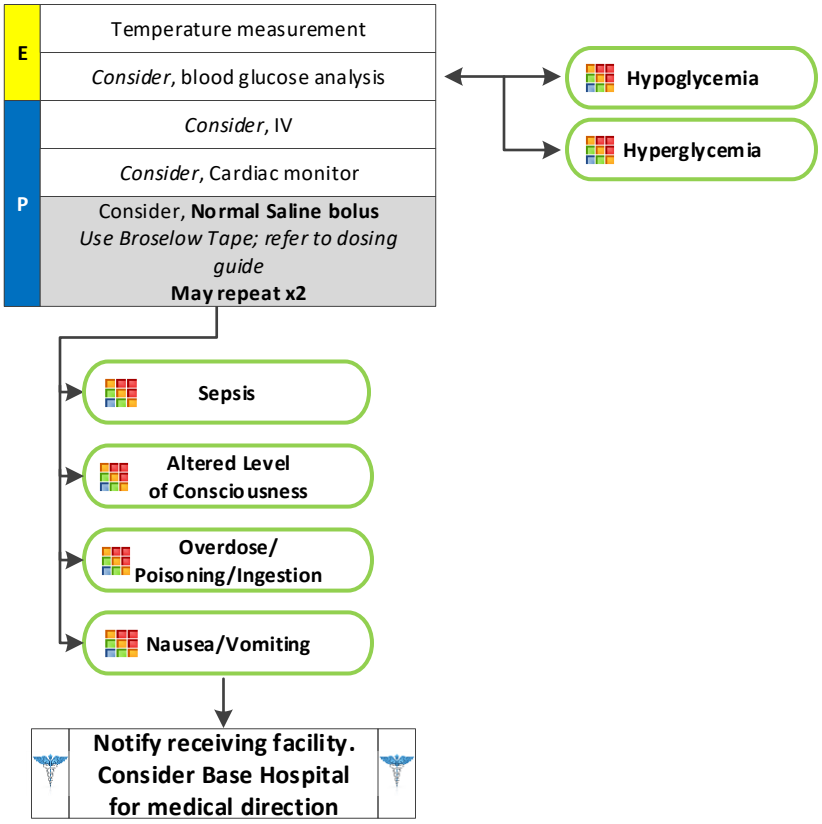
For minor respiratory illness in a patient without shortness of breath or wheezing; must have normal respiratory rate and O_2 sat

History
- Recent travel
- Duration of symptoms
- Severity of symptoms
- Current influenza/pneumonia vaccination?
- Past medical history
- Medications
- Immunocompromised (e.g., transplant, HIV, diabetes, cancer)
- Sick contact exposure
- Last acetaminophen or ibuprofen

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

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

Differential
- Infection/sepsis
- Cancer/tumors/lymphomas
- Medication or drug reaction
- Connective tissue disease (e.g., arthritis or vasculitis)
- Carbon monoxide poisoning
- Meningitis



Adult Respiratory Distress Treatment Protocols

Pearls
- Nasal suctioning and supplemental oxygen are appropriate treatments.

San Mateo County Emergency Medical Services

Pediatric Submersion/Drowning

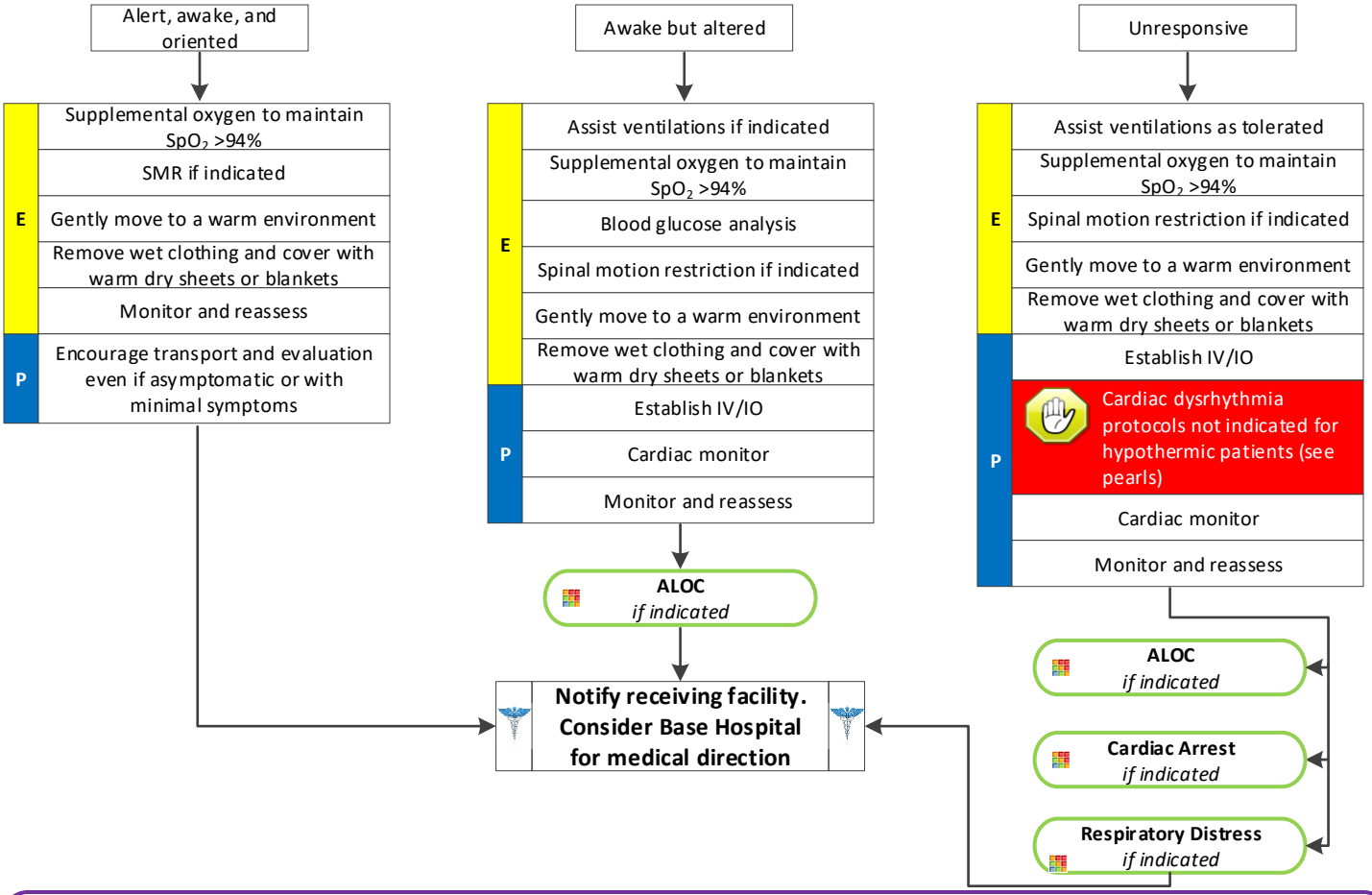
For any submersion injury, including drowning and dive (decompression) emergencies

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

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

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

Emergency Hyperbaric Chambers
John Muir Medical Center – Walnut Creek



Adult Respiratory Distress Treatment Protocols

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

San Mateo County Emergency Medical Services

Pediatric Carbon Monoxide/Cyanide

For suspected or known carbon monoxide exposure

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

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

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

E	Immediately remove from exposure
	Airway support
	High flow Oxygen regardless of SpO_2
	Blood glucose analysis
P	Cardiac monitor
	CO-oximetry (SpCO), if available
	12-Lead ECG
	Consider, IV
	Consider $EtCO_2$ monitoring
	Consider, **Normal Saline bolus** *Use Broselow Tape; refer to dosing guide* **May repeat x2**

Notify receiving facility. Consider Base Hospital for medical direction

Emergency Hyperbaric Chambers
John Muir Medical Center – Walnut Creek

Adult Respiratory Distress Treatment Protocols

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

San Mateo County Emergency Medical Services

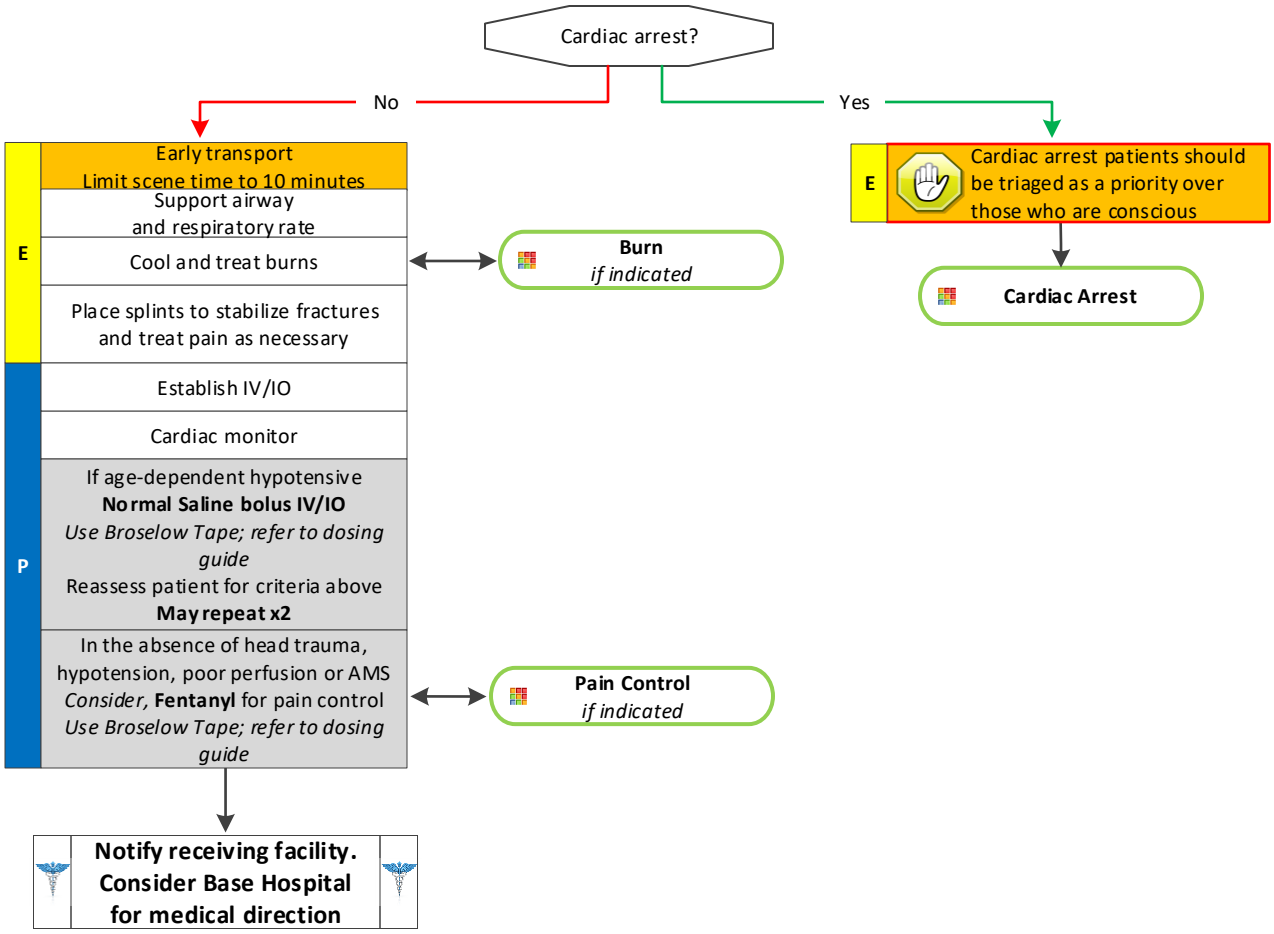
Pediatric Electrocution

For any electrocution injury

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

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

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



Pediatric Environmental Treatment Protocols

Pediatric Electrocution

For any electrocution injury

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

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

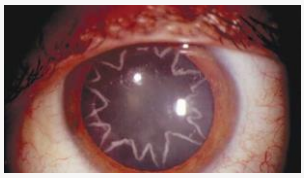
There are five basic mechanisms of injury that occur with lightning strikes:

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

Electrical/lightning burn images

Electrical burn

Electrical burn



Electrical burn

Lightning strike

Lightning strike

Pearls

- Never enter an unsafe scene of an electrical injury.
- In multi-casualty incidents involving electrocution, cardiac arrest patients should be triaged as priority over conscious patients to facilitate early defibrillation. Electrocution patients rarely die as a result of electrical injuries and may have a favorable outcome despite prolonged asystole.
- Be prepared to treat cardiac arrthymias.
- Patients with a combination of trauma and burns should be transported to a trauma center.

San Mateo County Emergency Medical Services

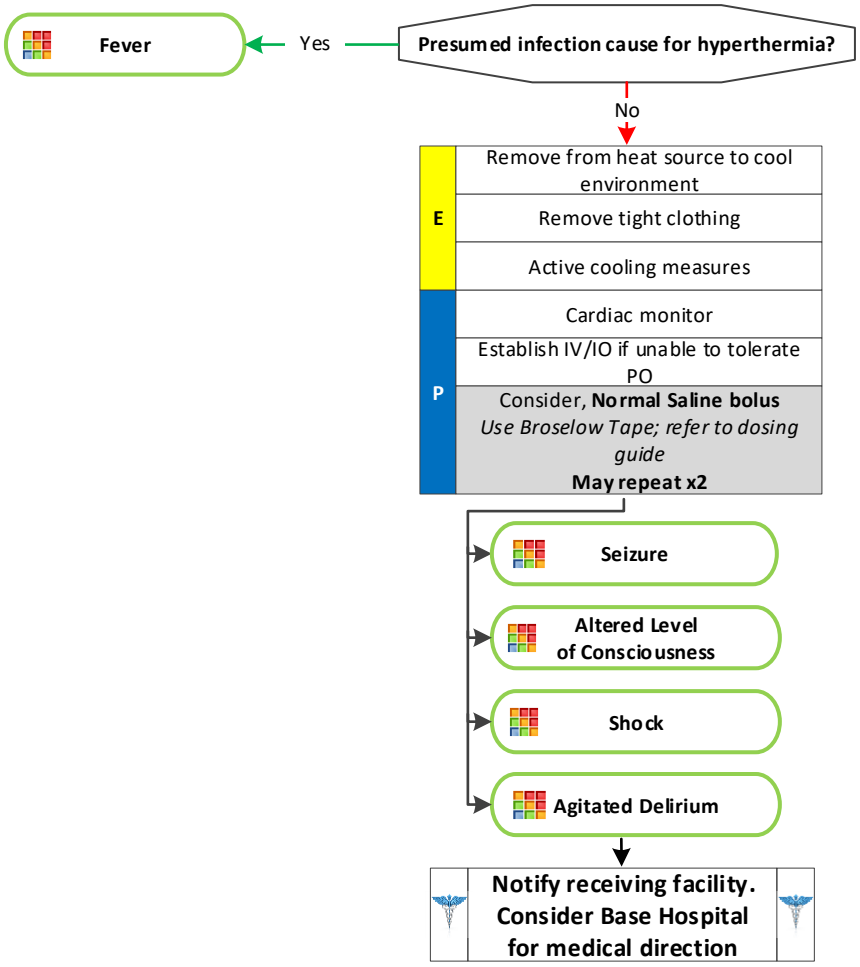
Pediatric Hyperthermia

For environmental exposure causing hyperthermia (e.g., heat exhaustion and heat stroke); drugs may also be a contributing factor

History
- Exposure to increased temperatures, humidity, or extreme physical exertion
- Time and length of exposure or last seen
- Fatigue or muscle cramping
- Poor oral intake of fluids
- Past medical history
- Medications

Signs and Symptoms
- AMS
- Hot, dry, and/or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

Differential
- Fever/Sepsis
- Hyperthyroidism
- Drug induced hyperthermia (NMS – Neuroleptic Malignant syndrome)
- Heat cramps
- Heat exhaustion
- Heat stroke



Pearls
- Check an initial temperature and repeat every 15 minutes while actively cooling.
- Extremes of age are more prone to heat emergencies. Obtain and document the patient temperature and location taken.
- Salicylates, antipsychotics, and some recreational drugs may elevate body temperature.
- Sweating generally disappears as body temperature rises above 104° F.
- Active cooling includes: Removal of bulky clothing; wetting patient with water; and air conditioning/fanning; ice packs to the axilla, groin, and neck.
- Intense shivering may occur as a patient is cooled. Stop cooling treatment until shivering stops.
- Seizures may occur with heat stroke; treat seizures per seizure treatment guideline.
- With mild symptoms of heat exhaustion, movement to a cooler environment and fanning may suffice. Increasing symptoms merit more aggressive cooling measures.

Pediatric Environmental Treatment Protocols

San Mateo County Emergency Medical Services

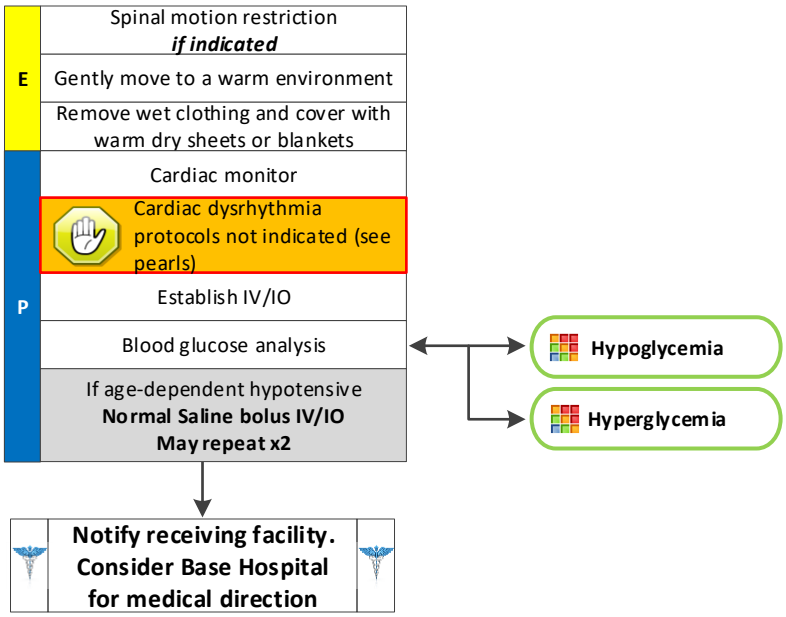
Pediatric Hypothermia/Cold Injury

For environmental exposures causing hypothermia and/or frostbite injury

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

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

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



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

Pediatric Environmental Treatment Protocols

San Mateo County Emergency Medical Services

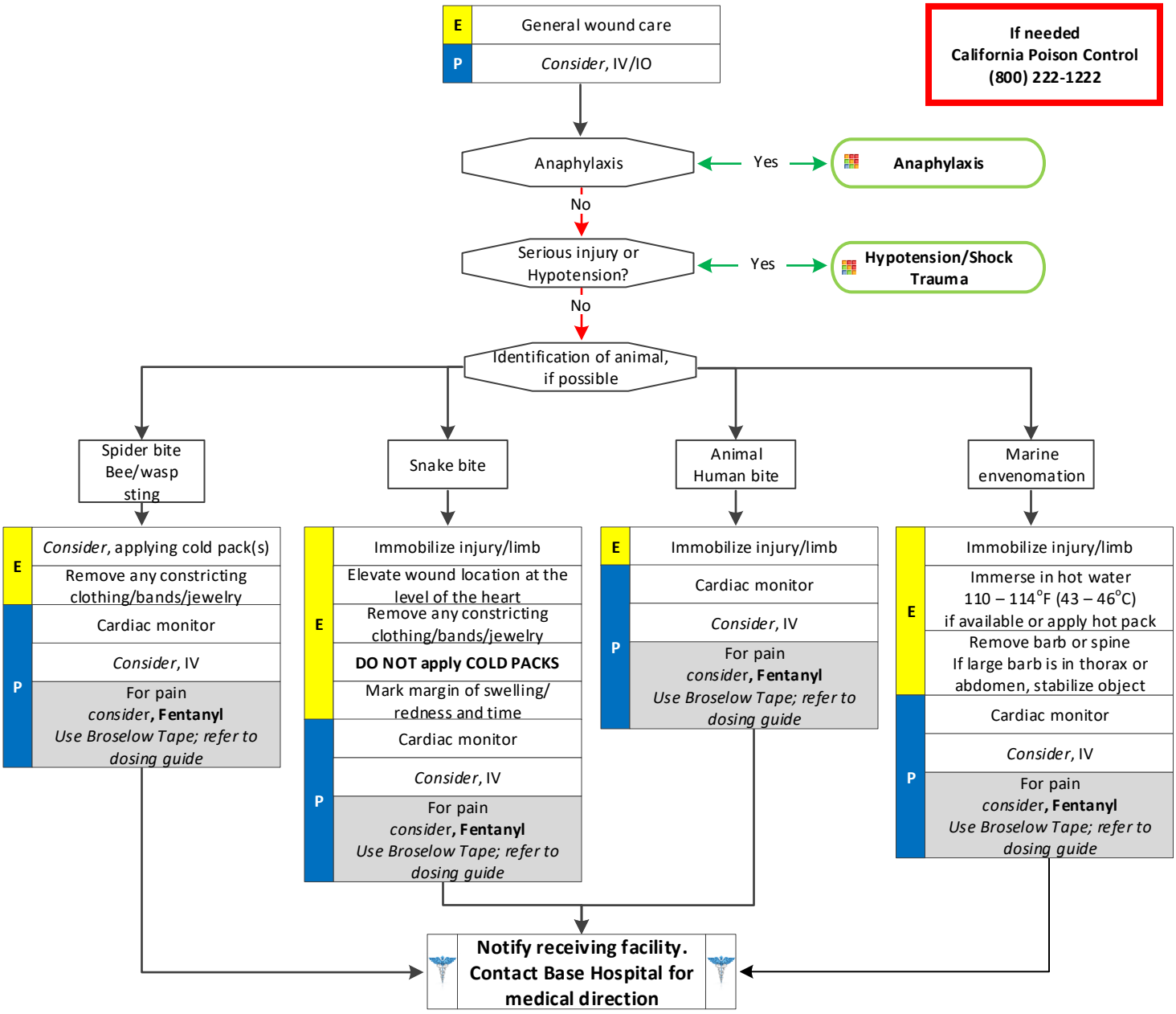
Pediatric Stings/Venomous Bites

For snakes, scorpion, insects, and marine envenomations (e.g., stingrays, jelly fish). NOT for animal bites; use traumatic injury

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

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

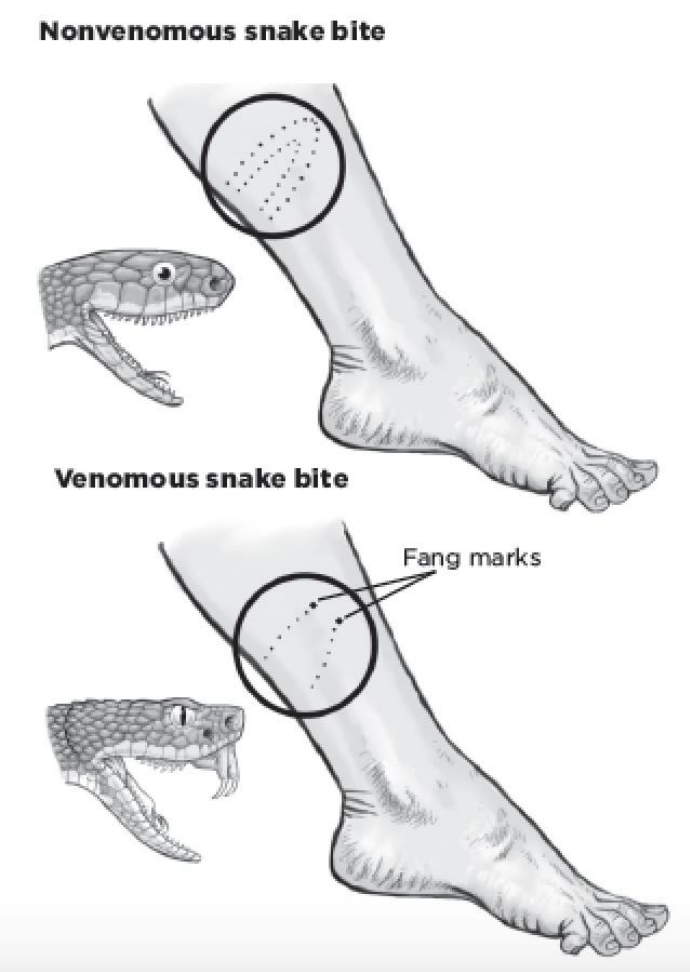
Differential
- Animal bite
- Human bite
- Snake bite (poisonous)
- Spider bite (poisonous)
- Insect sting/bite (bee, wasp, ant, or tick)
- Infection risk
- Rabies risk
- Tetanus risk



Pediatric Environmental Treatment Protocols

Pediatric Stings/Venomous Bites

For snakes, scorpion, insects, and marine envenomations (e.g., stingrays, jelly fish). NOT for animal bites; use traumatic injury



Jellyfish sting

Stingray sting

California King snake

Rattlesnake

Common Garter snake

Pearls

- Poisonous snakes in our region are generally of the pit viper family: six rattlesnake species.
- If no pain or swelling is present, envenomation is unlikely. About 25% of snake bites are dry bites.
- Black Widow spider bites tend to be minimally painful initially, but over a few hours, muscular and severe abdominal pain may develop (black spider with a red hourglass on the belly).
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back).
- Evidence of infection includes: swelling, redness, drainage, fever, and red streaks proximal to wound.
- Consider contacting the California Poison Control Center for identification (800) 222-1222.

San Mateo County Emergency Medical Services

Pediatric Hazmat Exposure/Skin Exposure

For any hazardous material (chemical) exposure. May use with another primary impression (e.g., Inhalation Injury or Burns) when applicable

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

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

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

Secure area
Scene safety
PPE

If needed
request Hazmat
(650) 363-4981

Type of exposure

Radiation

E
- Remove clothing, if appropriate
- Apply Oxygen to maintain goal $SpO_2 \geq 94\%$

P
- Cardiac monitor
- Establish IV/IO
- For nausea/vomiting *consider*, **Ondansetron**
- For pain *consider*, **Fentanyl**

Nerve agents

E
- Secure airway and support respiratory rate

P
- Establish IV/IO
- Cardiac monitor
- If purple or higher on Broselow tape **Atropine 2mg IV/IO/IM**

  If red or low on Broselow tape **Atropine 0.5mg IV/IO/IM**
  Repeat every 3-5 minutes until symptoms resolve
- **If patient is seizing upon EMS arrival, give Midazolam; do not wait to obtain IV or IO access**
  May repeat every 3 to 5 minutes for continued seizure activity

Chemical burns

E
- For burning involving powders, safely brush off powder. Flush with copious water after all powder is removed .

  For burns involving acids, thoroughly flush affected area(s) with water to remove acid.

P
- For hydrofluoric acid exposure **Calcium Chloride** for dysrhythmias or cardiac arrest
- For pain *consider*, **Fentanyl**

For thermal burns: **Burns**

Eye Irrigation Field Procedure

Notify receiving facility. Consider Base Hospital for medical direction

Pediatric Toxic Exposure Treatment Protocols

Pediatric Hazmat Exposure/Skin Exposure

For any hazardous material (chemical) exposure. May use with another primary impression (e.g., Inhalation Injury or Burns) when applicable

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

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

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

Pearls

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

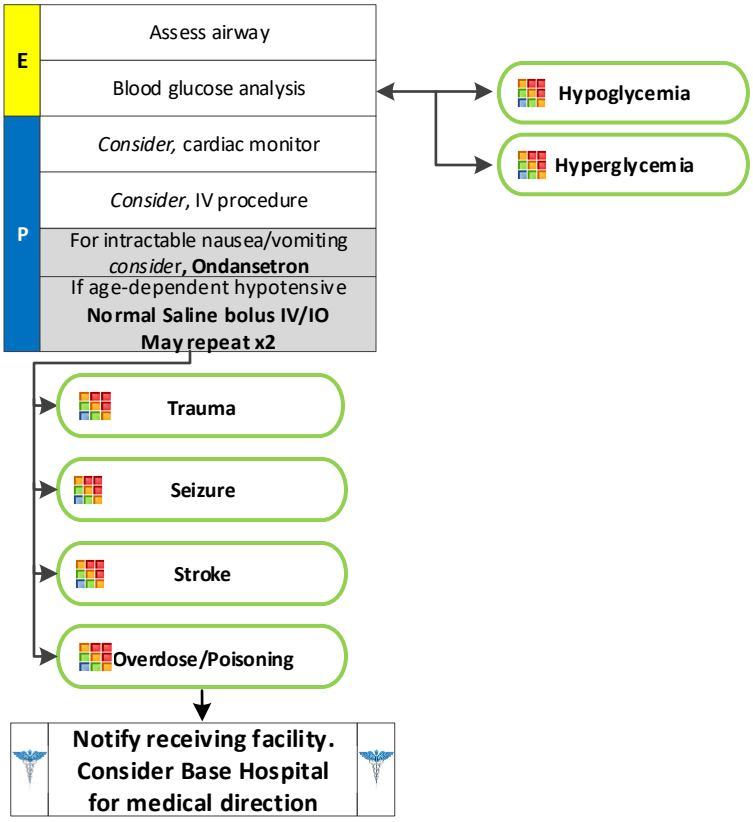
Pediatric Alcohol Intoxication

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

History
- Known or suspected alcohol use

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

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



San Mateo County Emergency Medical Services

Pediatric Overdose/Poisoning/Ingestion

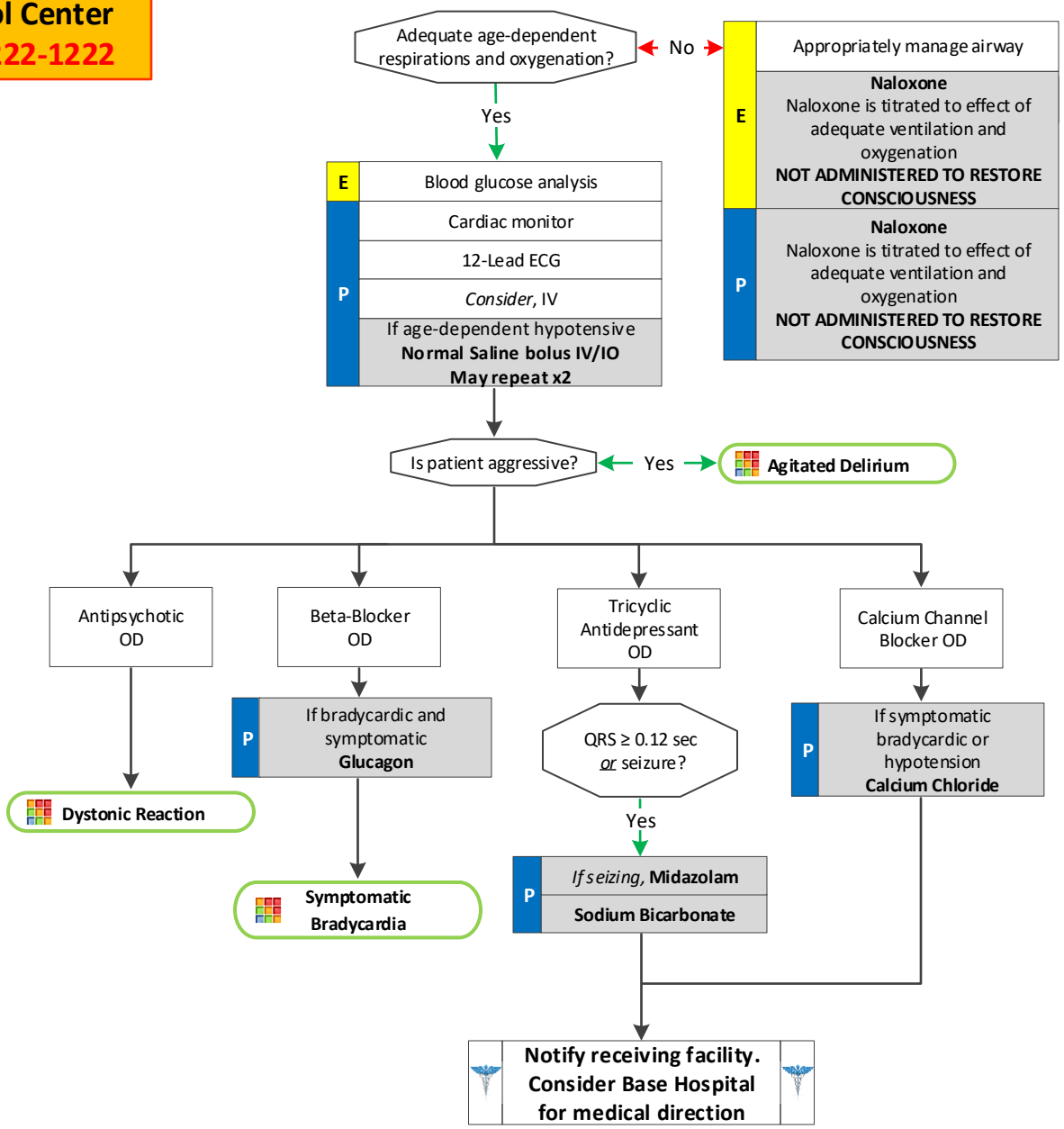
For any intentional or unintentional overdose/poisoning by any route, includes illicit substances and prescription medications, overdose and/or adverse reactions.

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

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

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

California Poison Control Center
(800) 222-1222



Pediatric Toxic Exposure Treatment Protocols

Pediatric Overdose/Poisoning/Ingestion

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

Toxidrome	Vital Signs	Mental Status	Pupils	Other Findings	Examples
Anticholinergic (ie a huge dose of atropine)	Hyperthermia (hot as hades), tachycardic, hypertensive, tachypnea	Hypervigilant, agitated (mad as a hatter), hallucinating	Mydriasis (blind as a bat)	Dry flushed skin (dry as a bone, red as a beet), urinary retention	Antihistamines, TCAs, atropine, scopolamine, antispasmodics
Cholinergic	Bradycardia (muscarinic), Tachycardia and hypertension (nicotinic)	Confused, coma	Miosis	SLUDGE (Salivation, lacrimation, urination, diarrhea, GI upset, emesis)	Organophosphate pesticides, nerve agents, physostigmine
Hallucinogen	Hyperthermia, tachycardia, hypertension	Hallucination, synesthesia, agitation	Mydriasis	Nystagmus	PCP, LSD, mescaline
Opioid	Hypothermia, bradycardia, hypotension, bradypnea	CNS depression, coma	Miosis	Hyporeflexia, pulmonary edema	Opioids (heroin, morphine, methadone, dilaudid, etc)
Sedative-Hypnotic	Hypothermia, bradycardia, hypotension, bradypnea	CNS depression, confusion, coma	Miosis	Hyporeflexia	Benzos, barbiturates, alcohols
Serotonin Syndrome	Hyperthermia, tachycardia, hypertension, tachypnea	Confused, agitated, coma	Mydriasis	Tremor, myoclonus, diaphoresis, hyperreflexia, trisumus, rigidity	MAOIs, SSRIs, meperidine, dextromethorphan
Sympathomimetic	Hyperthermia, tachycardia, tachypnea	Agitated, hyperalert, paranoia	Mydriasis	Diaphoresis, tremors, hyperreflexia, seizures	Cocaine, amphetamines, pseudoepherdine

Pearls

- Overdose or toxic ingestion patients with significant ingestion/exposures should be monitored very closely and aggressively treated as indicated. Do not hesitate to contact the Base Hospital or Poison Control for advice as certain critically ill overdose patients may quickly overwhelm medication supplies. For example, a tricyclic overdose with a wide QRS and altered mental status may need to receive multiple Sodium Bicarbonate boluses until QRS narrowing and clinical improvement. Note: Poison Control offers advice, not medical direction.
- Bring medication with the patient to the hospital.
- Tricyclic: Progression of toxicity include decreased mental status, dysrhythmias, seizures, hypotension then coma and death; onset can occur within 5 minutes.
- Acetaminophen: Initially normal or with nausea/vomiting.
- Aspirin: Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure or cerebral edema among other things can present later.
- Depressants: Decreased heart rate, blood pressure or temperature, decreased respirations, and non-specific pupils.
- Stimulants: Increased heart rate, blood pressure or temperature, dilated pupils, and seizures.
- Anticholinergics: Increased heart rate or temperature, dilated pupils, and mental status changes.
- Cardiac medications: Dysrhythmias and mental status changes.
- Solvents: Nausea, vomiting, coughing, and mental status changes.
- Insecticides: Increased or decreased heart rate, increased secretions, nausea, vomiting, diarrhea, and pinpoint pupils. Consider restraints if necessary for patient's or personnel's protection per Restraint Procedure. See Hazmat protocol for insecticide treatment.

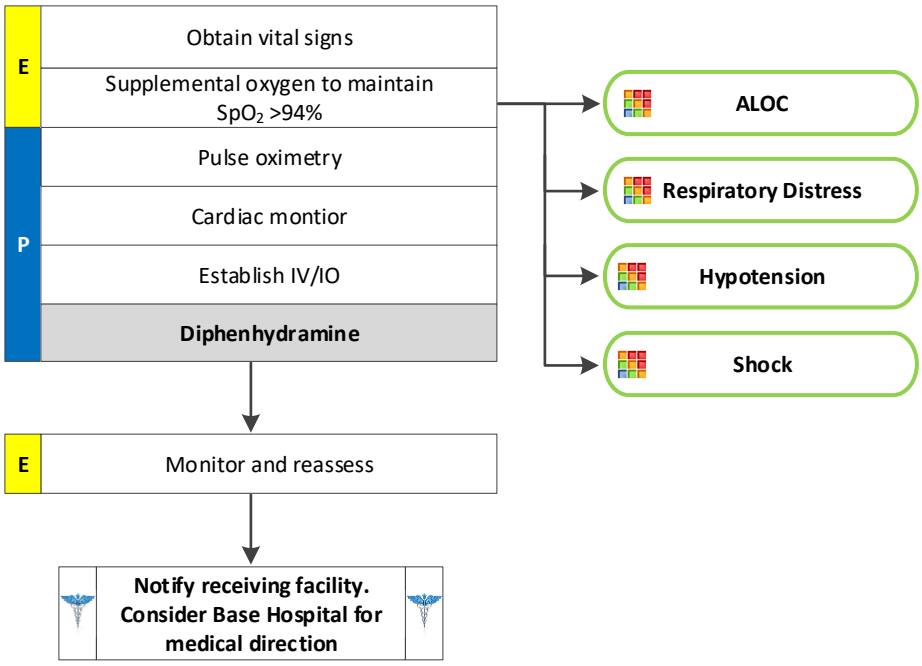
Pediatric Dystonic Reaction

For suspected dystonic reaction (i.e., reaction, typically from antipsychotic medications, causing abnormal contraction of head and neck muscles)

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

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

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



Pearls
- Common drugs implicated in dystonic reactions include many anti-emetics and anti-psychotic medications including, but not limited to:
  - Prochlorperazine (Compazine)
  - Haloperidol (Haldol)
  - Metoclopromide (Reglan)
  - Promethazine (Phenergan)
  - Fluphenazine (Prolixin)
  - Chlorpromazine (Thorazine)
  - Many other anti-psychotic and anti-emetic drugs

San Mateo County Emergency Medical Services

Pediatric Agitated Delirium

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

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

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

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

Ensure scene safety. Law enforcement should be present.

Extremely aggressive or violent? — No → **Behavioral/ Psychiatric Crisis**

Yes ↓

E
- *Consider* restraints
- Monitor restraints and PMS ***if indicated***
- *Consider* external cooling measures
- Monitor and reassess
- Blood glucose analysis → **Hypoglycemia**, **Hyperglycemia**

P
- Cardiac monitor
- Establish IV/IO
- If age-dependent hypotensive **Normal Saline bolus IV/IO May repeat x2**
- For wide QRS > 0.12mm **Sodium Bicarbonate**

↓

Exit to appropriate TP, *if indicated*

Assume patient has medical cause of behavioral change

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

↓

Notify receiving facility. Consider Base Hospital for medical direction

Pediatric Toxic Exposure Treatment Protocols

Pediatric Agitated Delirium

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

Excited Delirium Syndrome:

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

Pearls

- Crew/responder safety is the main priority.
- Any patient who is handcuffed by Law Enforcement and to remain handcuffed and transported by EMS must be accompanied by Law Enforcement in the ambulance.
- Caution using Midazolam for patients with alcohol intoxication.
- All patients who receive either physical restraint or chemical sedation must be continuously observed by EMS personnel. This includes direct visualization of the patient as well as cardiac and $EtCO_2$ monitoring.
- Consider all possible medical/trauma causes for behavior (e.g., hypoglycemia, overdose, substance abuse, hypoxia, seizure, head injury, etc.).
- Do not overlook the possibility of associated domestic violence or child abuse.
- Do not position or transport any restrained patient in a way that negatively affects the patient's respiratory or circulatory status (e.g., hog-tied or prone positions). Do not place backboards, splints, or other devices on top of the patient.
- If restrained, the extremities that are restrained will have a circulation check at least every 15 minutes. The first of these checks should occur as soon after placement of the restraints as possible. This shall be documented in the PCR.

San Mateo County Emergency Medical Services

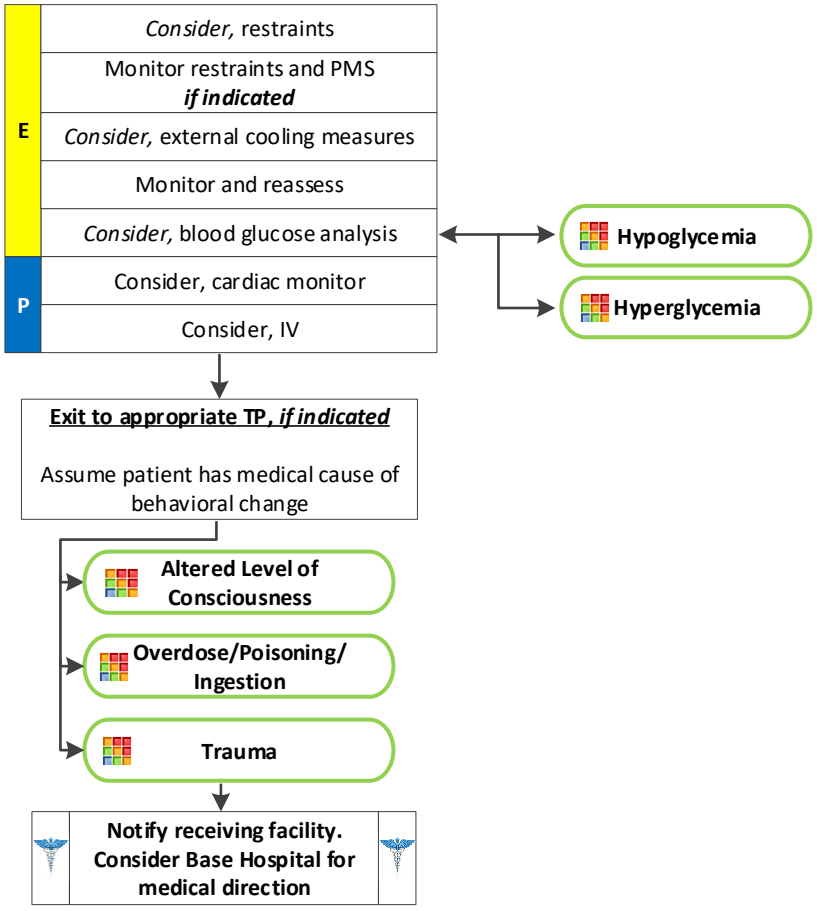
Pediatric Behavioral/Psychiatric Crisis

For psychiatric crisis that is the primary problem. NOT for anxiety/agitation secondary to medical etiology, use primary impression related to medical issue

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

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

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



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

San Mateo County Emergency Medical Services

Pediatric Abdominal Pain/Problems (GI/GU)

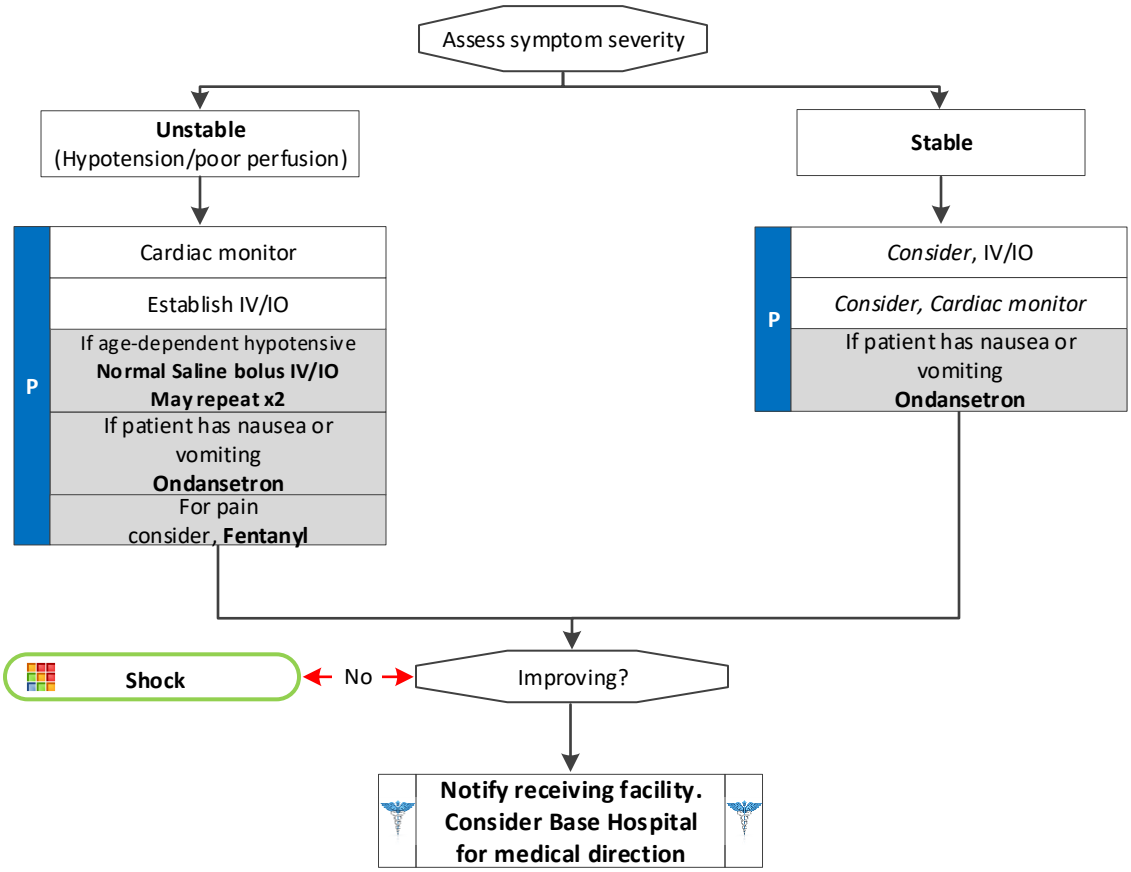
For any pain or problem in the abdominal/flank region that does not have a more specific primary impression; includes post-surgical complications

History
- Age
- Past medical/surgical history
- Medications
- **O**nset
- **P**rovocation
- **Q**uality (e.g., crampy, constant, sharp, dull, etc.)
- **R**egion/radiation/referred
- **S**everity (0 – 10 scale)
- **T**ime (duration/repetition)
- Fever
- Last meal eaten
- Last bowel movement/emesis

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

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

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



Pediatric Medical Treatment Protocols

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

San Mateo County Emergency Medical Services

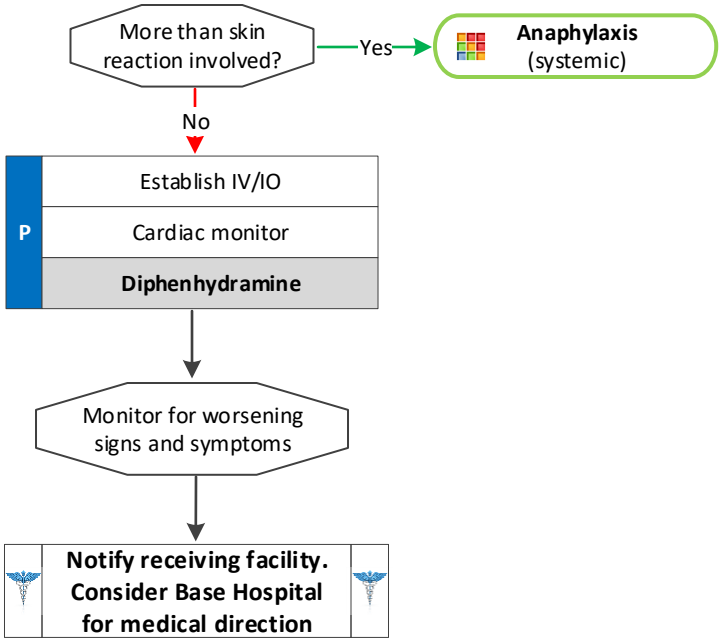
Pediatric Allergic Reaction

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

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

Signs and Symptoms
- Itching or hives
- Erythema

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



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

Pediatric Anaphylaxis

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

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

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

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

E	Assist patient or administer EpiPen Junior *if available*
P	**Epinephrine 1:1,000 IM**
	Establish IV/IO
	Cardiac monitor
	$EtCO_2$ monitoring
	Diphenhydramine
	Albuterol
	If systolic BP < 90 **Normal Saline bolus 500ml IV/IO** ***Maximum 2L***
	If hypotensive or no improvement, **Epinephrine 1:1,000 IM** every 10 minutes until improved
	Consider, 12-Lead ECG

Notify receiving facility. Consider Base Hospital for medical direction

Pediatric Medical Treatment Protocols

Pediatric Anaphylaxis

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

Pearls

- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Epinephrine is the drug of choice and the first drug that should be administered in acute anaphylactic reactions. IM Epinephrine should be administered as priority before or during attempts at IV or IO access.
- Anaphylaxis that is unresponsive to initial treatment of IM Epinephrine may require IV Epinephrine administration.
- Fluid bolus for patients demonstrating signs and symptoms of shock.
- Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash or skin involvement.
- Use an EpiPen (>30kg)/EpiPen Junior (15-30kg).
- All patients with respiratory symptoms must have continuous $EtCO_2$ measurement.

San Mateo County Emergency Medical Services

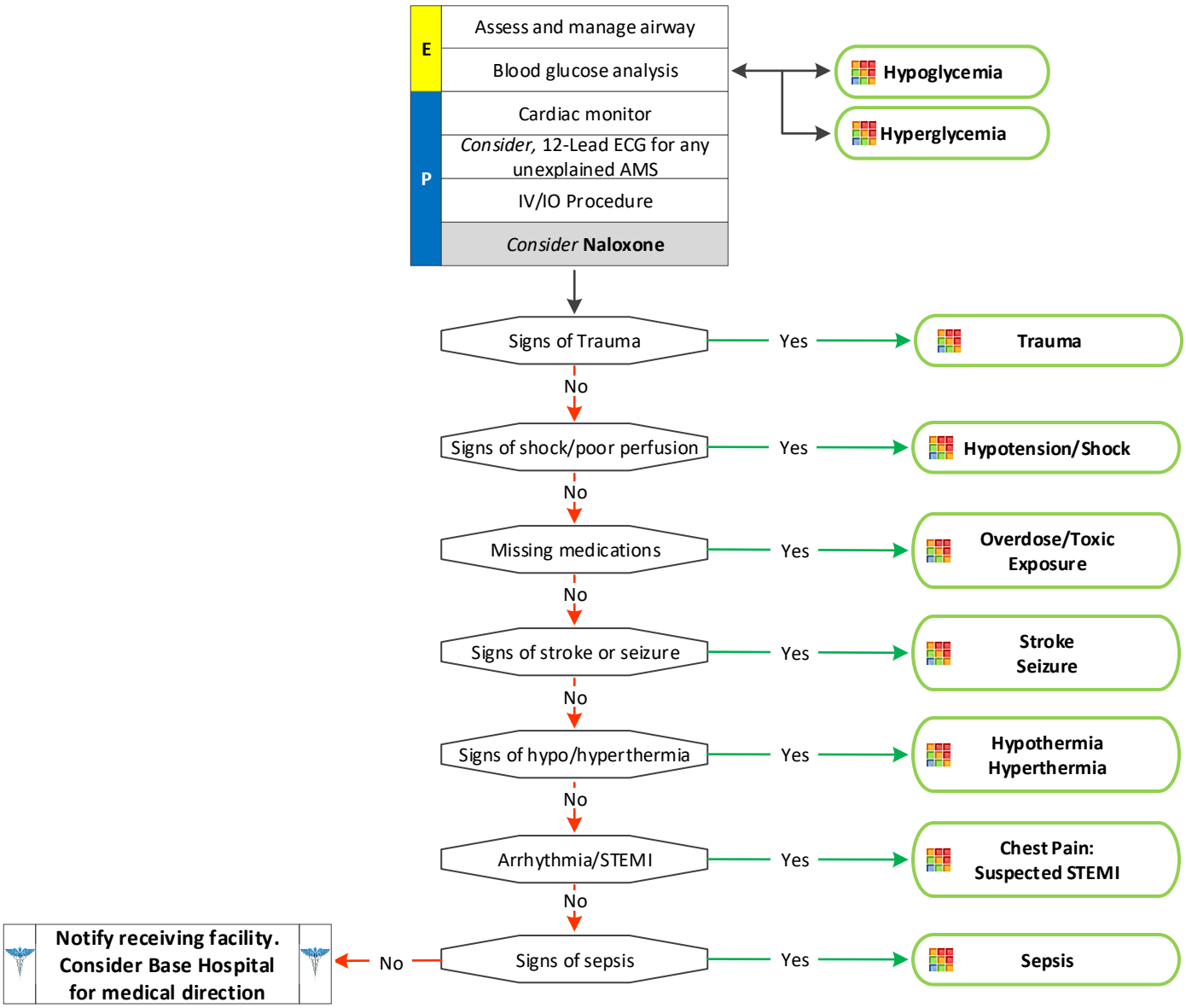
Pediatric Altered Level of Consciousness (ALOC)

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

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

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

Differential
- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Thyroid
- Electrolyte abnormality
- **A**cidosis or alkalosis
- **E**nvironmental exposure
- **I**nfection or sepsis
- **O**verdose or toxicological
- **U**nder dose of prescribed medications
- **T**rauma
- **I**nsulin or diabetic emergency
- **P**sychiatric disorder
- **S**epsis or shock



Pediatric Medical Treatment Protocols

Pediatric Altered Level of Consciousness (ALOC)

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

Pearls

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

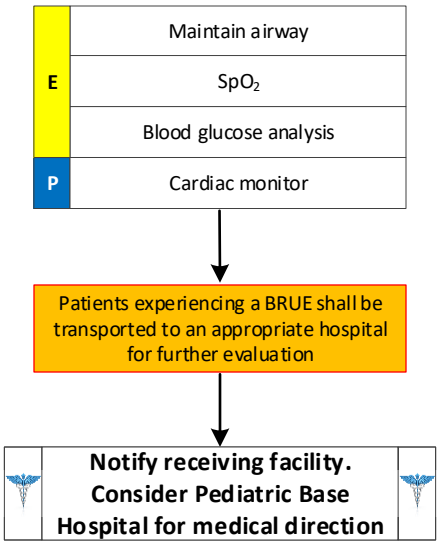
Pediatric Brief Resolved Unexplained Event (BRUE)

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

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

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

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



Pediatric Medical Treatment Protocols

Pearls
- BRUE was formally known as Apparent Life Threatening Event (ALTE).
- BRUE is formally diagnosed in the ED only when there is no explanation for a qualifying event after a physician conducts an appropriate history and physical examination.
- Base Hospital contact is required for all BRUE non-transports.
- Always consider non-accidental trauma in any infant who presents with BRUE.
- Even with a normal physical examination at the time of EMS contact, patients that have experienced BRUE should be transported for further evaluation.
- It is important to document sleeping position as parent co-sleeping with child is associated with infant deaths.

San Mateo County Emergency Medical Services

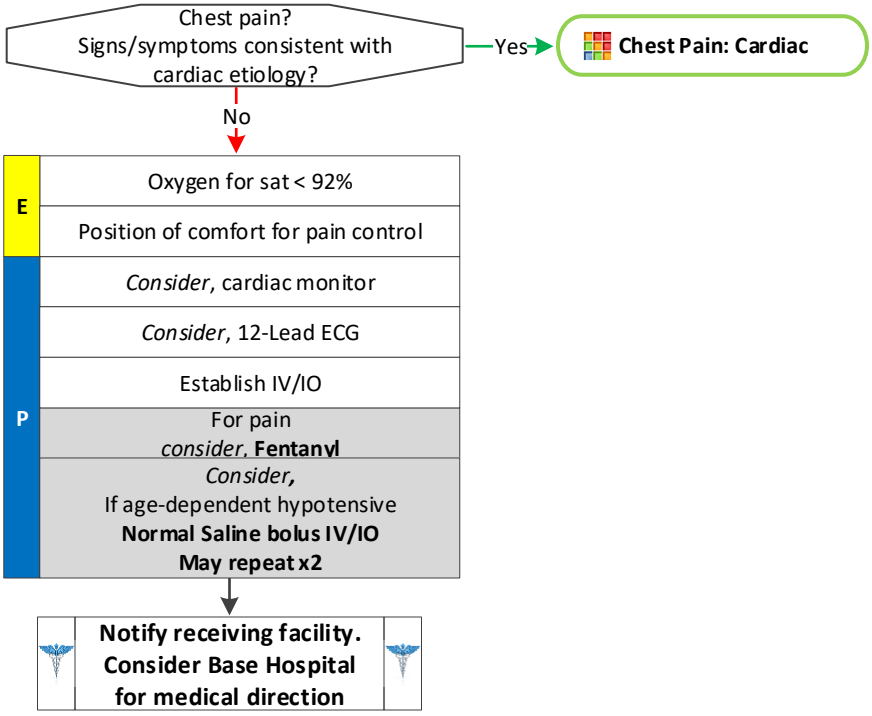
Pediatric Chest Pain: Not Cardiac

For musculoskeletal and pleuritic pain and any chest pain that is NOT of possible cardiovascular etiology

History
- Age
- Medications (Erectile dysfunction medications)
- Past medical history (e.g., MI, angina, diabetes, or post menopausal)
- Allergies
- Recent physical exertion
- **O**nset
- **P**rovocation
- **Q**uality (e.g., pressure, constant, sharp, dull, etc.)
- **R**egion/Radiation/Referred
- **S**everity (0 – 10 scale)
- **T**ime (onset/duration/repetition)

Signs and Symptoms
- Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
- Respiratory distress
- Hypotension or shock
- Altered mental status
- Syncope
- Nausea
- Abdominal Pain
- Diaphoresis

Differential
- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (e.g., 1°, 2°, or 3°)
- Overdose



Pearls
- Many STEMIs evolve during prehospital care and may not be noted on the initial 12-Lead ECG.
- An ECG should be obtained prior to treatment for bradycardia if patient condition permits.
- If a patient has taken their own Nitroglycerin without relief, consider potency of medication. Provider maximum doses do not include patient administered doses.
- Monitor for hypotension after administration of nitroglycerin and opioids.
- Diabetics, geriatric, and female patients often have atypical pain, or only generalized complaints. Suspect cardiac etiology in these patients, and perform a 12-Lead ECG.

Pediatric Medical Treatment Protocols

San Mateo County Emergency Medical Services

Pediatric Diarrhea

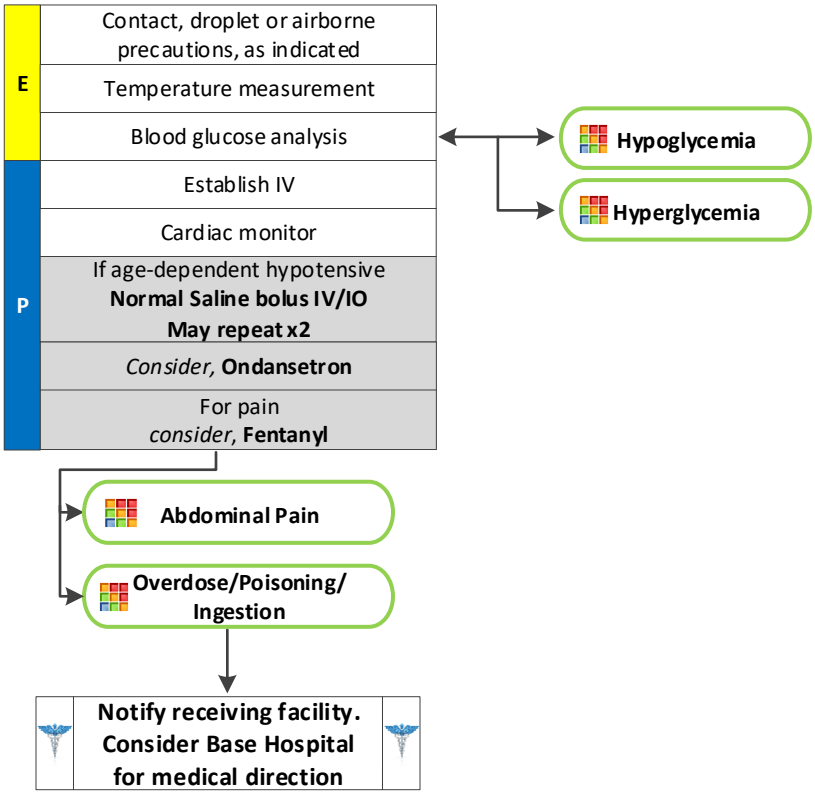
For diarrhea without bleeding. NOT for melena, use Upper GI Bleeding

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

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

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

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



Pearls
- Consider Ebola and obtain recent travel history.
- When you have a concern for a contagious infectious disease (i.e., measles, SARS, Ebola), contact your supervisor.

Pediatric Medical Treatment Protocols

San Mateo County Emergency Medical Services

Dizziness/Vertigo

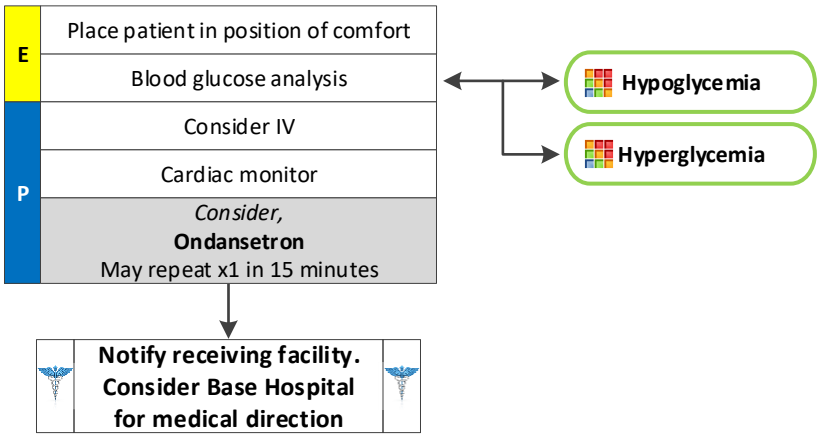
For lightheadedness or vertigo without syncope

History
- Age
- Duration of symptoms
- Severity of symptoms
- Past medical history
- Medications/changes in medications
- History of head or recent trauma
- Headache
- Tinnitus or hearing loss

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

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

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



Pediatric Medical Treatment Protocols

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

ENT/Dental Problem - Unspecified

For a problem located in the ear, nose, throat area; NOT epistaxis – use PI Epistaxis; NOT airway obstruction – use Airway Obstruction

History
- Age
- Past medical history
- Medications
- Onset of pain/injury
- Trauma with "knocked out" tooth
- Location of tooth
- Whole vs. partial tooth injury
- Loose tooth/teeth

Signs and Symptoms
- Bleeding
- Pain
- Fever
- Swelling
- Tooth missing or fractured

Differential
- Tooth decay
- Infection
- Fracture
- Avulsion
- Abscess
- Facial cellulitis
- Tooth exfoliation
- TMJ Syndrome

E	Control bleeding with direct pressure *Fashion gauze into a small square and place into socket with patient closing teeth to exert pressure*
	For avulsed tooth, place tooth in dairy milk or normal saline May rinse gross contamination Do not rub or scrub tooth
P	Cardiac monitor
	Consider, IV
	For pain *consider*, **Fentanyl**

↓

Notify receiving facility. Consider Base Hospital for medical direction

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

San Mateo County Emergency Medical Services

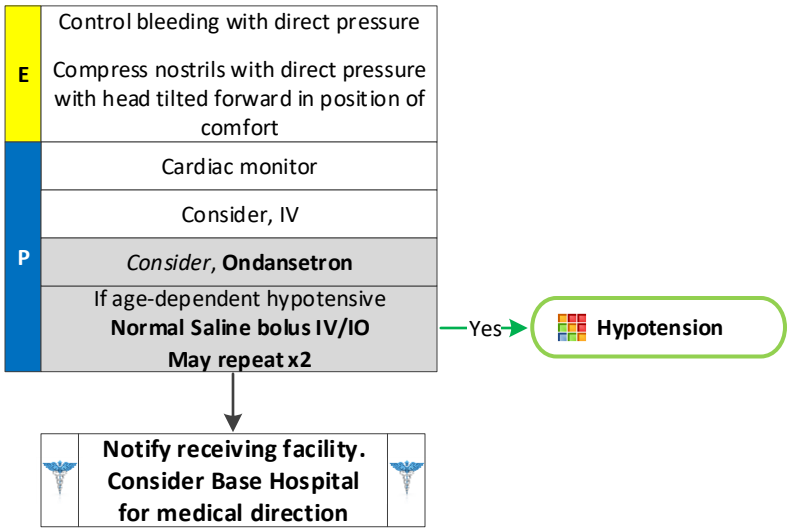
Epistaxis

For any bleeding from the nares

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

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

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



Pearls
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.
- Direct pressure is defined as constant, firm pressure for 20 minutes with head positioned forward without reexamining the affected nares(s).
- Encourage children not to swallow blood, which may result in vomiting blood.

Pediatric Medical Treatment Protocols

San Mateo County Emergency Medical Services

Eye Problem - Unspecified

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

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

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

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

	Temporary, complete vision loss?	↔ **Stroke**
E	If suspected chemical burn, immediately and continuously irrigate with Normal Saline for 15 minutes	
	If impaled object, foreign body, or globe rupture suspected, do not irrigate. Do not remove impaled object. Cover eye with a loose, protective dressing (eye cup), putting no pressure on the globe. Cover BOTH eyes if practical to reduce eye movement	
P	If possible, keep the patient's face upward and head of bed elevated greater than 30°	
	Consider, IV	
	Consider, **Ondansetron**	
	For pain *consider*, **Fentanyl**	

↓

Notify receiving facility. Consider Base Hospital for medical direction

Pearls
- Suspect an eye injury if any significant facial trauma.
- Normal Saline is the preferred solution for irrigation, but sterile water may be used if Normal Saline is not immediately available.
- If globe rupture is suspected (high velocity mechanism, impaled object, irregular pupil, significantly decreased vision in the acute setting), the eye should be protected from environment and NO irrigation should be administered.
- Do not remove impaled objects. Protect them from movement with a protective dressing (eye cup) and cover BOTH eyes to reduce eye movement. Explain to patient that the injured eye moves with the other eye and movement can worsen injury.
- Protect the patient from further eye injury/increases in intraocular pressure by elevating the head of the gurney, keeping the patient's face upward, consider Ondansetron for nausea.

Pediatric Medical Treatment Protocols

Fever

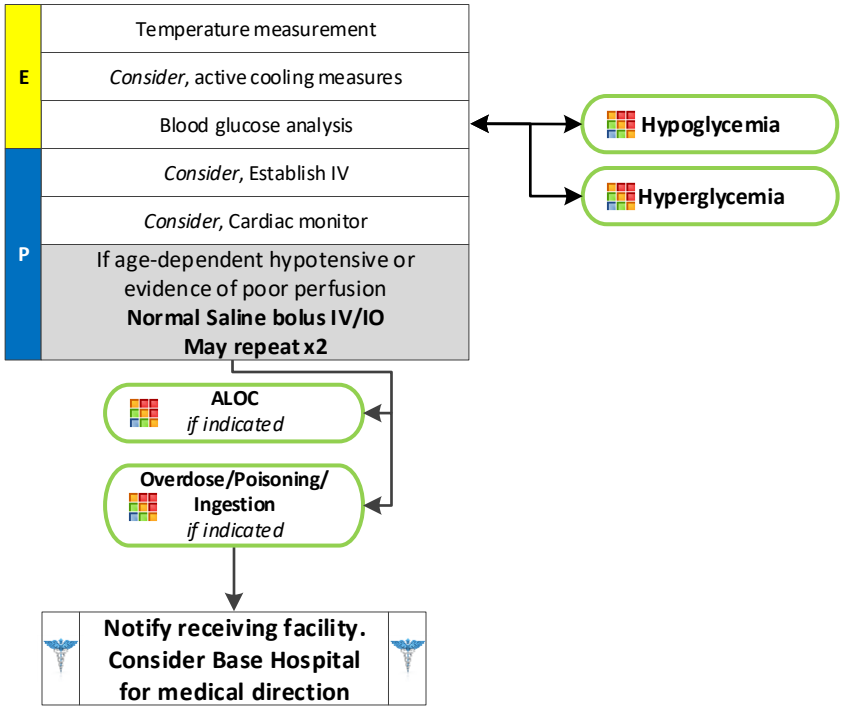
For reported or tactile fever that is NOT suspected sepsis. For sepsis, use primary impression Sepsis

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

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

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

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



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

General Weakness

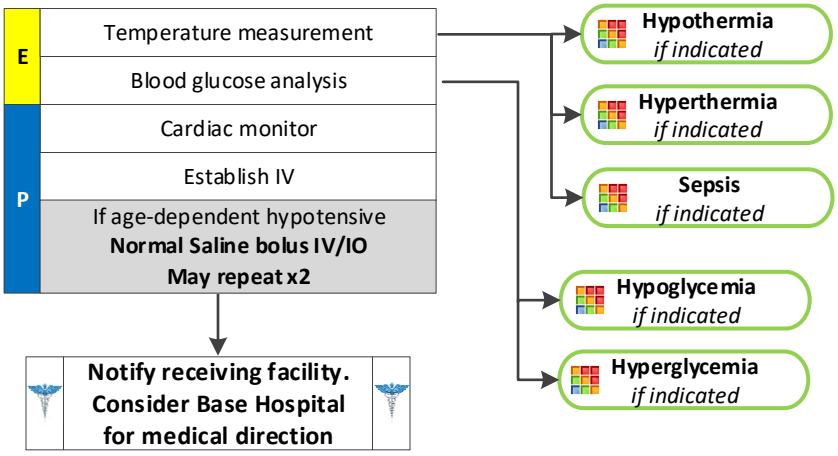
For non-focal weakness, general malaise, and any nonspecific 'sick' symptoms

History
- Age
- Duration of symptoms
- Severity of symptoms
- Past medical history (e.g., cancer, heart disease, adrenal disease, diabetes)
- Medications
- Recent history of oral intake
- Number of wet diapers

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

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

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



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

San Mateo County Emergency Medical Services

Genitourinary Disorder – Unspecified

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

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

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

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

E	*Apply heat pack(s) as tolerated*
P	Cardiac monitor
	Consider, IV
	If age-dependent hypotensive **Normal Saline bolus IV/IO** **May repeat x2**
	Consider, **Ondansetron**
	For pain consider, **Fentanyl**

Notify receiving facility. Consider Base Hospital for medical direction

Pediatric Medical Treatment Protocols

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

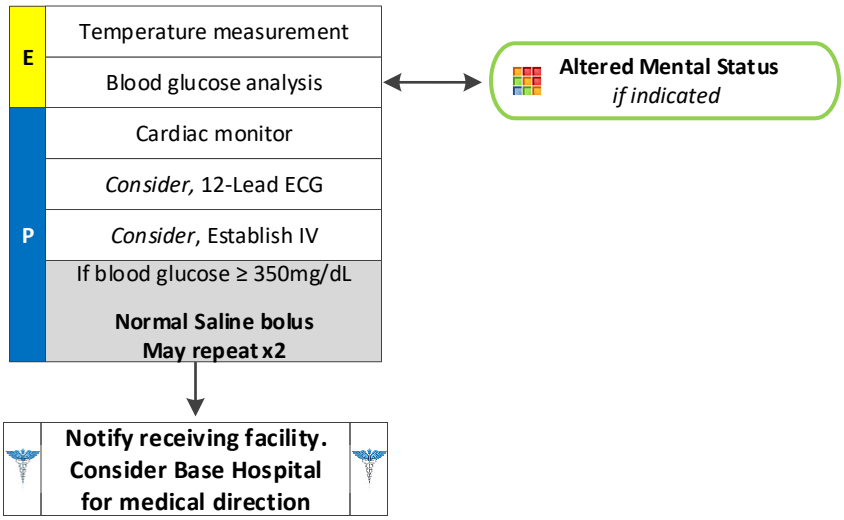
Hyperglycemia

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

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

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

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



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

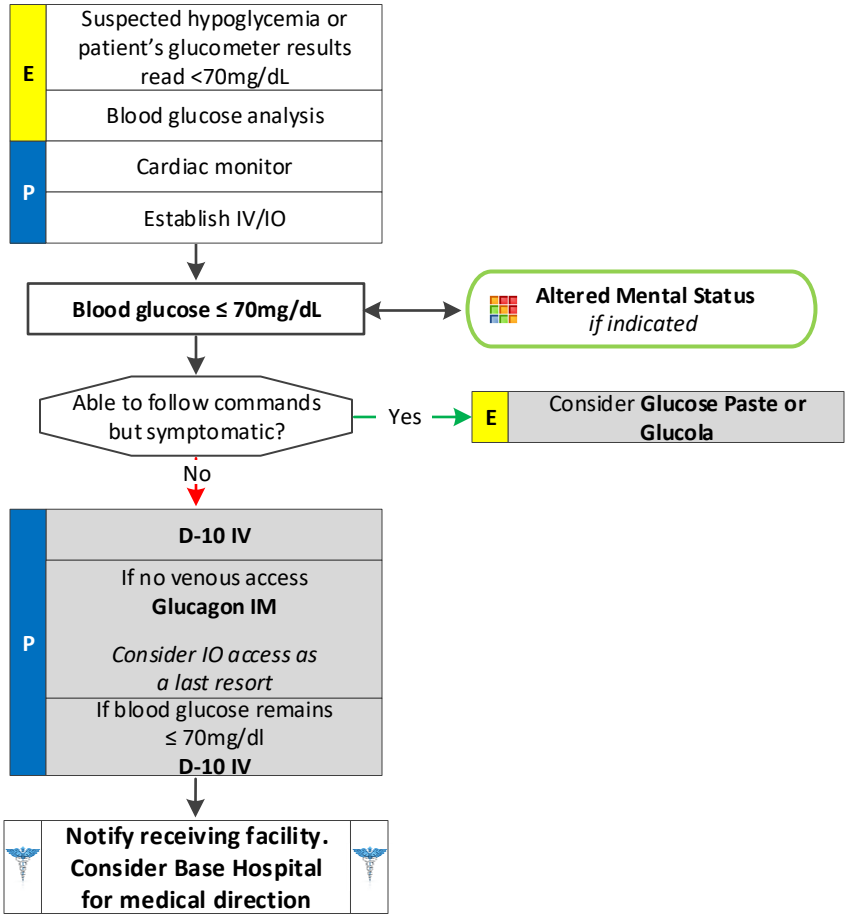
Hypoglycemia

For glucose < 70mg/dl

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

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

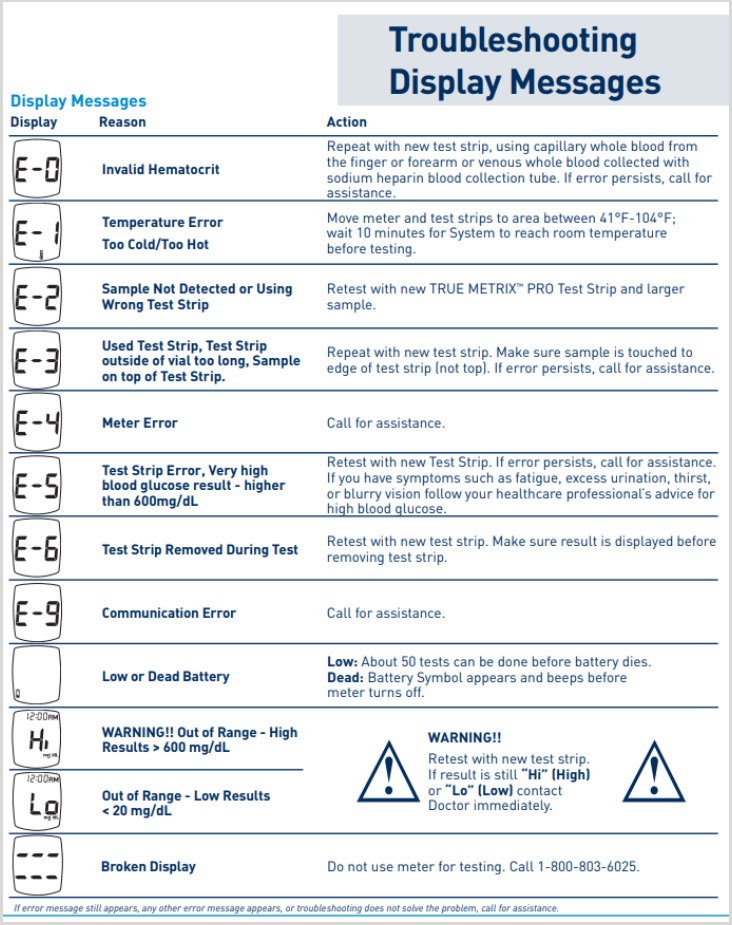
Differential
- Alcohol or drug use
- Toxic ingestion
- Trauma or head injury
- Seizure
- Stroke
- Altered mental status
- Sepsis



Pediatric Medical Treatment Protocols

Hypoglycemia

For glucose < 70mg/dl



Troubleshooting Display Messages

Display Messages

Display	Reason	Action
E-0	Invalid Hematocrit	Repeat with new test strip, using capillary whole blood from the finger or forearm or venous whole blood collected with sodium heparin blood collection tube. If error persists, call for assistance.
E-1	Temperature Error Too Cold/Too Hot	Move meter and test strips to area between 41°F-104°F; wait 10 minutes for System to reach room temperature before testing.
E-2	Sample Not Detected or Using Wrong Test Strip	Retest with new TRUE METRIX™ PRO Test Strip and larger sample.
E-3	Used Test Strip, Test Strip outside of vial too long, Sample on top of Test Strip.	Repeat with new test strip. Make sure sample is touched to edge of test strip (not top). If error persists, call for assistance.
E-4	Meter Error	Call for assistance.
E-5	Test Strip Error, Very high blood glucose result - higher than 600mg/dL	Retest with new Test Strip. If error persists, call for assistance. If you have symptoms such as fatigue, excess urination, thirst, or blurry vision follow your healthcare professional's advice for high blood glucose.
E-6	Test Strip Removed During Test	Retest with new test strip. Make sure result is displayed before removing test strip.
E-9	Communication Error	Call for assistance.
	Low or Dead Battery	**Low:** About 50 tests can be done before battery dies. **Dead:** Battery Symbol appears and beeps before meter turns off.
Hi	WARNING!! Out of Range - High Results > 600 mg/dL	**WARNING!!** Retest with new test strip. If result is still **"Hi" (High)** or **"Lo" (Low)** contact Doctor immediately.
Lo	Out of Range - Low Results < 20 mg/dL	
--- ---	Broken Display	Do not use meter for testing. Call 1-800-803-6025.

If error message still appears, any other error message appears, or troubleshooting does not solve the problem, call for assistance.

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

Pearls

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

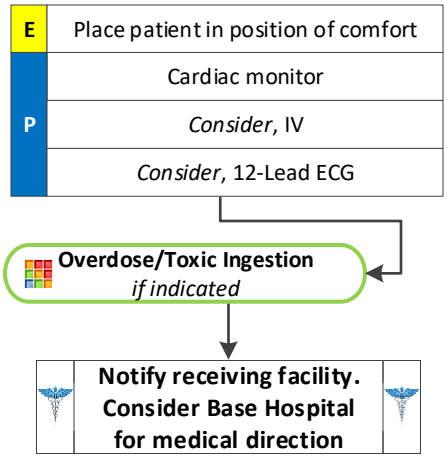
Hypertension

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

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

Signs and Symptoms
- Tinnitus
- Hypertension

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



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

San Mateo County Emergency Medical Services

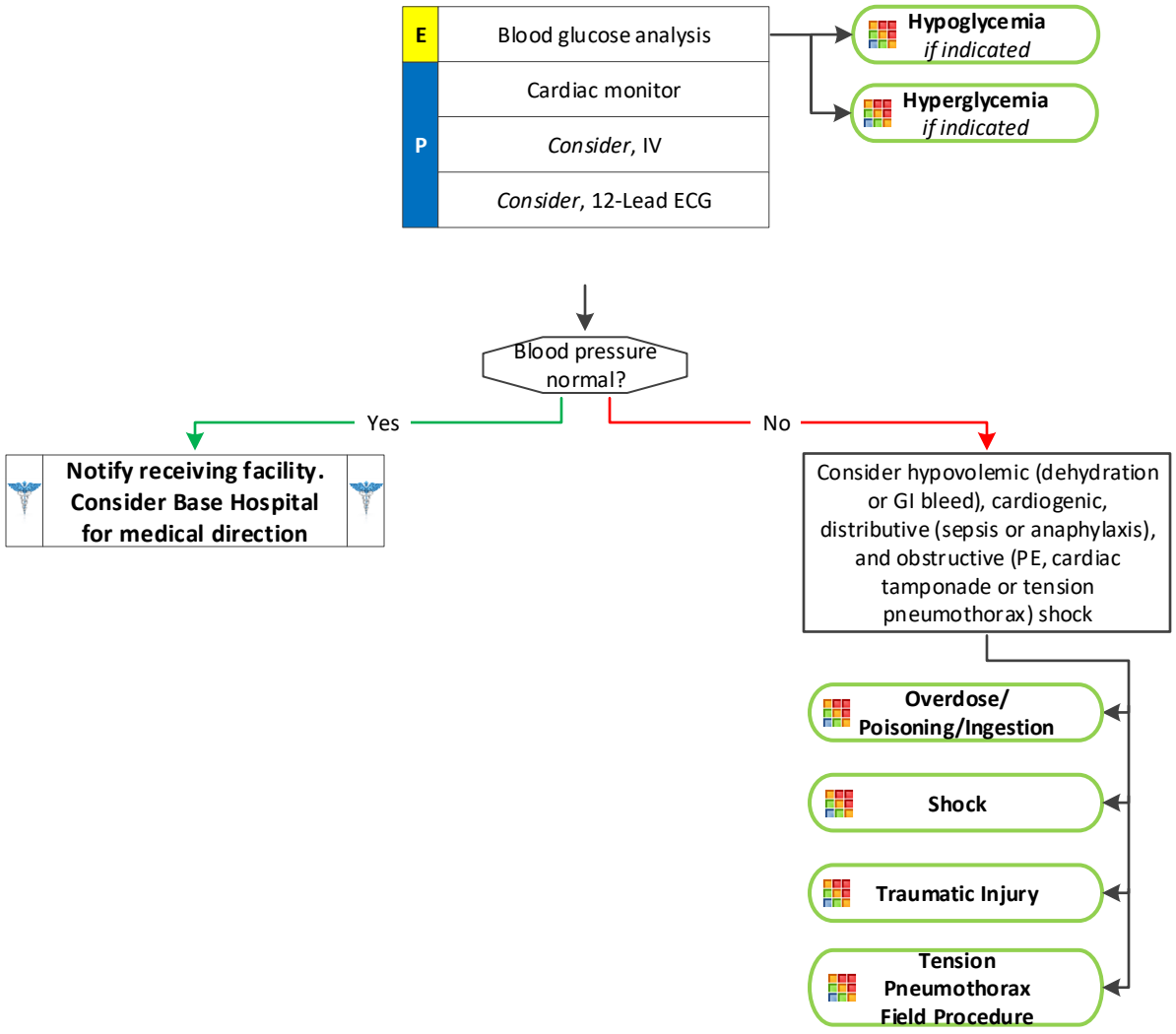
Hypotension

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

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

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

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



Pearls
- Pediatric systolic hypotension is defined as:
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x2)
  - Over 10 years: < 90mmHg

Pediatric Medical Treatment Protocols

Lower GI Bleeding

For bleeding from the rectum and/or bright red bloody stools

History
- Age
- Past medical history
- Food history
- Medications
- Number of episodes
- Weight loss

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

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

E	Oxygen for sat < 92%
P	*Consider*, cardiac monitor
	Consider, IV
	If age-dependent hypotensive **Normal Saline bolus IV/IO** **May repeat x2**
	Consider, **Ondansetron**
	For pain *consider*, **Fentanyl**

↓

Notify receiving facility. Consider Base Hospital for medical direction

Pearl
- For massive blood loss establish an IV and administer fluids.

San Mateo County Emergency Medical Services

Nausea/Vomiting

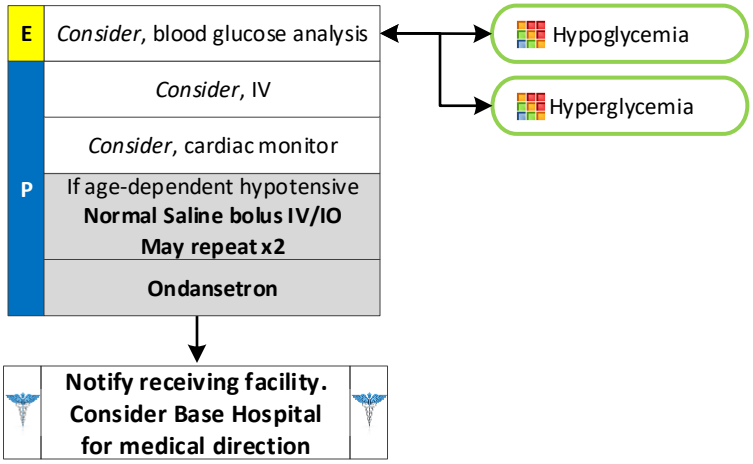
For any nausea or vomiting without blood. Not for adverse reaction to opiate administration by EMS; manage with primary impression

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

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

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

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



Pediatric Medical Treatment Protocols

Pearls
- Document the mental status and vital signs prior to administration of anti-emetics and pain medications.
- Nausea and vomiting are common symptoms but can be symptoms of uncommon and serious pathology. Consider other primary impressions.

San Mateo County Emergency Medical Services

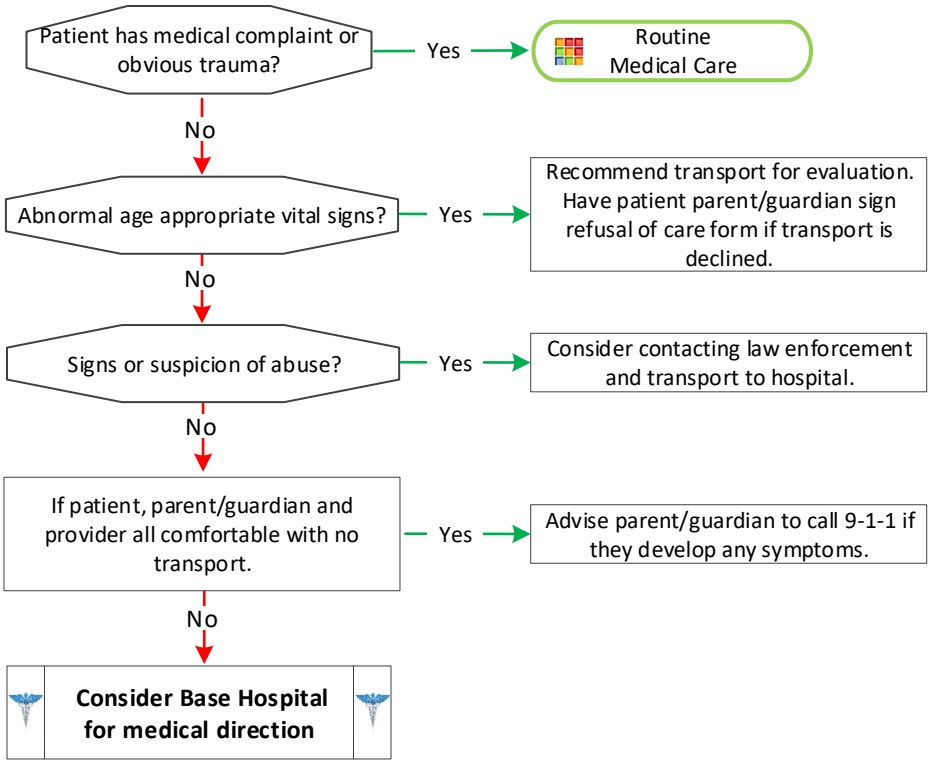
No Medical Complaint

For patients without any medical, psychiatric or traumatic complaint and no signs of illness on assessment. Usually reserved for non-transports

History
- Someone else called 911; patient did not request services
- Other situation in which patient does not have a medical complaint or obvious injury

Signs and Symptoms
- Assess for medical complaint

Differential
- Based on medical complaint if found



Pearls
- Discuss with parent/guardian to determine reason for 9-1-1 request to best determine if there is no medical complaint.
- All persons who request medical evaluation or treatment are considered patients and shall have a ePCR completed.
- Should a patient refuse evaluation or decline further evaluation once begun, document as much as you can. Even patients who refuse vital signs can be observed and respirations measured. The ePCR narrative in these cases is key and must accurately and thoroughly describe the patient encounter.

Pediatric Medical Treatment Protocols

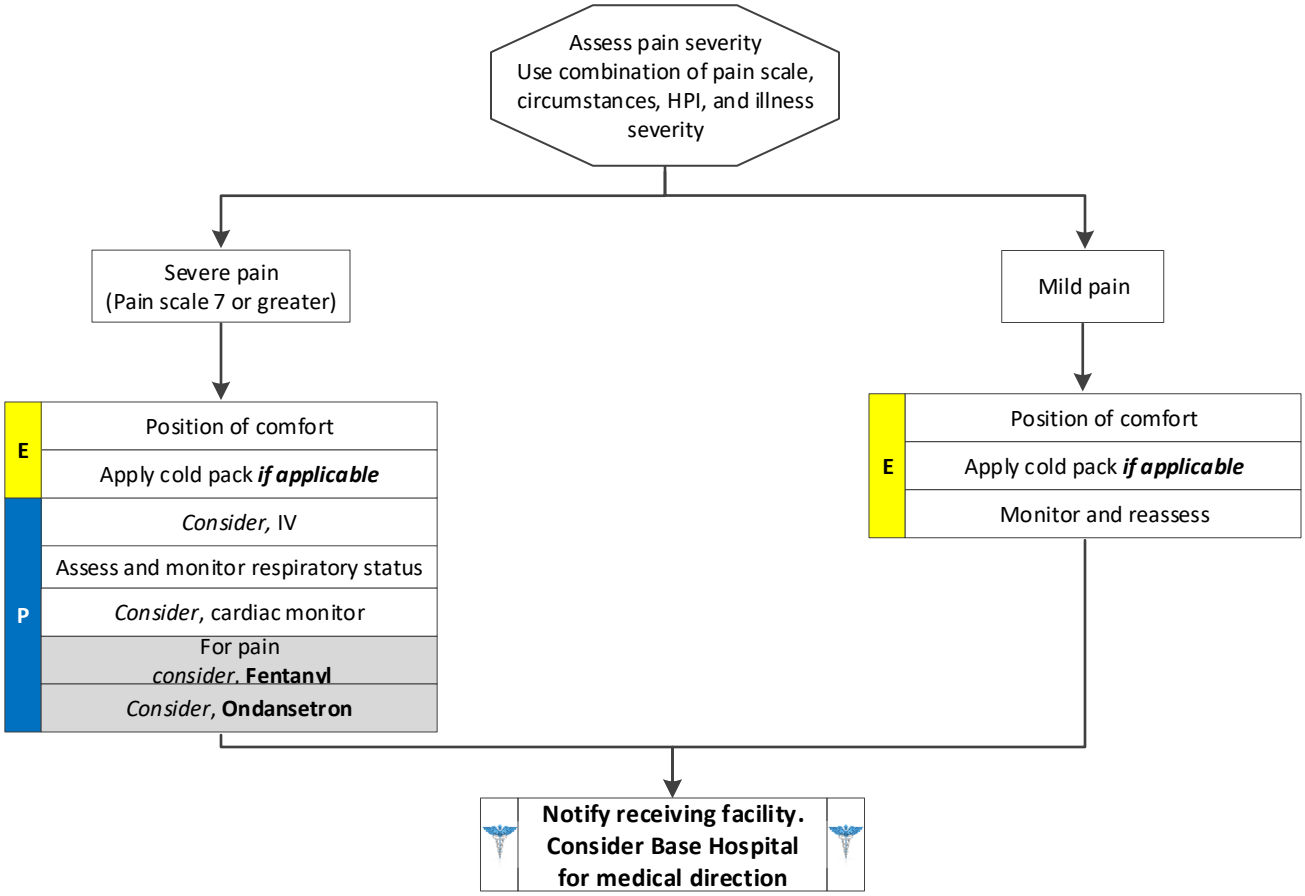
Non-Traumatic Body Pain

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

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

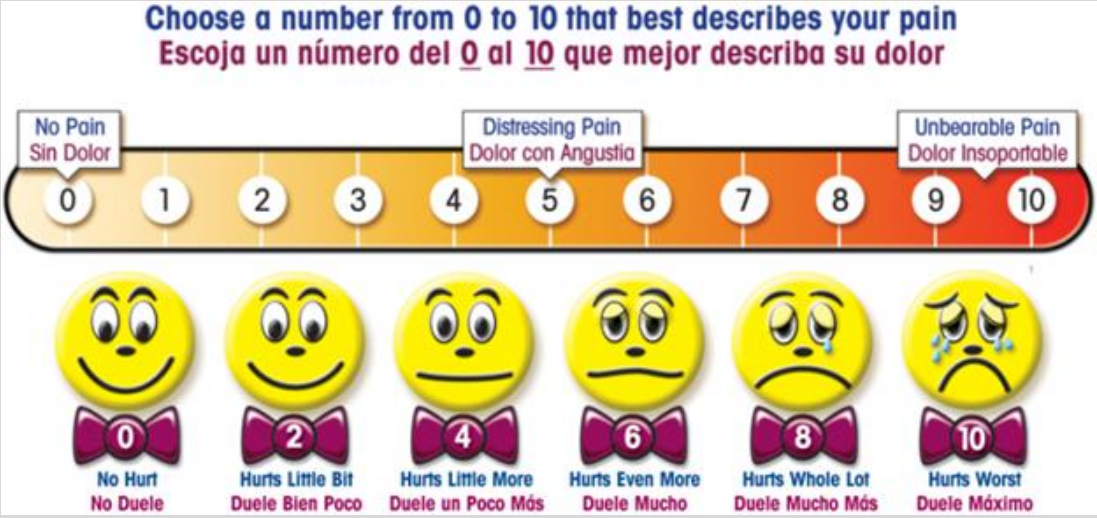
Signs and Symptoms
- Severity (pain scale)
- Quality (e.g., sharp, dull, or stabbing)
- Radiation
- Relation to movement or respiration
- Increased with palpation of area

Differential
- Musculoskeletal
- Rheumatologic/Hematologic
- Pleural/respiratory
- Neurogenic
- Renal (colic)
- Gynecological/obstetrical
- Acute pain not elsewhere classified



Non-Traumatic Body Pain

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



FLACC Scale		0	1	2
1	Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
2	Legs	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
3	Activity	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
4	Cry	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
5	Consolability	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin

Pearls

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

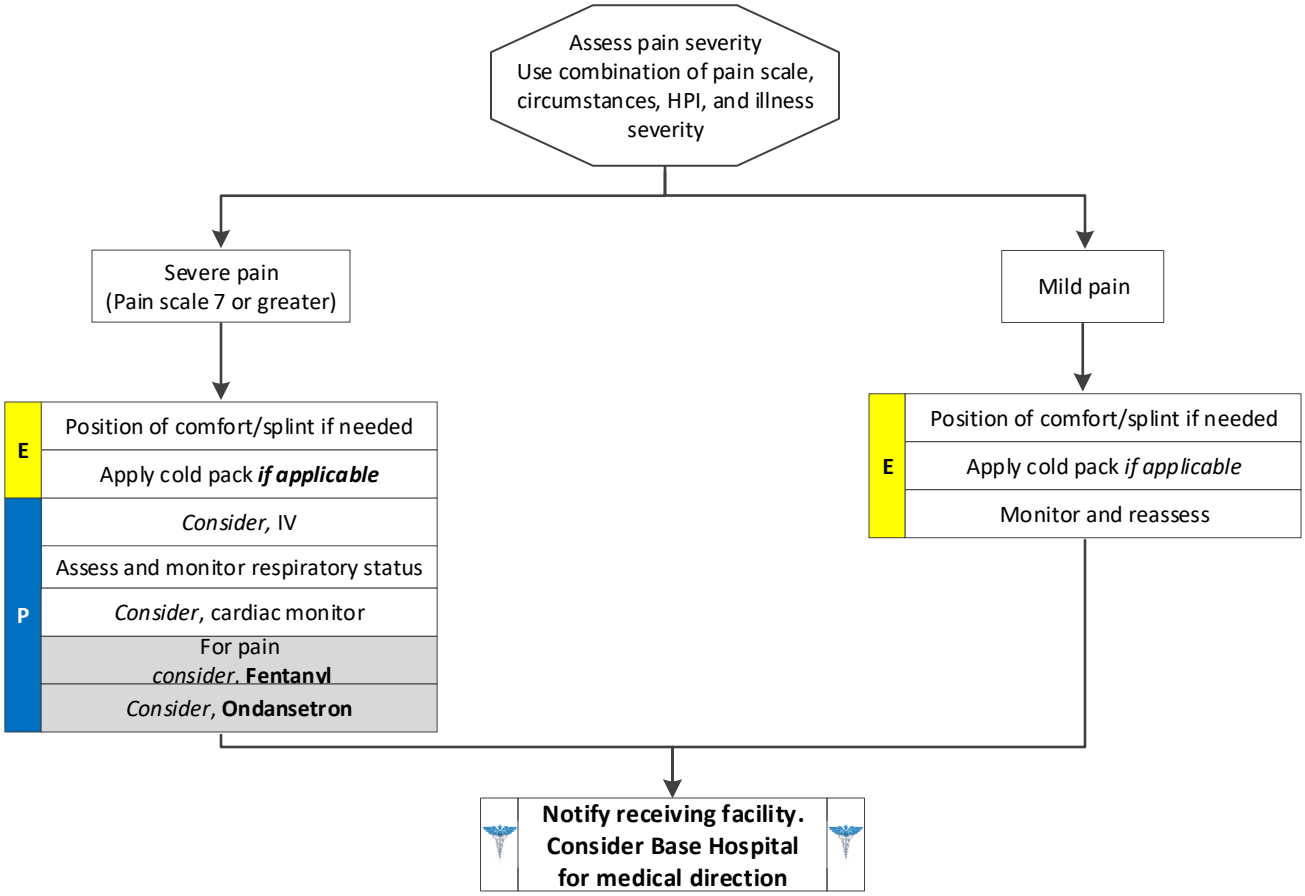
Non-Traumatic Extremity Pain/Swelling

For pain, swelling, or other non-traumatic problem of an extremity; includes rashes and non-traumatic bleeding (e.g., cellulitis)

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

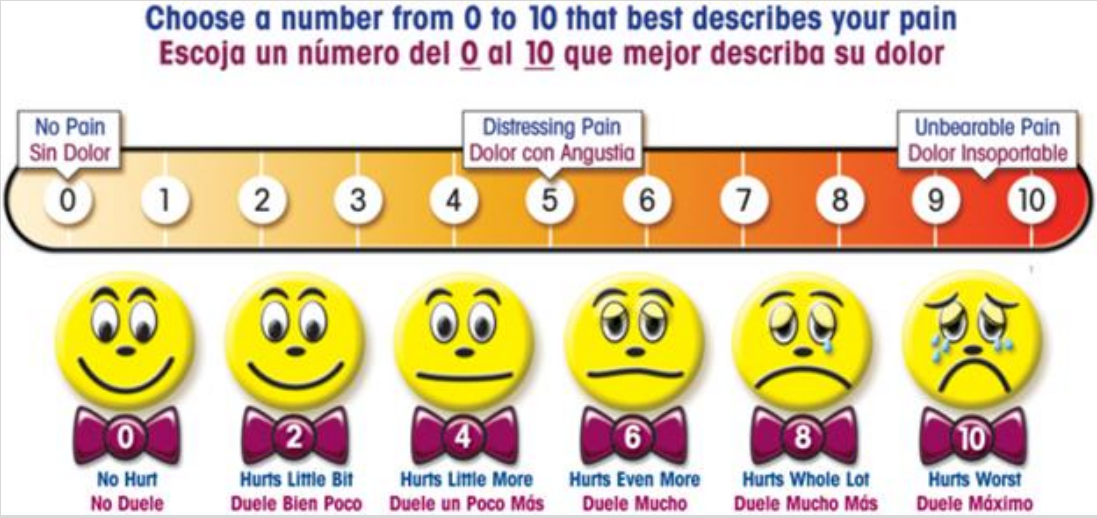
Signs and Symptoms
- Severity (pain scale)
- Quality (e.g,. sharp, dull, or stabbing)
- Radiation
- Relation to movement or respiration
- Increased with palpation of area

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



Non-Traumatic Extremity Pain/Swelling

For pain, swelling, or other non-traumatic problem of an extremity; includes rashes and non-traumatic bleeding (e.g., varicose vein bleed)



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- Minimal doses of opioids may cause respiratory depression in those patients who weigh less.
- It is strongly recommended that vascular access be established for patients who receive IM or IN medication.
- Have Naloxone available to reverse respiratory depression should it occur.

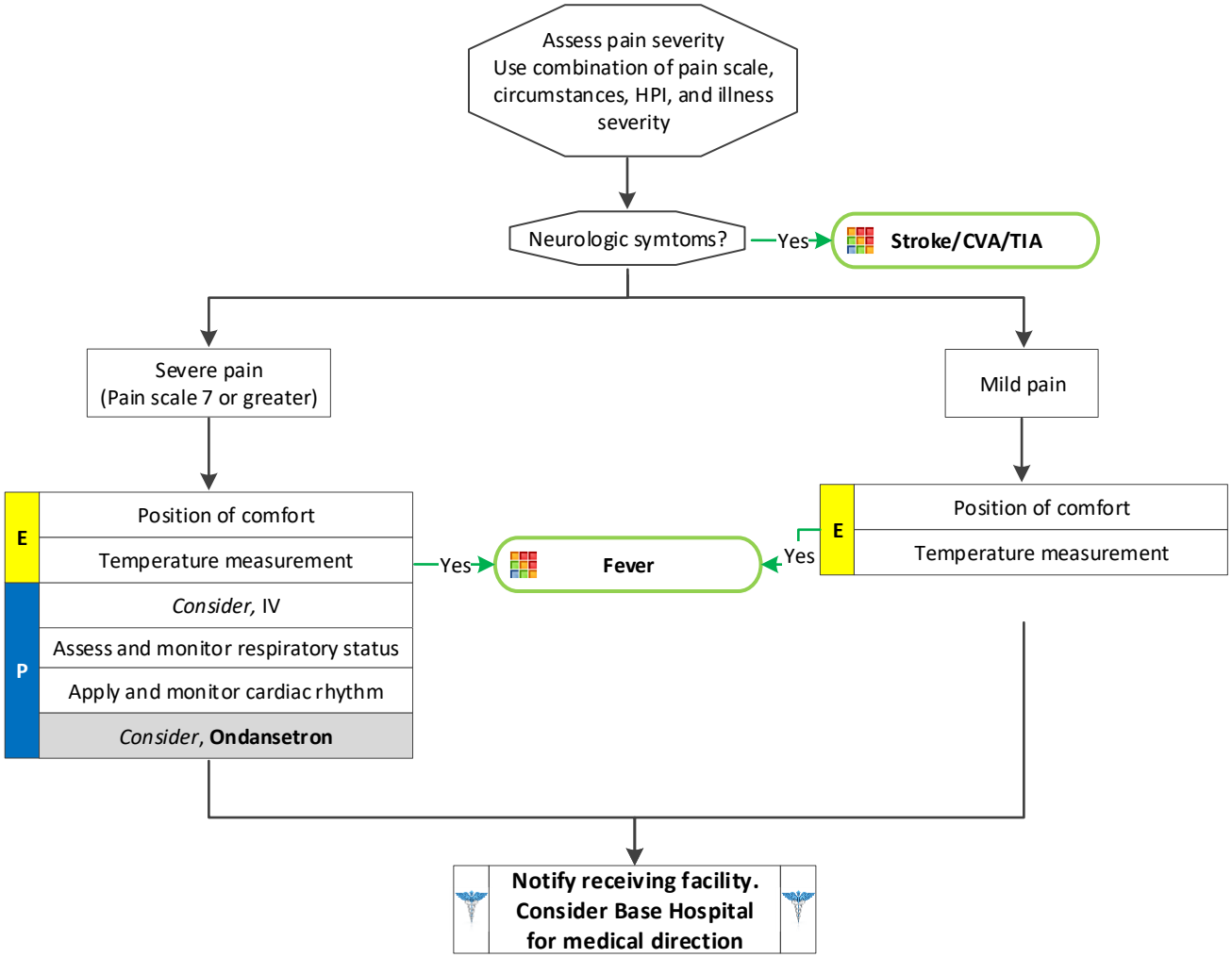
Non-Traumatic Headache

For non-traumatic headache or head pain

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

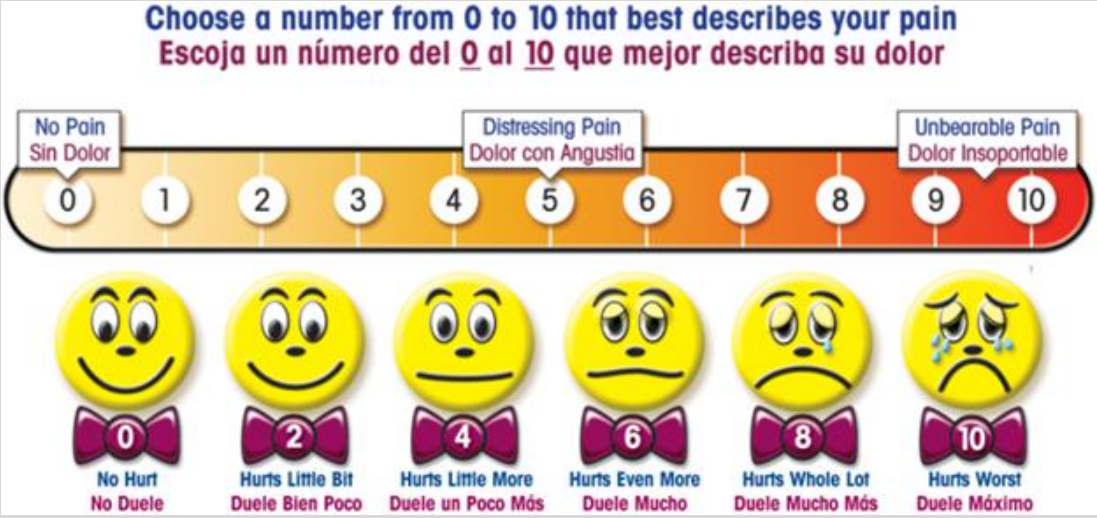
Signs and Symptoms
- Severity (pain scale)
- Quality (e.g., sharp, dull, or stabbing)
- Radiation
- Relation to movement or respiration
- Photophobia
- Nausea/vomiting
- Fever

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



Non-Traumatic Headache

For non-traumatic headache or head pain



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2	Legs	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
3	Activity	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
4	Cry	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin
5	Consolability	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenched jaw, quivering chin

Pearls

- Pain severity (0 – 10 scale) shall be recorded before and after all BLS pain control measures delivery. Monitor blood pressure and respirations closely as pain control medications may cause hypotension or respiratory distress.
- FLACC scale is intended for patients under 12 months of age.

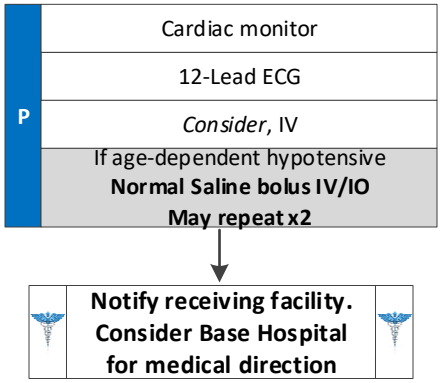
Palpitations

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

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

Signs and Symptoms
- Anxiety
- Irregular heart beat
- O_2 sat > 92%
- Jittery
- Heart rate < 120
- Normotensive blood pressure
- Normal mental status
- Potential presenting rhythm:
  - Atrial/sinus tachycardia
  - Atrial fibrillation/flutter

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



Pediatric Medical Treatment Protocols

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

San Mateo County Emergency Medical Services

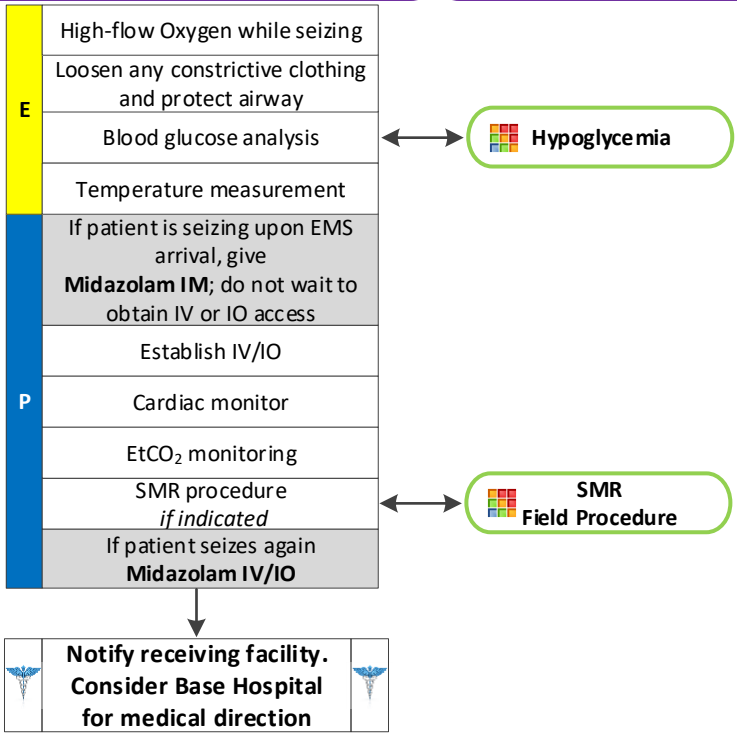
Seizure – Active

For seizure witnessed by EMS, whether treated or not

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

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

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



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

Adult Medical Treatment Guidelines

San Mateo County Emergency Medical Services

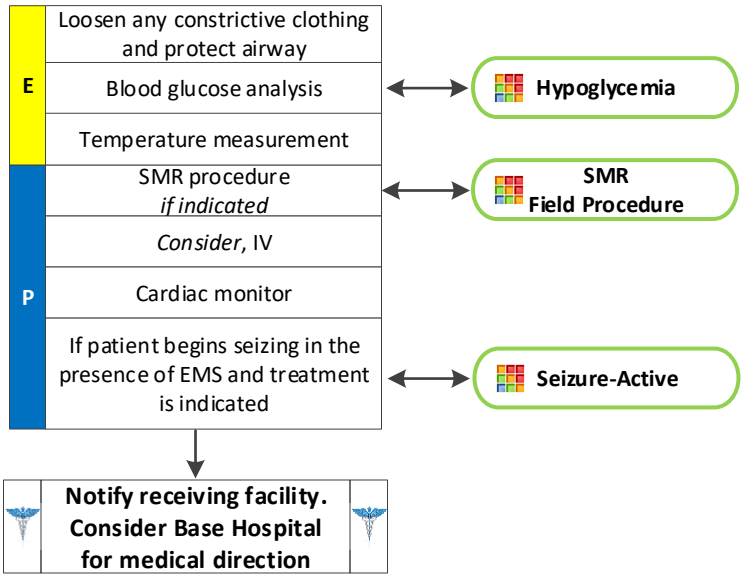
Seizure – Post

For any seizure that stopped prior to EMS arrival and there is no further seizure activity during EMS contact

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

Signs and Symptoms
- Altered mental status
- Sleepiness
- Incontinence
- Evidence of trauma
- Unconscious
- Incontinence
- Bitten tongue/oral trauma

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



Pearls
- Status Epilepticus is defined as two or more successive seizures without a period of consciousness or recovery, or one prolonged seizure lasting longer than 5 minutes. This is a true emergency requiring rapid airway control, treatment, and transport.
- Assess the possibility of occult trauma and substance abuse.
- Be prepared for airway problems and continued seizures.
- Be prepared to assist ventilations or manage the airway, especially if Midazolam is used.

Pediatric Medical Treatment Guidelines

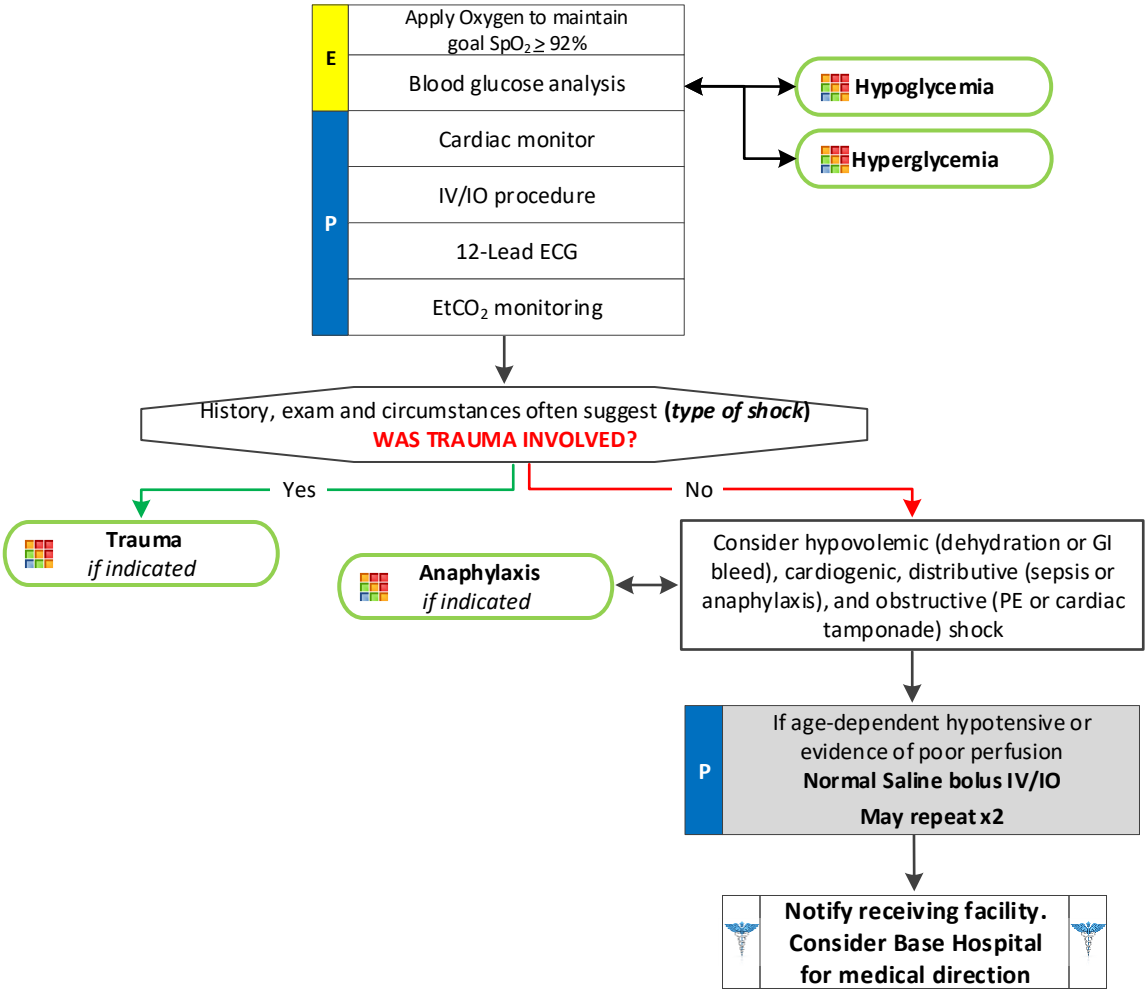
Shock

For patients with poor perfusion not rapidly responsive to IV fluids

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

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

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



Shock

For patients with poor perfusion not rapidly responsive to IV fluids

Pearls

- Shock is often present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.
- For patients with suspected cardiogenic shock who are not responsive to an initial fluid bolus, limit additional IV fluids and avoid Dopamine. Contact Base Hospital for medical direction.
- Consider all causes of shock and treat per appropriate Treatment Protocol.
- Hypovolemic shock:
  - Hemorrhage, trauma, or GI bleeding,
- Cardiogenic shock:
  - Myocarditis, heart failure, congenital, cardiomyopathy, myocardial contusion, ruptured ventricle/septum/valve or toxins.
- Distributive shock:
  - Sepsis, anaphylactic, neurogenic, or toxins.
  - Neurogenic shock generally presents with normal to slow heart rate with acute spinal cord injuries.
- Obstructive shock:
  - Pericardial tamponade, pulmonary embolus (PE), or tension pneumothorax.
  - Signs may include hypotension with distended neck veins, tachycardia, unilateral decreased breath sounds or muffled heart tones.

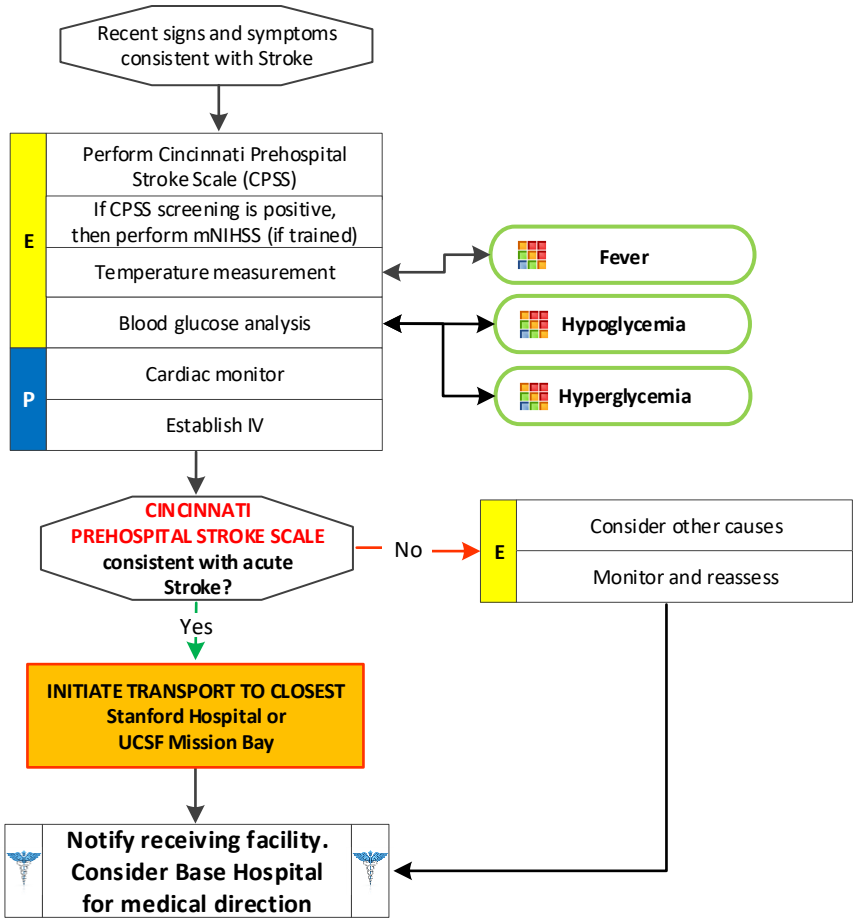
Stroke/CVA/TIA

For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly)

History
- Last seen normal
- A&O Status and GCS
- Family members phone number
- Previous stroke or TIA or brain hemorrhage
- Major surgery within last 2 weeks
- Signs of active bleeding, including Melena
- Associated diseases (DM, HTN, CAD)
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma
- History of brain tumor, aneurysm, or AVM.

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

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



Pediatric Medical Treatment Protocols

Stroke/CVA/TIA

For suspected stroke or transient ischemic attack (stroke symptoms that resolve rapidly)

Pearls

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

San Mateo County Emergency Medical Services

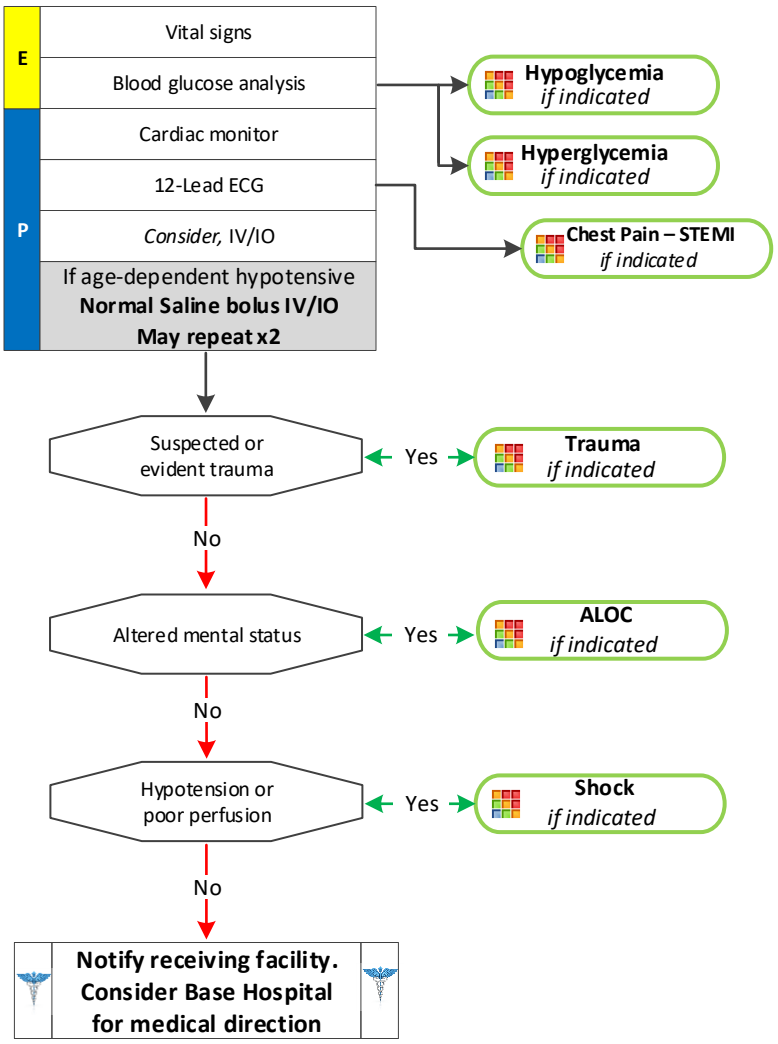
Syncope/Near Syncope

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

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

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

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



Pearls
- Consider dysrhythmias, GI bleed, and seizure as possible cause of syncope.

Pediatric Medical Treatment Protocols

San Mateo County Emergency Medical Services

Upper GI Bleeding

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

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

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

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

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

↓

Notify receiving facility. Consider Base Hospital for medical direction

Pearls
- Hemoptysis and epistaxis can appear to be an upper GI bleed. Perform a thorough history and assessment.
- Limit time on scene and transport quickly.

San Mateo County Emergency Medical Services

Vaginal Bleeding

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

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

Signs and Symptoms
- Dysuria
- Abdominal pain
- Vaginal discharge
- Fever/chills

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

P

Cardiac monitor

Consider 12-Lead ECG

Establish two large bore IVs if hemodynamically unstable

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

Consider,
Ondansetron

For pain
consider, **Fentanyl**

Notify receiving facility.
Consider Base Hospital for medical direction

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

San Mateo County Emergency Medical Services

Trauma Triage

Scene time goal is 10 minutes

ACTIVATION

Traumatic arrest?

Unmanagable airway?

No

Yes

- Traumatic Arrest
- Transport to closest facility to secure airway

1

Measure vital signs and level of consciousness

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

No

Yes

Trauma Center transport with early notification

2

Assess anatomy of injury

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

No

Yes

Trauma Center transport with early notification

3

Assess mechanism of injury and evidence of high-energy impact

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

No

Yes

Trauma Center transport with early notification

Adult and Pediatric Trauma Treatment Protocols

Trauma Triage

Scene time goal is 10 minutes

For other situations not described below, consider Trauma Base Hospital contact if paramedic has concern that a serious injury may exist

4

Risk Factor Advisory
Patients who do not meet Box 1-3 criteria may still be prone to seriously injury, specifically if they have one or more of the following risk factors: • Pregnancy over 20 weeks • Communication barrier (e.g., age, language, psychiatric, or developmental issues) • Age 55 or older • Patient taking anticoagulants or with known bleeding disorder • Patient with co-morbidity factors • Central nervous system changes • Time sensitive injuries

Motor vehicle crash • Estimated impact speed of > 40mph • Mechanical extrication required by fire department personnel • Rollover with unrestrained occupant
Person struck by a vehicle at < 20mph
Person ejected/fell from other object (e.g., motorcycle, horse, or ATV)
Blunt assault with weapon (e.g., pipe, bat, or golf club)
Falls > 10 but < 20 feet
This list is not all-inclusive and other high energy mechanisms encountered also merit Trauma Base Hospital contact

Yes → Trauma Center transport with early notification

No → Transport to hospital of patient choice

Trauma Triage

Scene time goal is 10 minutes

Pearls

- Do *not* let alcohol confuse the clinical picture. Persons using alcohol may have unrecognized injuries, particularly head bleeds.
- A complete hands on head-to-toe assessment is required for all trauma patients.
- Transport should be initiated within 10 minutes of ambulance arrival unless patient requires extrication.

Age Categories

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

Trauma Receiving Facilities

Adult Trauma Center catchment areas:

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

Pediatric Trauma Center catchment areas:

- Stanford Hospital – ***All patients < 6 years*** or any area south of and including Devil's Slide; City of Millbrae south of Trousdale Drive between I-280 and El Camino Real; and south of Millbrae Avenue between El Camino Real and the San Francisco Bay.
- Zuckerberg San Francisco General Hospital – All patients > 6 years and any area north of Devil's Slide; City of Millbrae north of Trousdale Drive between I-280 and El Camino Real; and north of Millbrae Avenue between El Camino Real and the San Francisco Bay. Include San Francisco International Airport.

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

Low Energy Mechanism Trauma

Low energy mechanism trauma may not obviously reveal significant trauma. Examples include, but are not limited to ground level or short falls, blunt assault without a weapon (e.g., closed fist), low speed motor vehicle crash, or other blunt trauma (e.g., sports injury). Symptoms or concern may include:

- Symptoms in the presence of head injury such as headache, vomiting, loss of consciousness, repetitive questioning, abnormal, or combative behavior or new onset of confusion
- Pain level greater than 5/10 related to head, neck, or torso injury
- Any concerns due to hypotension, tachycardia, or tachypnea
- Systolic BP < 110mmHg in patients 65 years of age or older
- Torso injury with tenderness of abdomen, chest/ribs or back/flank
- Suspected hip dislocation or pelvis injury

Other Definitions

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

San Mateo County Emergency Medical Services

Extremity Trauma

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

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

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

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

Crush injury?

No

E
- Control hemorrhaging **Apply tourniquet for hemorrhage**
- Place splints and cold packs to stabilize fractures as necessary

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

Notify receiving facility. Contact Base Hospital for medical direction

Yes

Early transport after release
Limit scene time to 10 minutes

E
- Control hemorrhaging **Apply tourniquet for hemorrhage**
- Secure airway and support respiratory rate
- Place splints and cold packs to stabilize fractures as necessary

Exit to Airway TG *if indicated*

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

P
- Establish IV/IO
- Cardiac monitor
- $EtCO_2$ monitoring
- If SBP < 80 in adults **Normal Saline bolus 500ml IV/IO** *May repeat as long as criteria above exists.* **Maximum 1L**
- If poor perfusion or shock in peds **Normal Saline bolus IV/IO** **Use pediatric tape and refer to dosing guide** Repeat to age dependent goal SBP *May repeat as long as criteria above exists*
- In the absence of head trauma, age-specific hypotension, poor perfusion or AMS *Consider,* **Fentanyl** for pain control
- Prior to release from entanglement **Albuterol nebulizer**
- For suspected hyperkalemia:
  - Peaked T-waves; or
  - QRS > 0.12 seconds; or
  - Loss of P-waves

  Albuterol nebulizer
  Calcium Chloride
  Sodium Bicarbonate

  Do NOT administer Sodium Bicarbonate and Calcium Chloride in the same IV.

Adult and Pediatric Trauma Treatment Protocols

Extremity Trauma

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

Pearls

- For partial amputations, splint affected extremity in anatomic location and elevate extremity.
- For complete amputations, place amputated part in a dry container or bag and place on ice. Seal or tie off bag and place in second container or bag. DO NOT place amputated extremity directly on ice or in water. Elevate extremity and dress with dry gauze.
- Penetrating trauma to an extremity may hide significant vascular injury and hemorrhage. Early application of a tourniquet should be considered.
- Hypotension is age dependent. This is not always reliable and should be interpreted in context with the patient's typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
    - Neonate: < 60mmHg or weak pulses
    - Infant: < 70mmHg or weak pulses
    - 1-10 years: < 70mmHg + (age in years x2)
    - Over 10 years: <90mmHg
    - Over 65 years: <110mmHg
- If vigorous hemorrhage is not controlled with direct pressure and elevation on wound, apply a tourniquet. Tourniquets may be used in pediatric patients. Tourniquets may also be appropriate for hemorrhage control in multi-casualty incidents.
- Crush Injury Syndrome is caused by muscle crush injury and cell death. Most patients have an extensive area of involvement such as a large muscle mass in a lower extremity or the pelvis. May develop after one (1) hour in the presence of a severe crush, but usually requires at least four (4) hours of compression. Hypovolemia and hyperkalemia may occur, particularly in extended entrapments.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Do not overlook the possibility of associated domestic violence or abuse.

San Mateo County Emergency Medical Services

Head Trauma

For any traumatic injury that involves the head; includes multi-system trauma that involves the head

History
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications (anticoagulants)

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

Differential
- Skull fracture
- Spinal injury
- Abuse

E

- Early transport
  Limit scene time to 10 minutes
- Control hemorrhaging
  Apply tourniquet for hemorrhage
- Spinal Motion Restriction
  if indicated
- Secure airway
  and support respiratory rate
- Elevate head 30 degrees unless contraindicated. Position patient on left side if needed for vomiting

P

- Establish IV/IO
- Cardiac monitor
- $EtCO_2$ monitoring
- If SBP < 110 in adults
  Normal Saline bolus 500ml IV/IO
  May repeat as long as criteria above exists.
  Maximum 2L

  If poor perfusion or shock in peds
  Normal Saline bolus IV/IO
  Use pediatric tape and refer to dosing guide
  Repeat to age dependent goal SBP
  May repeat as long as criteria above exists
- For nausea in adults, *consider*
  Ondansetron

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

↔ **Respiratory Arrest/Failure** *if indicated*

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

Notify receiving facility. Contact Base Hospital for medical direction

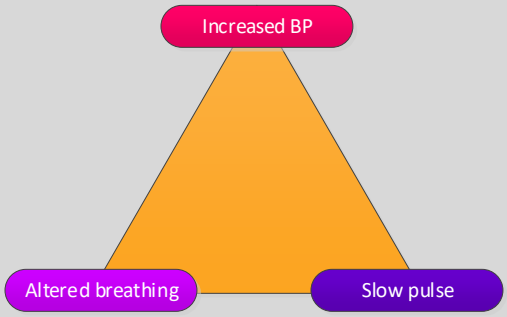
Adult and Pediatric Trauma Treatment Protocols

Head Trauma

For any traumatic injury that involves the head; includes multi-system trauma that involves the head

Increased Intracranial Pressure

Changes in LOC
Impaired eye movement
↓ sensory/motor function



Headache
Pupillary changes
Vomiting
Changes in vital signs
↑ Blood pressure
↓ Pulse
Changes in respiratory pattern

Infants

Bulging fontanels
Cranial suture separation
↑ head circumfrance
High-pitched cry

Pearls

- ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.
- Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize modified jaw thrust technique to open the airway.
- Intubation of head injury patients is best addressed at the hospital.
- Hypotension is age dependent and is not always a reliable sign. It should be interpreted in context with the patient's typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
  - Neonate: < 60mmHg or weak pulses
  - Infant: < 70mmHg or weak pulses
  - 1-10 years: < 70mmHg + (age in years x2)
  - Over 10 years: <90mmHg
  - Over 65 years: <110mmHg
- Avoid hyperventilation. Maintain an $EtCO_2$ of 35 or greater, which may be unreliable if the patient was subject to multisystem trauma or poor perfusion.
- In patients with a dilated pupil on one side or posturing, which indicates brainstem herniation, modest hyperventilation is appropriate. Keep $EtCO_2$ of 30 or greater.
- Scalp hemorrhage can be life threatening. Treat with direct pressure and pressure dressing.
- Increased intracranial pressure may cause hypertension and bradycardia.
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Limit IV fluids unless the patient is hypotensive.
- Concussions are traumatic brain injuries involving any number of symptoms including confusion, LOC, vomiting, or headache. Any prolonged confusion or mental status abnormality which does not return to the patient's baseline within 15 minutes of injury or any documented LOC should be evaluated by a physician.
- Do not overlook the possibility of associated domestic violence or abuse.

San Mateo County Emergency Medical Services

Multi-System Trauma

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

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
- AMS
- 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
- Early transport
  Limit scene time to 10 minutes
- Control hemorrhaging
  Apply tourniquet for hemorrhage
- Secure airway
  and support respiratory rate
- Spinal Motion Restriction
  if indicated
- Place splints and cold packs to stabilize fractures as necessary

P
- *Consider,*
  Needle decompression
- For open wounds to chest/abdomen, apply occlusive dressing

↔ **Respiratory Arrest/Failure** *if indicated*

Suspected head injury?
- No → **P**
- Yes → **Trauma – Head Injury**

P
- Establish IV/IO
- Cardiac monitor
- $EtCO_2$ monitoring
- If SBP < 80 in adults
  Normal Saline bolus 500ml IV/IO
  May repeat as long as criteria above exists.
  Maximum 1L

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

  For peds patients ≥ 4 years, *consider*
  Ondansetron
  Use pediatric tape and refer to dosing guide
- In the absence of head trauma, age-specific hypotension, poor perfusion or AMS
  Consider, **Fentanyl** for pain control

Notify receiving facility. Contact Base Hospital for medical direction

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

Adult and Pediatric Trauma Treatment Protocols

Multi-System Trauma

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

Pearls

- ALS procedures in the field do not significantly improve patient outcome in critical trauma patients.
- Basic airway management is preferred unless unable to effectively manage with BLS maneuvers. Utilize modified jaw thrust technique to open the airway.
- Intubation of head injury patients is best addressed at the hospital.
- Hypotension is age dependent and is not always a reliable sign. It should be interpreted in context with the patient's typical BP, if known. Shock may be present with a seemingly normal blood pressure initially.
    - Neonate: < 60mmHg or weak pulses
    - Infant: < 70mmHg or weak pulses
    - 1-10 years: < 70mmHg + (age in years x2)
    - Over 10 years: <80mmHg
    - Over 65 years: <110mmHg
- Stabilize flail segments with bulky dressing.
- Cover eviscerated bowel with dry sterile dressing.
- Stabilize impaled object(s) with bulky dressing. Do not remove.
- Avoid hyperventilation. Maintain an $EtCO_2$ of 35 or greater, which may be unreliable if the patient was subject to multisystem trauma or poor perfusion.
- An important item to monitor and document is a change in the level of consciousness by repeat examination.
- Do not overlook the possibility of associated domestic violence or abuse.

San Mateo County Emergency Medical Services

Traumatic Arrest

For cardiac arrest with penetrating or blunt traumatic mechanism. NOT for trauma sustained after cardiac arrest, use primary impression Cardiac Arrest – Non- traumatic

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

Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

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

E

Has a paramedic, EMT, designated first responder, or public safety officer found injuries incompatible with life, including one or more of the following conditions:
- **Decapitation**
- **Incineration**
- **Rigor Mortis**
- **Decomposition**
- **Apnea with destruction and/or separation of the body from the heart, brain, liver, or lungs**
- **Multi-casualty incidents (MCIs) where triage principles preclude the initiation or continuation of resuscitation**

Yes → Do not begin resuscitation

No

AT ANY TIME

Return of spontaneous circulation

Multi-System Trauma

Does the patient meet all of the following criteria?
- Pulseless
- Apneic
- No other signs of life, including purposeful movement or pupillary response
- Asystole or PEA < 40bpm
- Physical signs of trauma or blood loss

Yes → Do not begin resuscitation

No

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

First medical contact to trauma center time < 20 min.?

Yes

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

P
- If suspected thoracic trauma, bilateral pleural decompression
- If shockable rhythm, defibrillate

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

No

E
- Control hemorrhaging **Apply tourniquet for hemorrhage**
- **Begin continuous chest compressions Push hard (> 2 inches) and fast (110/min) *Use metronome to ensure proper rate* Change compressors every 2 minutes (Limit changes/pulse checks to < 5 seconds)**
- High flow oxygen via BVM

P
- If suspected thoracic trauma, bilateral pleural decompression
- If shockable rhythm, defibrillate

Asystole or PEA < 40bpm *and* $EtCO_2$ < 20 after 15 min.?

Yes → Terminate resuscitation

No → **Notify receiving facility. Consider Base Hospital for medical direction**

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

Adult and Pediatric Trauma Treatment Protocols

San Mateo County Emergency Medical Services

Burns

For any burn injury to skin. For inhalation injury, use primary impression Inhalation Injury. Use with primary impression Traumatic Injury if other trauma present

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

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

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

Assess burn injury severity

Approved Burn Receiving Centers

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

Minor

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

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

Trauma Triage *if indicated*

Transport to facility of choice.
Consider transporting to Burn Center for burns to the face, hands, perineum, or feet and circumferential burns

Major

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

Inhalation Injury *if indicated*

E	Remove rings, bracelets, and constricting items
	Apply clean dressing to burn area
	Maintain airway
P	Establish IV/IO *Consider,* one large bore IV in each AC
	Cardiac monitor
	$EtCO_2$ monitoring
	Normal Saline bolus ≤ 5 years – 125ml 6-13 years – 250ml ≥ 14 years – 500ml
	For pain *consider*, **Fentanyl**

Trauma Triage *if indicated*

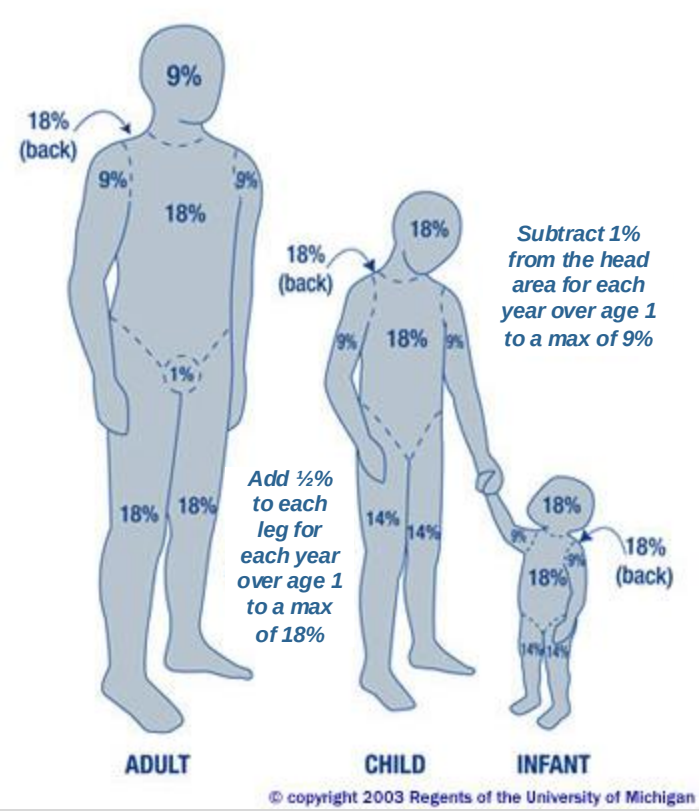
Transport to appropriate facility
Burns with trauma to Trauma Center
Burns only to Burn Center

Notify receiving facility. Contact Base Hospital for medical direction

Adult and Pediatric Trauma Treatment Protocols

Burns

For any burn injury to skin. For inhalation injury, use primary impression Inhalation Injury. Use with primary impression Traumatic Injury if other trauma present



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	Old Terminology
Superficial	1st degree
Partial thickness	2nd degree
Full thickness	3rd degree
Burn assessment should be documented and reported using only approved terminology	

Pearls

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

12-Lead ECG

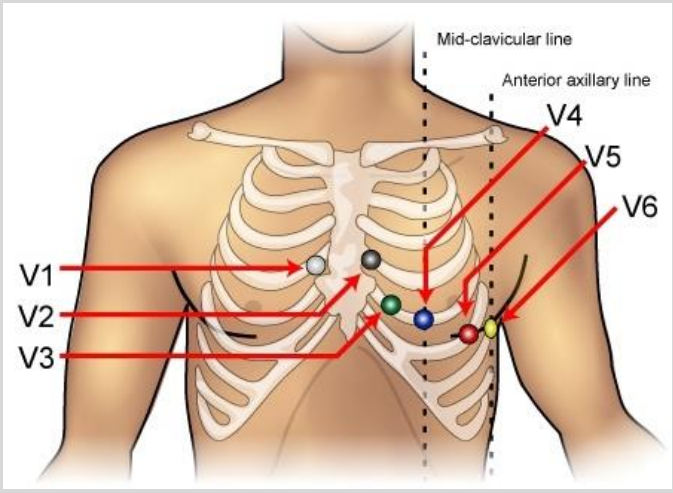
	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Suspected cardiac patient, suspected stroke patient or cardiac arrest patient post ROSC.
2. As required by treatment guidelines.

Procedure (to be obtained within the first five (5) minutes of patient contact:

1. Prepare ECG monitor and connect patient cable with electrodes.
2. Enter the required patient information (e.g., patient name, age and gender) 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.



Paramedic Only

8. Once acquired, transmit any 12- Lead ECG that indicates the patient is having a STEMI to the appropriate receiving STEMI Center.
9. Contact the receiving STEMI Center to notify them that a positive 12-Lead ECG has been sent.
10. Monitor the patient while continuing with the treatment protocol.
11. Download the cardiac monitor data as required by EMS policy and attach a copy of the 12-Lead ECG to the prehospital ePCR.
12. Document the procedure, time, and results in the prehospital PCR.

Airway: BLS Management

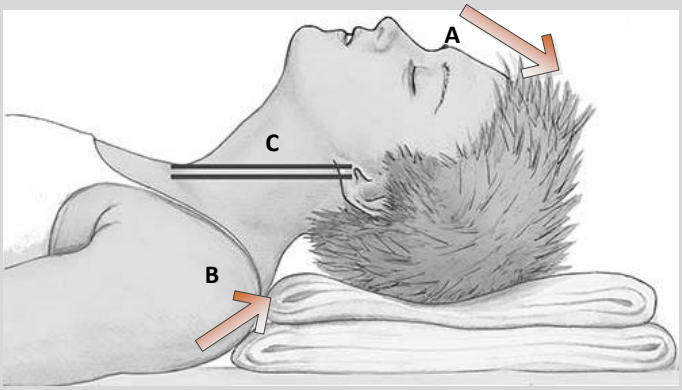
	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. A patient who is unable to maintain their airway without assistance.

Procedure:

1. Position the patient to optimize airway opening and facilitate ventilations.
   a. Use the sniffing position with head extended (A) and neck flexed forward (B) unless there is a suspected spinal injury.
   b. Position with head/shoulders elevated; anterior ear should be at the same horizontal level as the sternal notch (C). This is especially advantageous in larger or morbidly obese patients.



2. Using a two-person technique is the preferred method to ventilate patients with a Bag-Valve-Mask (BVM).
   a. **J** – jaw thrust maneuver to open the airway.
   b. **A** – use a nasal or oral airway. Appropriately measure before placing airway adjunct.
   c. **W** – work together to ventilate the patient using a BVM. This should be done using two rescuers – one holding the mask to achieve an optimal seal and the other to deliver ventilations.
   d. **S** – slow and small ventilations to produce visible chest rise.

It is required that the airway be monitored continuously through waveform capnography (ALS providers) and pulse oximetry.

Notes:

1. The goal of airway management is to ensure adequate ventilation and oxygenation. Initial airway management should always begin with BLS maneuvers.
2. Avoid excessive ventilation. In non-arrest patients, ventilation rates should be:
   a. Adults – 10/minute
   b. Children – 20/minute
   c. Infants – 30/minute

Airway: Bougie Device

Applies to:
P Paramedic

Clinical Indications:

1. Patients meet clinical indications for oral intubation.
2. For use with direct laryngoscopy only.

Contraindications:

1. Age less than eight (8) or Broslow tape ETT size less than 6.5 mm.

Procedure:

1. Prepare, position, and oxygenate the patient with 100% oxygen.
2. Select the proper ET tube and remove stylette; test cuff and prepare suction.
3. Lubricate the distal end and cuff of the endotracheal tube (ETT) with a water-based lubricant and the distal 1/2 of the Bougie device. (Note: Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT).
4. Using the laryngoscope, visualize the vocal cords, if possible, using external laryngeal manipulation.
5. Introduce the Bougie with the curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized.
6. Once inserted, gently advance the Bougie until you meet resistance; feel for the tracheal rings. If you do not meet resistance, you have a probable esophageal intubation and insertion should be reattempted or use a King Airway.
7. Withdraw the Bougie ONLY to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Bougie.
8. Gently advance the Bougie and loaded ETT until you have feel resistance again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Bougie.
9. While maintaining a firm grasp on the proximal Bougie, introduce the ETT over the Bougie passing the tube to its appropriate depth.
10. If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT).
11. Once the ETT is correctly placed, hold the ETT securely and remove the Bougie.
12. Confirm tracheal placement according to the intubation protocol, inflate the cuff with 3–10ml of air until pilot balloon is softly firm, auscultate for equal breath sounds, and reposition accordingly.
13. When final position is determined secure the ETT, reassess breath sounds, apply $EtCO_2$ monitoring, and record and monitor readings to assure continued tracheal intubation.

Airway: BVM with In-Line Nebulizer

Applies to:
P Paramedic

Clinical Indications:

1. In-line nebulization via BVM is indicated in patients whom inadequate ventilation is suspected and who present with bronchospasm (wheezing).

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Assemble the BVM with nebulizer by adding a handheld nebulizer device between the BVM and mask using a clear adapter; add Albuterol.
4. Connect the DISS adapter to demand port on regulator. Oxygen will automatically flow at 7-8 lpm.
5. Connect the BVM tubing to the primary port on the regulator and begin flow rate at 15 lpm.

6. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
7. Secure the mask to the face using a 2-hand “E-C” technique.
8. Evaluate the response of the patient assessing breath sounds, oxygen saturation, $EtCO_2$ and general appearance.
9. Titrate oxygen levels to the patient’s response (O_2 sat > 92%).
10. Encourage the patient to allow assisted ventilation to occur.
11. Observe closely for signs of complications and deterioration.
12. Document time and response in the ePCR.

Airway: Direct Laryngoscopy Intubation

Applies to:
P Paramedic

Clinical Indications:

1. Inability to adequately ventilate a patient with a Bag Valve Mask (BVM) and basic airway adjunct.
2. An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.

Procedure:

1. Prepare, position, and oxygenate the patient with 100% Oxygen.
2. Select proper ET tube and stylette; have suction ready.
3. The use of a Bougie device is strongly encouraged with all ET intubation attempts.
4. Using laryngoscope, visualize vocal cords.
5. Do not stop/pause CPR to intubate.
6. Visualize tube passing through vocal cords.
7. **Confirm and document tube placement using continuous $EtCO_2$ monitoring.**
8. Inflate the cuff with 3–10ml of air until pilot balloon is softly firm; secure the tube using a commercial tube holder.
9. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with a BVM.
10. Apply waveform capnography. After 3 ventilations, $EtCO_2$ should be >10 or comparable to pre-intubation values. If < 10, check for adequate circulation, ETT placement, equipment, and ventilatory rate. If $EtCO_2$ remains < 10 without physiologic explanation, remove the ETT and ventilate using an airway adjunct and BVM.
11. If unable to ventilate with a BVM and BLS airway adjunct, consider using a King Airway if intubation efforts are unsuccessful.
12. Monitor $EtCO_2$ and record readings on scene, en route to the hospital, and at the hospital.
13. Document ETT size, time, result (success) and placement location by the centimeter marks either at the patient's teeth or lips in the ePCR. Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.
14. **It is required that the airway be monitored continuously utilizing waveform capnography (ALS providers) and pulse oximetry.**

Airway: Foreign Body Removal

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Sudden onset of respiratory distress often with coughing, wheezing, gagging, or stridor due to a foreign-body obstruction of the upper airway.

Procedure:

1. Assess the degree of foreign body obstruction.
   a. Do not interfere with a mild obstruction; allow the patient to clear their airway by coughing.
   b. In severe foreign-body obstructions, the patient may not be able to make a sound. The patient may clutch his/her neck demonstrating the universal choking sign.
2. **For an infant**, deliver 5 back blows (slaps) followed by 5 chest thrusts (compressions) repeatedly until the object is expelled or the patient becomes unresponsive.
3. **For a child**, perform a subdiaphragmatic abdominal thrust (Heimlich Maneuver) until the object is expelled or the patient becomes unresponsive.
4. **For adults**, a combination of maneuvers may be required.
   a. First, subdiaphragmatic abdominal thrusts (Heimlich Maneuver) should be used in rapid sequence until the obstruction is relieved or the patient becomes unresponsive.
   b. If abdominal thrusts are ineffective, chest thrusts should be used. Chest thrusts should be used primarily in morbidly obese patients and in patients who are in the late stages of pregnancy.
5. If the patient becomes unresponsive, begin CPR immediately but look in the mouth before administering any ventilations. If a foreign-body is visible, remove it.
6. **Do not perform blind finger sweeps in the mouth and posterior pharynx. This may push the object farther into the airway.**
7. In unresponsive patients, Paramedics should visualize the posterior pharynx with a laryngoscope to potentially identify and remove the foreign-body using Magill forceps.
8. Document the methods used and result of these procedures in the ePCR.

Airway: King Airway

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. EMT – cardiac arrest patients only.
2. Inability to adequately ventilate a patient with a Bag Valve Mask (BVM) and basic airway adjunct.
3. An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.

Contraindications:

1. Gag reflex
2. Caustic ingestion
3. Known esophageal disease (e.g., cancer, varices or stricture)
4. Laryngectomy with stoma – if present, place ETT in stoma
5. Height less than 4 feet
6. Known foreign body airway obstruction

Procedure:

1. Prepare, position and oxygenate the patient with 100% Oxygen.
2. Document the pre-intubation $EtCO_2$ reading (ALS providers).
3. Select proper King Airway; have suction ready.
3. Lubricate the King Airway with water-based lubricant.
4. Grasp the patient's tongue and jaw with your gloved hand and pull forward.
5. Using a laryngoscope to displace the tongue, gently insert the tube rotated laterally 45-90 degrees to the right so that the blue orientation line is touching the corner of the mouth. Once the tip is at the base of the tongue, rotate the tube back to midline. Insert the airway until the base of the connector is in line with the teeth and gums.
6. Inflate the pilot balloon with 45-90ml of air depending on the size of the device used.
7. **If resistance is encountered when ventilating immediately after placement, ventilate the patient while gently withdrawing the airway until the patient is easily ventilated**.
8. Auscultate for breath sounds and sounds over the epigastrium and look for the chest to rise and fall.
9. Secure the device using a commercial tube holder.
10. **Confirm tube placement using $EtCO_2$ and waveform capnography.**
11. **It is required that the airway be monitored continuously through waveform capnography (ALS providers) and pulse oximetry.**

Airway: Stomal Intubation

Applies to:
P Paramedic

Clinical Indications:

1. Patient requiring intubation who has a mature stoma and does not have a replacement tracheostomy tube available.

Procedure:

1. Select the largest endotracheal tube (ETT) that will fit through the stoma without force; check the cuff and remove the stylette.
2. Pre-oxygenate the patient with 100% oxygen using a BVM.
3. Lubricate the ETT.
4. Suction if necessary.
5. Pass the ETT and inflate the cuff. The pharynx has been bypassed, so the ETT will protrude from the neck by several inches.
6. Hold the tube in place and attach the BVM.
7. While ventilating the patient, watch for equal rise and fall of the chest.
8. Secure the tube and ventilate with 100% oxygen.
9. Auscultate for bilaterally equal breath sounds. Examine the neck for subcutaneous emphysema indicating false passage.
10. Do not take longer than 30 seconds to perform this procedure.
11. Document ETT size, time, result (success) and placement location by the centimeter marks either at the stomal opening in the ePCR. Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.
12. **It is required that the airway be monitored continuously through waveform capnography (ALS providers) and pulse oximetry.**

Airway: Tracheostomy Tube Replacement

Applies to:
P Paramedic

Clinical Indications:

1. Presence of Tracheostomy site.
2. Urgent or emergent indication to change the tube, such as obstruction that will not clear with suction, dislodgement, or inability to oxygenate/ventilate the patient without other obvious explanation.

Procedure:

1. Have all airway equipment prepared for standard airway management, including equipment for endotracheal intubation.
2. Have an airway device (endotracheal tube or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5 size smaller available (e.g., if the patient has a #6.0 Shiley, then have a 6.0 and a 5.5 tube).
3. Lubricate the replacement tube(s) with water-based lubricant and check the cuff.
4. Remove the tracheostomy tube from mechanical ventilation device and use a bag-valve mask to pre-oxygenate the patient as much as possible.
5. Once all equipment is in place, remove the device securing the tracheostomy tube.
6. If applicable, deflate the cuff on the tube. If unable to aspirate air with a syringe, cut the balloon off to allow the cuff to deflate.
7. Remove the tracheostomy tube.
8. Insert the replacement tube. Confirm placement via auscultation of the lungs.
9. If there is any difficulty placing the tube, re-attempt procedure with the smaller tube.
10. If difficulty is still encountered, use standard airway procedures such as oral bag-valve mask or endotracheal intubation. More difficulty with tube changing can be anticipated for tracheostomy sites that are immature (i.e. less than two weeks old). Great caution should be exercised in attempts to change immature tracheotomy sites.
11. Document the procedure, confirmation, patient response, and any complications in the ePCR.

Airway: Video Laryngoscopy Intubation

Applies to:
P Paramedic

Clinical Indications:

1. Inability to adequately ventilate a patient with a Bag Valve Mask (BVM) and basic airway adjunct.
2. An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.

Procedure:

1. Prepare, position (sniffing position, unless trauma), and oxygenate the patient with a BLS airway adjunct and BVM. Maintain in-line stabilization in trauma patients.
2. Continue chest compressions throughout the intubation attempt.
3. Clear the patient's airway with suction.
4. Power on display computer and connect USB extension or adapter cable. Open pouch of Vividtrac device and remove just the USB cable and connect to the USB extension cable. Confirm image is displayed. If damage is noted upon opening package, discard VividTrac and use a new one.
5. Lubricate the first 4 inches of an appropriately sized endotracheal tube (ETT); load the ETT in the Vividtrac channel with a back and forth motion to lubricate the tube channel.
6. Load the straight end of the bougie into the ETT.
7. Gently hold the Vividtrac just below the proximal end of the device with index and middle finger tips on the metal side and thumb placed on the plastic side.
8. While looking at the patient's face, with your free hand slightly opening the mouth, place the blade tip midline on the surface of the tongue. While keeping the body of the Vividtrac parallel to the patient's neck, insert the blade to a depth such that the body of the Vividtrac is touching the patient's chin.
9. With the airway illuminated, look into the mouth and check for fluid in the airway; suction if needed.
10. View the live video image of the airway on the tablet. Gently, with minimal force, insert the Vividtrac deeper into the oral cavity.
11. Using a rotational motion, keeping it midline over the center of the tongue, advance the blade into the patient's oropharynx while visualizing landmarks.
12. Once the epiglottis is in view, place the blade tip in the center of the vallecula to view the vocal cords.
13. Make gentle alignment adjustments of the device to allow the airway to open up with vocal cords centered on the video image.
14. While allowing adequate distance from the vocal cords, gently advance the bougie past the vocal cords into the trachea.
15. If required, twist the ETT counter clockwise to direct the bougie to the left. If necessary, switch to load the coude tip of the bougie. If required, advance the ETT to move the bougie anteriorly, or retract the ETT to move the bougie posteriorly.
16. Once the bougie is properly positioned, advance the ETT until the cuff is visualized passing through the vocal cords.

Airway: Video Laryngoscopy Intubation

17. While visualizing the cords and ETT, inflate the cuff.
18. Confirm proper ETT placement using $EtCO_2$ and wave form capnography. Auscultate for bilaterally equal breath sounds and absence of sounds over the epigastrium. If you are unsure of placement, remove tube and ventilate patient with a BVM. After 3 ventilations, $EtCO_2$ should be >10 or comparable to pre-intubation values. If < 10, check for adequate circulation, equipment, and ventilatory rate. If $EtCO_2$ remains < 10 without physiologic explanation, remove the ETT and ventilate using an airway adjunct and BVM.
19. Separate the ETT from the tube channel at the proximal end of the Vividtrac device by pushing the ETT forward and to the right. Firmly hold the ETT in place at the corner of the mouth with one hand while gently reversing the path of insertion and removing the device from the oral cavity.
20. Secure the ETT with a commercial tube securing device.
21. Document the procedure and reassess frequently and with each patient move.
22. Consider using a King Airway if intubation efforts are unsuccessful.
23. Monitor $EtCO_2$ and record readings on scene, en route to the hospital, and at the hospital.
24. Document ETT size, time, result (success) and placement location by the centimeter marks either at the patient's teeth or lips in the ePCR. Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.
25. **It is required that the airway be monitored continuously through waveform capnography (ALS providers) and pulse oximetry.**

Childbirth

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Imminent delivery with crowning.

Procedure:

1. Delivery should be controlled so as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant's head as needed.
3. Check the neck for the umbilical cord. If it is present, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
4. Grasping the head with hands over the ears, gently pull down to allow delivery of the anterior shoulder.
5. Gently pull up on the head to allow delivery of the posterior shoulder.
6. Slowly deliver the remainder of the infant.
7. Clamp the cord 2 inches from the abdomen. Milk the cord towards the mother approximately 2 inches and places a second clamp. Cut the cord away from the provider's face between the clamps.
8. Follow the **Newly Born Treatment Guideline** for further treatment of newly born child and **Pregnancy/Labor** for further treatment of the mother.
9. The placenta will deliver spontaneously, usually within 5 minutes of the infant. To facilitate this process, apply very gentle tension to the cord.
10. Massaging the fundus may aid in the delivery of the placenta and decrease bleeding by facilitating uterine contractions. This procedure is best accomplished by two paramedics.
11. Continue transport to the hospital.

CPAP

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. CPAP is indicated in all patients whom inadequate ventilation is suspected and who have adequate mental status and respiratory drive to allow CPAP to function. This could be as a result of pulmonary edema, pneumonia, asthma, COPD, etc.

Clinical Contraindications:

1. Decreased Mental Status.
2. Facial features or deformities that prevent an adequate mask seal.
3. Excessive respiratory secretions.
4. Suspected pneumothorax
5. Thoracic trauma
6. SBP < 90 mmHg

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
4. Secure the mask with provided straps starting with the lower straps until minimal/no air leak occurs.
5. If the Positive End Expiratory Pressure (PEEP) is adjustable on the CPAP device, adjust the PEEP beginning at 0 cmH_20 of pressure and slowly titrate to achieve a positive pressure as follows:
   a. 5 – 10 cmH_20 for pulmonary edema, submersion (near drowning), possible aspiration or pneumonia. A PEEP setting of 7.5 cm H_2O is suitable for most patients.
6. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance.
7. Titrate oxygen levels to the patient's response (O_2 sat > 92%).
8. Encourage the patient to allow assisted ventilation to occur.
9. Observe closely for signs of complications and deterioration. Switch to assisted ventilation with BVM if necessary.
10. Document time and response in the ePCR.

End Tidal CO_2 ($EtCO_2$) Monitoring

Applies to:
P Paramedic

Clinical Indications:

1. Capnography shall be used when available with the use of all advanced airway procedures and as required by treatment guidelines.

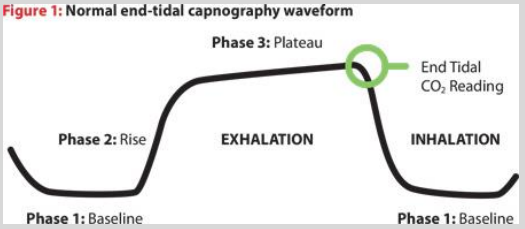
Procedure:

1. Attach capnography sensor to the monitor first to allow for room air calibration, then attach to the advanced airway or any other oxygen delivery device, including bag-valve mask and nasal cannula.
2. Note that $EtCO_2$ level and waveform changes. Values shall be documented in the ePCR.
3. The capnometer shall remain in place and be monitored throughout prehospital care and transport.
4. Any loss of $EtCO_2$ detection or waveform may indicate an airway problem and should be immediately addressed and thoroughly documented.
5. Document the procedure and results in the ePCR.

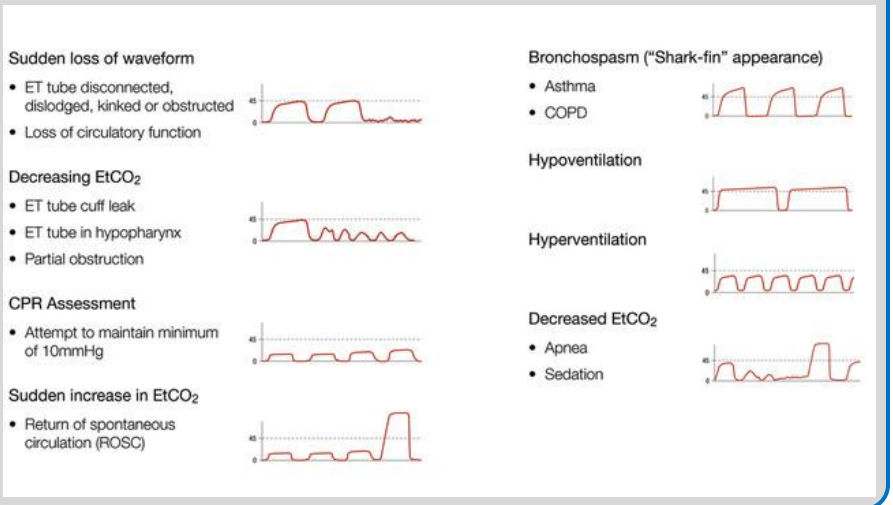
Notes:

1. $EtCO_2$ readings may be unreliable if the patient is in shock or has poor perfusion.
2. Normal $EtCO_2$ levels range from 30s and 40s, but this may vary based on the patient's underlying respiratory and metabolic status.
3. $EtCO_2$ levels that rise from a normal baseline to or above 50 may indicate hypoventilation is occurring.
4. Patient stimulation, use of a BVM, or use of Naloxone may be appropriate based on the situation.

Figure 1: Normal end-tidal capnography waveform



Causes of Elevated $EtCO_2$	Causes of Decreased $EtCO_2$
METABOLISM Pain Hyperthermia Shivering	**METABOLISM** Hypothermia Metabolic acidosis
RESPIRATORY SYSTEM Respiratory insufficiency Respiratory depression COPD Analgesia/sedation	**RESPIRATORY SYSTEM** Alveolar hyperventilation Bronchospasm Mucus plugging
CIRCULATORY SYSTEM Increased cardiac output	**CIRCULATORY SYSTEM** Hypotension Sudden hypovolemia Cardiac arrest Pulmonary emboli
MEDICATIONS Bicarb administration	



External Pacing

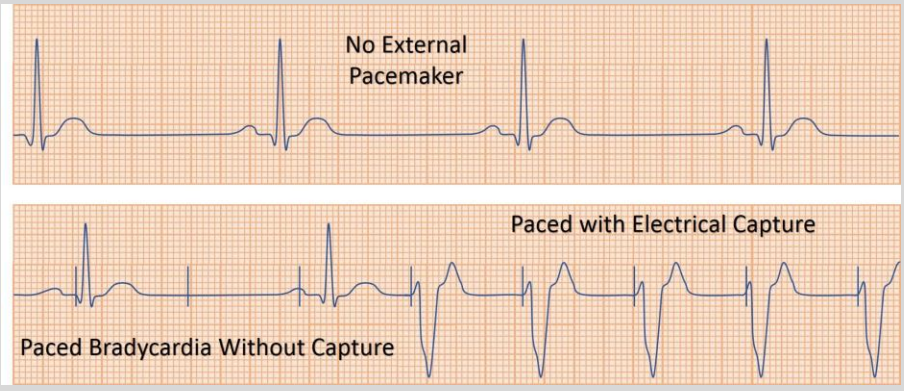
Applies to:
P Paramedic

Clinical Indications:

1. Patients with symptomatic bradycardia (< 60/minute) with signs and symptoms of inadequate cerebral or cardiac perfusion such as:
   a. Chest Pain
   b. Hypotension
   c. Acute onset of pulmonary edema
   d. Altered Mental Status
   e. Seizure

Procedure:

1. Attach cardiac monitor using standard four-lead placement.
2. Apply defibrillation/pacing pads to chest and back:
   a. One pad to left chest next to sternum.
   b. One pad to left back next to spine.
3. Select pacing option on monitor unit.
4. Adjust the heart rate to 60 BPM for an adult.
5. Note pacer spikes on ECG screen.
6. Slowly increase output until capture of electrical rhythm on the monitor. This is evidenced by a wide QRS with a T-wave.
7. If unable to capture while at maximum electrical output, stop pacing immediately.
8. When capture observed on monitor, check for corresponding right radial or femoral pulse and assess vital signs. Pacing causes muscle contractions that can be confused with a pulse in areas near the pacing pads, hence the need to check pulse at a radial site.
9. If patient continues to have signs of poor perfusion, increase rate to a maximum of 100 BPM.
10. If the patient is unconscious, reassess frequently. If there is any question about the effectiveness of pacing, initiate chest compressions.
11. Document the dysrhythmia and the response to external pacing with ECG strips in the ePCR.



Eye Irrigation

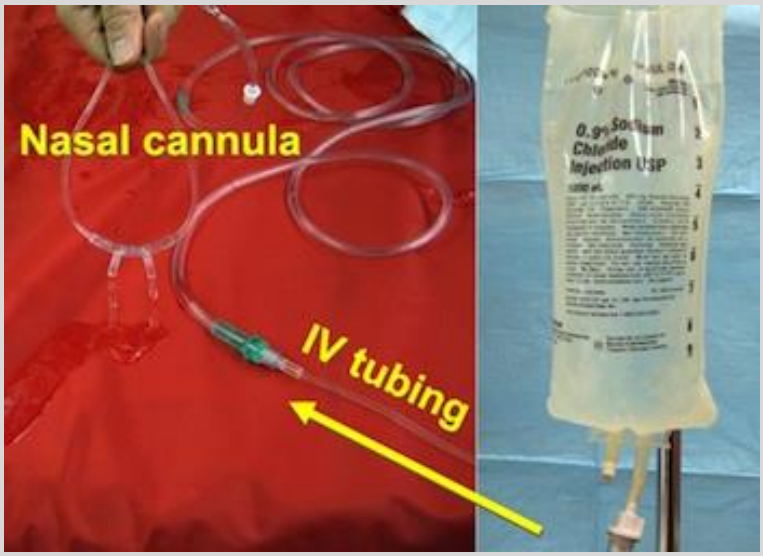
	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Any patient who has a suspected foreign body in the eye(s) or who has had chemicals splashed in their eye(s).

Procedure:

1. Place the patient on the gurney in a semi-fowler position.
2. Have the patient attempt to remove contact lenses, if present.
3. Affix a nasal cannula across the bridge of the nose such that the cannula nares are pointing down towards the eyes.
4. Secure the tubing to prevent accidental movement of the nasal cannula.
5. Attach the nasal cannula to a Normal Saline IV bag and continuously flush the eyes for a minimum of 15 minutes. If the patient feels relief, continuously flushing may continue until arrival at hospital.



Helmet Removal

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Helmet interferes with airway management or spinal motion restriction.
2. Improper fit, allowing head to move within helmet.
3. Patient in cardiac arrest.

Contraindications:

1. Airway and spinal motion restriction can be addressed without helmet removal.

Procedure:

1. High Impact Helmets (e.g., motorcycle, car racing) - Whether the helmet is a closed or open-faced style helmet, the helmet must always be removed while providing spinal precautions.
2. Low Impact Helmets with Shoulder Pads (e.g., football, ice hockey, etc.) - In those patients wearing a well-fitted helmet which conforms closely to the patient's head, it may be preferable to leave the helmet and shoulder pads in place after removing the face mask. If the helmet is removed, the shoulder pads must also be removed to maintain neutral spinal alignment.
3. Low Impact Helmets without Shoulder Pads (e.g., baseball, bicycle, rollerblade, etc.) - Whether the helmet is a closed or open faced style helmet, the helmet must always be removed while providing spinal precautions.
4. Assess and document PMS.
5. While gently removing the helmet, maintain stabilization of the cervical spine. If indicated, place the patient in spinal motion restriction.
6. Reassess and document PMS.

In-Line Nebulizer for Flowsafe II CPAP Device

Applies to:
P Paramedic

Clinical Indications:

1. In-line nebulization via CPAP is indicated in patients whom inadequate ventilation is suspected, who present with bronchospasm (wheezing), and who have adequate mental status and respiratory drive to allow CPAP to function.

Clinical Contraindications:

1. Decreased Mental Status.
2. Facial features or deformities that prevent an adequate mask seal.
3. Excessive respiratory secretions.
4. Suspected pneumothorax
5. Thoracic trauma
6. SBP < 90 mmHg

Procedure:

1. Ensure adequate oxygen supply to ventilation device.
2. Explain the procedure to the patient.
3. Assemble the CPAP device with nebulizer by adding a handheld nebulizer device between the mask and oxygen connector; add Albuterol.
4. Connect the DISS adapter to demand port on regulator. Oxygen will automatically flow at 7-8 lpm.
5. Connect the CPAP tubing to the primary port on the regulator and begin flow rate to achieve 10 cmH_2O; titrate down to 7.5 cmH_2O on the device.
6. Place the delivery mask over the mouth and nose. Oxygen should be flowing through the device at this point.
7. Secure the mask with provided straps starting with the lower straps until minimal/no air leak occurs.
8. Evaluate the response of the patient assessing breath sounds, oxygen saturation, and general appearance.
9. Titrate oxygen levels to the patient's response (O_2 sat > 92%).
10. Encourage the patient to allow assisted ventilation to occur.
11. Observe closely for signs of complications and deterioration. Switch to assisted ventilation with BVM if necessary.
12. Document time and response in the ePCR.

Intraosseous Access

Applies to:
P Paramedic

Clinical Indications:

1. Patients where rapid, regular IV access is unavailable with any of the following:
   a. Cardiac arrest
   b. When IV access is unsuccessful or, after evaluation of potential sites, it is determined that an IV attempt would not be successful in the setting of:
      i. Shock or evolving shock, regardless of the cause.
      ii. 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).

Procedure:

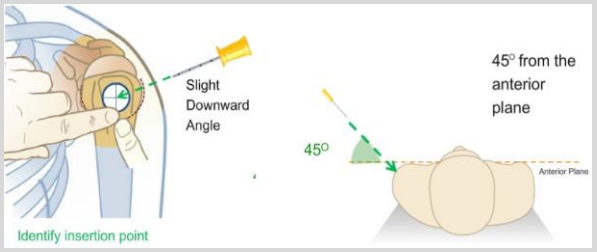
1. Proximal humerus (preferred site in adults only, if available)
2. Proximal tibia
3. Distal tibia (if proximal humerus or proximal tibia are unsuitable)

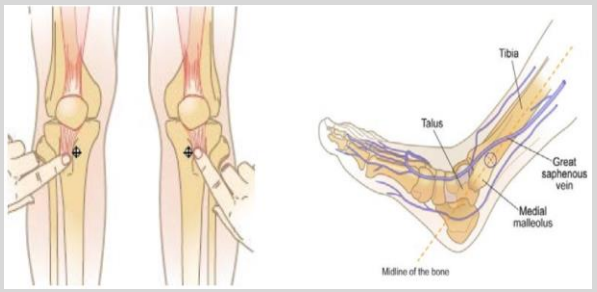
Procedure:

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 alcohol and allow to air dry.

Intraosseous Access

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.
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 in adults; stop at the loss of resistance in peds. 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 not in arrest.
   a. For conscious adult patients, 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.
8. Stabilize device to skin.
9. Flush with 10ml Saline. In conscious patients, flush with 5ml Saline initially and repeat if necessary.
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. Place wristband included with IO set on patient and document time of insertion on wristband.

San Mateo County Emergency Medical Services

Mechanical Compression Device (MCD)

(For Adults Only)

		Compressions (round 1)			
P1	**Airway**	**E1**	**Chest Compressions**	**E2**	**Metronome, Defibrillator set-up**
	1. Defibrillate immediately if VT/VF 2. Set up BVM & connect to Oxygen/ETCO2 3. Provide cadence and count for EMT 4. Provide high quality 1-person BVM breaths every 10 compressions 5. Charge defibrillator at 16th breath		1. Shake and Shout (no pulse check) 2. Open airway and move to floor with adequate space 3. Start high quality chest compressions 4. Change compressor every 2 minutes (Limit changes/pulse checks to < 5 seconds)		1. Activate metronome at 110 bpm 2. Cut shirt 3. Attach defibrillator pads 4. Can start set up of MCD if compressions aren't compromised.
		Rhythm Check (round 1) <10 secs			
P1	**Rhythm Check, Defibrillation**	**E1**	**Pulse Check**	**E2**	**Pulse Check**
	1. ETCO2 and Rhythm Check 2. If indicated (VT/VF), clear and defibrillate patient. If not indicated, dump charge		1. Pulse Check 2. Prepare to set up MCD		1. Pulse Check 2. Prepare to start high quality compressions
		Compressions (round 2)			
P1	**Airway**	**E1**	**Set up and Lay Out MCD within 2 minutes**	**E2**	**Chest Compressions**
	1. Provide high quality 1-person BVM breaths every 10 compressions 2. Provide cadence and count for compressor 3. Charge defibrillator at 16th breath		1. Unpack Back Plate and Mechanical Device 2. If air-pressure controlled, attach SCBA 3. Place Mechanical Device on E2 side (EMT doing compressions) 4. Place Back Plate next to P1 (airway paramedic)		1. Continuous chest compressions 2. Push hard (> 2 inches) and fast (110/min) 3. Continue using metronome to ensure proper rate 4. Change compressor every 2 minutes (Limit changes/pulse checks to < 5 seconds)
		Rhythm Check (round 2) <10 secs			
P1	**Rhythm Check, Defibrillation**	**E1**	**Pulse Check, MCD application**	**E2**	**Pulse Check, MCD application**
	1. ETCO2 and Rhythm Check 2. If indicated (VT/VF), clear and defibrillate patient. If not indicated, dump charge 3. Slide Back Plate underneath patient		1. Pulse Check 2. After shock applied (or decision not to shock), grasp patient's shoulder and support head with E2 to lift the upper torso for paramedic to slide Back Plate underneath patient		1. Pulse Check 2. After shock applied (or decision not to shock), grasp patient's shoulder and support head with E1 to lift the upper torso for paramedic to slide Back Plate underneath patient
		Compressions (round 3)			
P1	**Airway**	**E1**	**Chest Compressions**	**E2**	**Continue to set up MCD within 2 minutes**
	1. Provide high quality 1-person BVM breaths every 10 compressions 2. Provide cadence and count for compressor 3. Charge defibrillator at 16th breath		1. Continuous chest compressions 2. Push hard (> 2 inches) and fast (110/min) 3. Continue using metronome to ensure proper rate 4. Change compressor every 2 minutes (Limit changes/pulse checks to < 5 seconds)		1. If not completed, finish setting up and laying out MCD 2. Attach the first claw of the Mechanical Device to the Back Plate
		Rhythm Check (round 3) <10 secs			
P1	**Rhythm Check, Defibrillation**	**E1**	**Finish Applying and Turn On MCD Device**	**E2**	**Pulse Check, MCD application**
	1. ETCO2 and Rhythm Check 2. If indicated (VT/VF), clear and defibrillate patient. If not indicated, dump charge		1. Attach the second claw of the Mechanical Device to the Back Plate 2. Adjust the compression plunger to the correct depth 3. Turn on MCD Device 4. Apply neck strap		1. Pulse Check 2. After shock applied (or decision not to shock), assist E1 in applying and turning on MCD device 3. Mark plunger location with permanent marker

Needle Decompression

Applies to:
P Paramedic

Clinical Indications:

1. Patients who are peri-arrest with absent/severely diminished breath sounds and have at least two of the following signs:
   a. AMS
   b. Hypotension
   c. Increased pulse and respirations
   d. Hyperresonance to percussion on affected side
   e. Jugular vein distension
   f. Difficulty ventilating
   g. Tracheal shift
2. In patients with penetrating trauma to the chest or upper back, or gunshot wound to the neck or torso who are in respiratory distress, a weak or absent radial pulse may indicate hypotension; signs of tension pneumothorax listed above may also be present.
3. Patients in traumatic arrest with chest or abdominal trauma for whom resuscitation is indicated. These patients may require bilateral chest decompression even in the absence of the signs above.

Note: Assessment must be confirmed by second paramedic.

Procedure:

1. Administer high flow oxygen.
2. Identify and prep the site:
   a. Preferred site - Locate the sternal angle of Louis, which corresponds to the 2nd rib. Move down to fifth rib to identify fourth intercostal space in the mid-axillary line on the same side as the pneumothorax.
   b. Secondary site – Locate the second intercostal space in the mid-clavicular line on the same side of the pneumothorax.
   c. Prepare the site with alcohol and allow to air dry.
3. Insert a 10g catheter into the skin over the fifth rib and direct it just over the top of the rib (superior border) into the interspace.
4. Advance the catheter through the parietal pleura until a “pop” is felt and air or blood exits under pressure through the catheter, then advance catheter only to chest wall.
5. Remove the needle, leaving the plastic catheter in place.
6. Secure the catheter hub to the chest wall with a flutter valve.

Pediatric Assessment

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

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

Pediatric Assessment Triangle:

	Assessment	Abnormal
Appearance	Assess: Tone, interactiveness, look/gaze and speech/cry	Any abnormality
Work of breathing	Assess: Effort	Increased or decreased effort or abnormal sounds
Circulation	Assess: Skin color	Abnormal skin color or external bleeding

Primary Assessment:

	Assessment	Abnormal
Airway	Assess: Patency	Severe or complete airway obstruction
Breathing	Assess: Rate and effort, air movement, airway, breath sounds and pulse oximetry	Apnea, slow rate, very fast rate or significate work of breathing
Circulation	Assess: Heart rate, pulses, capillary refill, skin color and temperature and blood pressure	Unexplained tachycardia, bradycardia, absence of detectable pulses, poor perfusion (e.g., increased capillary refill time, pallor, mottling or cyanosis) or hypotension
Disability	Assess: AVPU response, pupil size and reaction to light and blood glucose	Decreased response or abnormal motor function (e.g., posturing) to pain or unresponsiveness
Exposure	Assess: Skin for rash or trauma	Hypothermia, rash (petichiae/ purpura) consistent with septic shock, significant bleeding or abdominal distension

Pediatric Assessment

Pediatric GCS:

	Infant	Score	Child	Score
Motor response	Spontaneous movements	6	Obeys commands	6
	Withdraws to touch	5	Localizes	5
	Withdraws to pain	4	Withdraws to pain	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 sound	3	Opens to sound	3
	Opens to pain	2	Opens to pain	2
	No response	1	No response	1

FLACC Scale		0	1	2
1	Face	No particular expression or smile, eye contact and interest in surroundings	Occasional grimace or frown, withdrawn, disinterested, worried look to face, eyebrows lowered, eyes partially closed, cheeks raised, mouth pursed	Frequent to constant frowning, clenched jaw, quivering chin, deep furrows on forehead, eyes closed, mouth opened, deep lines around nose/lips
2	Legs	Normal position or relaxed	Uneasy, restless, tense, increased tone, rigidity, intermittent flexion/extension of limbs	Kicking or legs drawn up, hypertonicity, exaggerated flexion/extension of limbs, tremors
3	Activity	Lying quietly, normal position, moves easily and freely	Squirming, shifting, back and forth, tense, hesitant to move, guarding, pressure on body part	Arched, rigid, or jerking, fixed position, rocking, side to side head movement, rubbing of body part
4	Cry	No cry or moan (awake or asleep)	Moans or whimpers, occasional cries, sighs, occasional complaint	Crying steadily, screams, sobs, moans, grunts, frequent complaints
5	Consolability	Calm, content, relaxed, does not require consoling	Reassured by occasional touching, hugging, or talking to, distractable	Difficult to console or comfort

Spinal Injury Assessment

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Suspicion of spinal or neurological injury

Procedure:

1. Have the patient extend both wrists and touch each finger to its thumb.
2. Have the patient flex each foot upward and down.
3. Ensure the patient has gross sensation in all extremities. Note any deficits.
4. Explain to the patient the actions that you are going to take when assessing the spine. Ask the patient to immediately report any pain verbally by answering questions with a verbal “yes” or “no” answer rather than shaking the head.
5. With the patient’s spine supported to limit movement, begin palpation at the base of the skull at the midline of the spine.
6. Palpate the vertebrae individually from the base of the skull to the bottom of the sacrum.
7. On palpation of each vertebral body, look for evidence of pain and ask the patient if they are experiencing pain. If evidence of pain along the spinal column is encountered, the patient should be immobilized.

Risk Assessment:

1. History of high-velocity blunt injury increases spinal injury risk.
2. Axial load injury to the head (e.g., diving) increases spinal injury risk.
3. Low-velocity injuries such as falls from a standing position or lower-velocity motor vehicle accidents have increased risk in patients 55 and older.

Spinal Motion Restriction

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Spinal motion restriction (SMR) as determined by spinal injury assessment:
   a. Pain upon palpation of spine; or
   b. Neurological deficits

Procedure:

1. Explain the procedure to the patient; assess and record extremity neuro status & distal pulses.
2. Place the patient in an appropriately sized C-collar while maintaining in-line stabilization of the cervical spine by a second provider.
3. Methods used to achieve SMR that are allowable for pain upon palpation (less restrictive to most restrictive):
   a. Semi-fowler's or fowler's position with cervical collar or towel rolls only;
   b. Pillows or blanket to fill voids (i.e., behind knees, lower back);
   c. Supine on a gurney; or
   d. Children's car seat.
4. Methods used to achieve SMR that are allowable for neurological deficits (less restrictive to most restrictive):
   a. KED; or
   b. Backboard with adequate padding, head immobilizers, and straps.
5. Stabilize the patient with straps and head rolls or other similar device. Once the head is secured, the second provider may release manual in-line stabilization.
6. Assess and record extremity neuro status and distal pulses post-procedure. If worse, remove any immobilization devices and reassess.

Exclusion Criteria:

1. The need for spinal motion restriction may be deferred for patients who demonstrate ALL of the following findings on assessment:
   a. Age < 55 years;
   b. Absence of tenderness at the posterior midline of the spine;
   c. Absence of focal neurological deficit;
   d. Normal mentation;
   e. Ability to communicate well independently or through an interpreter;
   f. No evidence of intoxication or impairment due to drugs or alcohol; and
   g. No clinically apparent painful injury that might distract from the pain of spinal injury.

Note:

1. SMR should reduce, rather than increase, patient discomfort. SMR that increases pain should be avoided. The cervical spine should never be moved if movement increases pain or in the presence

of neurological deficits or neck spasms.

2. Suspected spinal injuries should be maintained in a neutral position; position will vary by patient.
3. Routine use of full spinal motion restriction should be reserved for patients with confirmatory physical findings or high suspicion of spinal injury.
4. AMS or presence of an entry/exit wound in proximity of spine are no longer indications for SMR.

Tourniquet

	Applies to:
E	EMT
P	Paramedic

Clinical Indications:

1. Extremity hemorrhage that can not be controlled by other means.
2. To control hemorrhage in multi-casualty incidents.

Contraindications:

1. Non-extremity hemorrhage.
2. Hemorrhage that can be controlled with pressure or dressings.

Procedure:

1. Place windlass tourniquet proximal to wound and tighten strap. Do not place over a joint.
2. Tighten until hemorrhage stops.
3. Secure the tourniquet and mark the time of application on extremity.
4. Note the time of tourniquet application in the electronic medical record and communicate this to the receiving facility.
5. Dress wounds as necessary.
6. If one tourniquet is not sufficient or not functional to control hemorrhage, consider the application of a second tourniquet more proximal to the first.

Valsalva (Modified) Maneuver

Applies to:
P Paramedic

Clinical Indications:

1. Clinically stable patient with narrow complex tachycardia. Do not attempt this procedure on a patient with serious signs or symptoms, which include: Hypotension; acutely altered mental status; signs of shock/poor perfusion; chest pain with evidence of ischemia (e.g., STEMI, T-wave inversions, or depressions); and acute CHF.

Procedure:

1. Place the patient on a cardiac monitor; ensure continuous ECG monitoring throughout procedure.
2. Describe the procedure to the patient.
3. Position the patient so that the patient is sitting in a semi-recumbent (45^{o}) position.
4. Have the patient inhale and hold his/her breath while bearing down as if to have a bowel movement, or have the patient blow into a 10ml syringe. Instruct the patient to continue bearing down or blowing into the syringe until told to stop; time the event for 15 seconds.
5. *Immediately* lie the patient supine and elevate the patient's legs to 45^{o} for 15 seconds.
6. Lower the patient's legs such that the patient is in a supine position and reassess the cardiac rhythm after 45 seconds.
7. Continue to monitor the heart rhythm during the procedure. **Stop** the procedure if the patient becomes confused, the heart rate drops below 100 or asystole occurs.
8. If the patient remains in a narrow complex tachycardia, repeat the procedure one time.
9. Document the initial and all subsequent ECG rhythms and any dysrhythmia in the prehospital care record.

Vascular Access

Applies to:
P Paramedic

Clinical Indications:

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

Procedure:

1. Saline locks shall be attached to the IV catheter.
2. Paramedics can use intraosseous access where threat to life exists as provided for in the Intraosseous procedure.
3. Use the largest catheter necessary based upon the patient's condition and size of veins.
4. Select the most appropriate site:
   a. Hand/Arm – General fluid and medications. *Not* 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. Intraosseous (IO) – Preferred site for critical patients where IV access was unsuccessful or are in cardiac arrest.
   d. External Jugular (EJ) – Unstable patients who need emergent IV medications or fluids AND no peripheral site is available AND IO access is not appropriate (e.g., very alert patient).
5. Place a tourniquet around the patient's extremity to restrict venous flow only.
6. Prep the skin with alcohol and allow to air dry.
7. Insert the needle with the bevel up into the skin in a steady, deliberate motion until a blood flashback is visualized in the catheter.
8. Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into a sharps container without recapping.
9. Remove the tourniquet and connect the saline lock. Flush with 10ml of saline to ensure patency.
10. If administering IV fluid or medications:
    a. Inspect the IV solution/medication for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
    b. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and flush the tubing, thus bleeding all air bubbles from the line.
    c. Open the IV to assure free flow of the fluid and then adjust the flow rate as clinically indicated.

Pediatric Cardioversion

Energy Selection

Physio-Control LifePak 12 and LifePak 15

COLOR	First	Second
Gray	8 J	15 J
Pink	15 J	30 J
Red	15 J	30 J
Purple	20 J	30 J
Yellow	30 J	50 J
White	30 J	70 J
Blue	30 J	70 J
Orange	50 J	100 J
Green	70 J	125 J
40kg	70 J	150 J
45kg	100 J	175 J

Note: Cardioversion in pediatric patients requires a Base Hospital order.

Pediatric Defibrillation

Energy Selection

Physio-Control LifePak 12 and LifePak 15

COLOR	First	Second	Maximum
Gray	**8 J**	**15 J**	**30 J**
Pink	15 J	30 J	50 J
Red	**15 J**	**30 J**	**70 J**
Purple	**20 J**	**30 J**	**100 J**
Yellow	30 J	50 J	125 J
White	30 J	70 J	175 J
Blue	30 J	70 J	200 J
Orange	50 J	100 J	250 J
Green	70 J	125 J	300 J
40kg	70 J	150 J	360 J
45kg	100 J	175 J	360 J

Pediatric Weight Conversion

Always document weight in kg

COLOR	Kilograms	Pounds
Gray	3 – 5 kg	6 -11 lbs
Pink	6 – 7 kg	13 – 15 lbs
Red	8 – 9 kg	17 – 20 kg
Purple	10 – 11 kg	22 – 25 lbs
Yellow	12 – 14 kg	27 – 32 lbs
White	15 – 18 kg	34 – 41 lbs
Blue	19 – 23 kg	42 – 52 lbs
Orange	24 – 29 kg	54 – 65 lbs
Green	30 – 36 kg	37 – 80 lbs
40kg	40 kg	90 lbs
45kg	45 kg	101 lbs

Adenosine

Indication: SVT

Concentration = 3 mg/ml

COLOR	Doses (mg)	Give (ml)
Gray	0.45 mg	1st 0.15 ml
	0.9 mg	2nd 0.3 ml
Pink	0.66 mg	1st 0.22 ml
	1.35 mg	2nd 0.45 ml
Red	0.9 mg	1st 0.3 ml
	1.8 mg	2nd 0.6 ml
Purple	1 mg	1st 0.33 ml
	2mg	2nd 0.67 ml
Yellow	1.35 mg	1st 0.45 ml
	2.7 mg	2nd 0.9 ml
White	1.7 mg	1st 0.6 ml
	3.4 mg	2nd 1.2 ml
Blue	2.1 mg	1st 0.7 ml
	4.2 mg	2nd 1.4 ml
Orange	2.7 mg	1st 0.9 ml
	5.4 mg	2nd 1.8 ml
Green	3.3 mg	1st 1.1 ml
	6.6 mg	2nd 2.2 ml
40kg	4mg	1st 1.3 ml
	8mg	2nd 2.7 ml
45kg	4.5 mg	1st 1.5 ml
	9 mg	2nd 3 ml

Note: Immediately follow with a rapid 10-20ml NS bolus.

Amiodarone

Indication: V-Fib

Concentration = 50 mg/ml

COLOR	Doses (mg)	Give (ml)
Gray	Not given	
Pink	35 mg	0.7 ml
Red	**45 mg**	**0.9 ml**
Purple	**50 mg**	**1 ml**
Yellow	65 mg	1.3 ml
White	80 mg	1.6 ml
Blue	100 mg	2 ml
Orange	130 mg	2.6 ml
Green	170 mg	3.4 ml
40kg	200 mg	4 ml
45kg	225 mg	4.5 ml

Atropine

Indication: Symptomatic Bradycardia/Overdose

Concentration = 0.1 mg/ml

Minimum Dose = 0.1 mg

Maximum Dose – 0.5 mg

COLOR	Doses (mg)	Give (ml)
Gray	**0.1 mg**	**1 ml**
Pink	0.13 mg	1.3 ml
Red	**0.17 mg**	**1.7 ml**
Purple	**0.2 mg**	**2 ml**
Yellow	0.25 mg	2.5 ml
White	0.35 mg	3.5 ml
Blue	0.42 mg	4.2 ml
Orange	0.5 mg	5 ml
Green	0.5 mg	5 ml
40kg	0.5 mg	5 ml
45kg	0.5 mg	5 ml

Note: Ensure adequate ventilation before considering Atropine. **NOT** indicated for asystole.

Dextrose 10%

Indication: Hypoglycemia

Concentration = 0.1 g/ml

COLOR	Doses (mg)	Give (ml)
Gray	2 g	20 ml
Pink	3.5 g	35 ml
Red	4.5 g	45 ml
Purple	5.5 g	55 ml
Yellow	6.5 g	65 ml
White	8.5 g	85 ml
Blue	10 g	100 ml*
Orange	10 g	100 ml*
Green	10 g	100 ml*
40kg	10 g	100 ml*
45kg	10 g	100 ml*

Note: *A repeat dose equal to the initial dose and be required based on repeat BGL.

Diphenhydramine

Indication: Allergic Reaction

Concentration = 50 mg/ml

COLOR	Doses (mg)	Give (ml)
Gray	5 mg	0.1 ml
Pink	6.5 mg	0.13 ml
Red	8.5 mg	0.17 ml
Purple	10 mg	0.2 ml
Yellow	12.5 mg	0.25 ml
White	17.5 mg	0.35 ml
Blue	20 mg	0.4 ml
Orange	35 mg	0.5 ml
Green	0.5 mg	0.7 ml
40kg	40 mg	0.8 ml
45kg	45 mg	0.9 ml

Note: Utilize Epinephrine 1: 1,000 IM first if patient is in anaphylaxis. Consider giving one-half dose Diphenhydramine if patient has taken or been given full dose within one hour.

Epinephrine 1:1,000

Indication: Anaphylaxis and Severe Asthma

NEVER GIVE EPINEPHRINE 1:1,000 VIA IV ROUTE

Concentration = 1 mg/ml

Maximum Dose = 0.3mg IM

COLOR	Doses (mg)	Give (ml)
Gray	0.04 mg	0.04 ml
Pink	0.06 mg	0.06ml
Red	0.08 mg	0.08 ml
Purple	0.1 mg	0.1 ml
Yellow	0.13 mg	0.13 ml
White	0.17 mg	0.17 ml
Blue	0.21 mg	0.21 ml
Orange	0.27 mg	0.27 ml
Green	0.3 mg	0.3 ml
40kg	0.3 mg	0.3 ml
45kg	0.3 mg	0.3 ml

Note: Subcutaneous administration of Epinephrine 1:1,000 is no longer authorized.

Epinephrine 1:10,000

Indication: Cardiac Arrest

Concentration = 0.1 mg/ml

COLOR	Doses (mg)	Give (ml)
Gray	0.04 mg	0.4 ml**
Pink	0.06 mg	0.6ml**
Red	0.08 mg	0.8 ml**
Purple	0.1 mg	1 ml
Yellow	0.13 mg	1.3 ml
White	0.17 mg	1.7 ml
Blue	0.21 mg	2.1 ml
Orange	0.27 mg	2.7 ml
Green	0.33 mg	3.3 ml
40kg	0.4 mg	4 ml
45kg	0.45 mg	4.5 ml

Note: Epinephrine 1:10,000 is also used in anaphylactic shock if IM treatment is ineffective.

** In anaphylactic shock:

- Patients under 10kg receive smaller increments (same as single dose for cardiac arrest.
- For patients ≥ 10kg, administer in 0.1mg increments (1ml).

Fentanyl (IM/IV)

Indication: Pain Management

Concentration = 50 mcg/ml

Single dose only – Repeat doses require Base Hospital order

COLOR	Doses (mg)	Give (ml)
Gray	Not given	
Pink	6 mcg	0.12 ml
Red	8 mcg	0.16 ml
Purple	10 mcg	0.2 ml
Yellow	12.5 mcg	0.25 ml
White	15 mcg	0.3 ml
Blue	20 mcg	0.4 ml
Orange	25 mcg	0.5 ml
Green	35 mcg	0.7 ml*
40kg	40 mcg	0.8 ml*
50kg	45 mcg	0.9 ml*

Note: *Doses greater than 25mcg can be titrated to effect beginning with 25mcg increments.

Fentanyl (IN)

Indication: Pain Management

Concentration = 50 mcg/ml

Single dose only – Repeat doses require Base Hospital order

COLOR	Doses (mg)	Give (ml)
Gray	Not given	
Pink	9 mcg	0.18 ml
Red	**12 mcg**	**0.24 ml**
Purple	**15mcg**	**0.3 ml**
Yellow	20 mcg	0.4 ml
White	25 mcg	0.5 ml
Blue	30 mcg	0.6 ml*
Orange	40 mcg	0.8 ml*
Green	50 mcg	1 ml*
40kg	60 mcg	1.2 ml*
50kg	70 mcg	1.4 ml*

Note: *Doses greater than 25mcg (0.5ml) can be titrated to effect beginning with 25mcg increments.

Fluid Bolus

Indication: Shock/Hypotension

Maximum single bolus = 500ml

COLOR	Give (ml)
Gray	80 ml
Pink	130 ml
Red	170 ml
Purple	210 ml
Yellow	260 ml
White	340 ml
Blue	420 ml
Orange	500ml
Green	500ml
40kg	500 ml
45kg	500 ml

Glucagon

Indication: Hypoglycemia
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

Lidocaine

Indication: Pain Management for Placement of IO

(Not for patients in cardiac arrest)
Concentration = 2% (100mg/5ml)

COLOR	Doses (mg)	Give (ml)
Gray	Not given	
Pink	3 mg	0.15 ml
Red	4 mg	0.2 ml
Purple	5 mg	0.25 ml
Yellow	7 mg	0.35 ml
White	9 mg	0.45ml
Blue	10 mg	0.5 ml
Orange	14 mg	0.7 ml
Green	16 mg	0.8 ml
40kg	20 mg	1 ml
50kg	20 mg	1 ml

Midazolam

Indication: Seizure/Sedation for Cardioversion/Sedation for Advanced Airway

Concentration = 5 mg/ml

COLOR	Doses (mg)	Give (ml)
Gray	0.5 mg	0.1 ml
Pink	0.75 mg	0.15 ml
Red	0.85 mg	0.17 ml
Purple	1 mg	0.2 ml
Yellow	1.25 mg	0.25 ml
White	1.75 mg	0.35 ml
Blue	2 mg	0.4 ml
Orange	2.75 mg	0.55 ml
Green	3.25 mg	0.65 ml
40kg	4 mg	0.8 ml
50kg	4.5 mg	0.9 ml

Note: Titrate dosage in 0.5 – 1mg increments to desired effect (seizure cessation) or 5mg maximum dose.

Naloxone

Indication: Respiratory Depression

Concentration = 1 mg/ml

Maximum single dose = 2mg

COLOR	Doses (mg)	Give (ml)
Gray	0.4 mg	0.4 ml
Pink	0.7 mg	0.7 ml
Red	0.9 mg	0.9 ml
Purple	1 mg	1ml
Yellow	1.3 mg	1.3 ml
White	1.7 mg	1.7 ml
Blue	2 mg	2 ml
Orange	2 mg	2 ml
Green	2 mg	2 ml
40kg	2 mg	2 ml
50kg	2 mg	2 ml

Note: Naloxone is available in multiple concentrations. This chart is intended for a 1mg/ml concentration.

Ondansetron ODT

Indication: Nausea/Vomiting

Concentration = 4mg tablet

Maximum single dose = 4mg

COLOR	Doses (mg)	Give (ml)
Gray	Not indicated	Not indicated
Pink	Not indicated	Not indicated
Red	Not indicated	Not indicated
Purple	Not indicated	Not indicated
Yellow	Not indicated	Not indicated
White	4 mg	1 tablet
Blue	4 mg	1 tablet
Orange	4 mg	1 tablet
Green	4 mg	1 tablet
40kg	4 mg	1 tablet
50kg	4 mg	1 tablet

Note: Ondansetron is not indicated for motion sickness.

Ondansetron

Indication: Nausea/vomiting

Concentration = 2 mg/ml

Maximum single dose = 4mg

COLOR	Doses (mg)	Give (ml)
Gray	Not indicated	Not indicated
Pink	Not indicated	Not indicated
Red	Not indicated	Not indicated
Purple	Not indicated	Not indicated
Yellow	Not indicated	Not indicated
White	1 mg	0.5 ml
Blue	2 mg	1 ml
Orange	2 mg	1 ml
Green	3 mg	1.5 ml
40kg	4 mg	2 ml
50kg	4 mg	2 ml

Note: Ondansetron is not indicated for motion sickness. May be repeated x1 for patients ≥ 40kg.

Approved Abbreviations

ABBREVIATION	DEFINITION
>	Is greater than
<	Is less than
≥	Is greater than or equal to
≤	Is less than or equal to
ACLS	Advanced Cardiopulmonary Life Support
AED	Automated External Defibrillator
ALS	Advanced Life Support
AMA	Against Medical Advice
AMI	Acute Myocardial Infarction
AMS	Altered Mental Status
APS	Adult Protective Services
BHP	Base Hospital Physician
BLS	Basic Life Support
BP	Blood Pressure
BPM	Beats Per Minute
BSA	Body Surface Area
BSI	Body Substance Isolation
BVM	Bag Valve Mask
CAB	Circulation, Airway, Breathing
CAD	Computer Aided Dispatch
CHF	Congestive Heart Failure
CHO	UCSF Benioff Children's Hospital of Oakland
CHP	California Highway Patrol
COPD	Chronic Obstructive Pulmonary Disease
CPAP	Continuous Positive Airway Pressure
CPR	Cardiopulmonary Resuscitation
CPS	Child Protective Services
CT	Computed Tomography
CVA	Cerebral Vascular Accident
DNR	Do Not Resuscitate

Approved Abbreviations

ABBREVIATION	DEFINITION
ECG	Electrocardiogram
ED	Emergency Department
EHR	Electronic Health Record
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMTALA	Emergency Medical Treatment and Active Labor Act
EOA	Exclusive Operating Area
ETA	Estimated Time of Arrival
$EtCO_2$	End Tidal Carbon Dioxide
ETT	Endotracheal Tube
GCS	Glasgow Coma Score
H_20	Water
HIPAA	Health Insurance Portability and Accountability Act
HR	Heart Rate (as depicted on an ECG) – not to be confused with pulse rate
IC	Incident Commander
ICS	Incident Command System
IFT	Inter-facility Transfer
IM	Intramuscular
IN	Intranasal
IO	Intraosseous
IV	Intravenous
IVP	Intravenous Piggyback
LOC	Level of Consciousness
MCI	Multi Casualty Incident
MHOAC	Medical/Health Operational Area Coordinator
MOI	Mechanism of injury
NIMS	National Incident Management System
NREMT	National Registry of Emergency Medical Technicians
NS	Normal Saline
NTG	Nitroglycerin

Approved Abbreviations

ABBREVIATION	DEFINITION
PALS	Pediatric Advanced Life Support
PMS	Pulse, motor, and sensation
PO	Periorally
PPE	Personal Protective Equipment
PPV	Positive Pressure Ventilation
PR	Pulse rate (manually obtained) – not to be confused with heart rate
PSAP	Primary Service Answering Point (9-1-1)
QA	Quality Assurance
QI	Quality Improvement
RIVP	Rapid Intravenous Push
RN	Registered Nurse
ROSC	Return of Spontaneous Circulation
RR	Respiratory Rate
SBP	Systolic Blood Pressure
SEMS	Standardized Emergency Management System
SIDS	Sudden Infant Death Syndrome
SIVP	Slow Intravenous Push
SL	Sublingual
SMR	Spinal Motion Restriction
SOB	Shortness of Breath
SpO_2	Pulse Oximeter Oxygen Concentration
SC	Subcutaneous
SRC	STEMI Receiving Center
STEMI	ST-Segment Elevation Myocardial Infarction
TKO	To Keep Open
V-Fib	Ventricular Fibrillation
V-Tach	Ventricular Tachycardia

Adult Drug Reference

Drug	Indication	Dosing	Cautions	Comments
Adenosine	Narrow complex tachycardia	Initial – 6 mg rapid IV Repeat – 12 mg rapid IV Follow each dose with 20 ml NS rapid IV	May cause transient heart block or asystole. Use ½ dose for patients taking carmbamazepine or dipyramidole. Do not administer if patient is experiencing acute asthma exacerbation.	Side effects include: chest pressure/pain, palpitations, hypotension, dyspnea, or feeling of impending doom.
Albuterol	Bronchospasm	5mg nebulized Repeat as needed	Use caution in patients taking MAOIs (antidepressants Phenelzine and Tarnylcypromine)	None
	Crush injury/ Hyperkalemia	10 mg nebulized continuously		
Aspirin	Chest pain – suspected cardiac or STEMI	324 mg PO	Contraindicated in aspirin or salicylate allergy.	Blood thinner use is not a contraindication.
Atropine	Symptomatic bradycardia	Initial – 0.5 mg IV/IO Repeat every 3-5 min. to a max of 3 mg	Doses less than 0.5mg can cause paradoxical bradycardia.	Can dilate pupils, aggravate glaucoma, cause urinary retention, confusion, and dysrhythmias including V-Tach and V-Fib. Increases myocardial oxygen consumption. Bradycardia in children is primarily related to respiratory issues – assure adequate ventilation first.
	Organophosphate overdose	Initial – 1-2 mg IV/IO/IM Repeat every 3-5 min. until relief of symptoms is achieved		
Calcium Chloride	Calcium channel blocker OD	1 g IV/IO over 60 seconds	Use cautiously or not at all in patients on digitalis. Avoid extravasation. Rapid administration can cause dysrhythmias or arrest.	None
	Crush injury			
	Hyperkalemia			

Adult Drug Reference

Drug	Indication	Dosing	Cautions	Comments
Dextrose 10%	Hypoglycemia	Initial – 100 ml IV Repeat – 150 ml if glucose remains ≤ 70 mg/dl and patient remains altered	Can cause tissue necrosis if IV is infiltrated	Recheck blood glucose after administration.
Diphenhydramine	Allergic reaction	50 mg IV/IO/IM	None	May cause drowsiness
	For nausea in pregnancy < 20 weeks	25 mg IV/IO/IM		
	Dystonic reaction	25-50 mg IV/IO or 50 mg IM		
Dopamine	Persistent hypotension unrelated to hypovolemia *or* symptomatic bradycardia	400 mg in 250 ml NS Infuse at 5-20 mcg/kg/min titrated to response	None	None
Epi 1:1,000	Anaphylaxis	0.3 mg IM	Never administer IV/IO. Use with caution in asthma patients with a history of hypertension or coronary artery disease. May cause serious dysrhythmias or exacerbate angina.	None
	Asthma/COPD or respiratory distress			
	Stridor	1 ml mixed with 3ml saline nebulized		
Epi 1:10,000	Cardiac arrest	1 mg IV/IO every 3-5 min.	May cause serious dysrhythmias or exacerbate angina. In adult anaphylactic patients, should be used if patient is hypotensive or no improvement after two (2) Epi 1:1,000 IM doses.	None
	Cardiac arrest/ Bradycardia			
	Anaphylaxis	0.1 mg slow IV/IO May repeat every 3-5 min. as needed to a max of 0.5 mg		

Adult Drug Reference

Drug	Indication	Dosing	Cautions	Comments
EpiPen	Allergic reaction/ Anaphylaxis	1 auto-injector	See Epinephrine 1:1,000 and Epinephrine 1:10,000	See Epinephrine 1:1,000 and Epinephrine 1:10,000
Fentanyl	Pain control	IV/IO – 50 mcg initial May repeat every 5 min. to max of 200 mcg or IM – 50 mcg initial May repeat after 10 min. to max of 100 mcg or IN – 50 mcg (½ each nare) Do not repeat	Contraindicated in SBP < 90mmHg, child birth or active labor, sudden onset of severe headache, AMS, suspected closed head injury. Can cause hypotension or respiratory depression.	Recheck vital signs between each dose. Hypotension is more common in patients with low cardiac output or volume depletion. Respiratory depression is reversible with naloxone.
Glucagon	Hypoglycemia	IM – 1 mg May repeat x 1 after 10 min.	None	Effect may be delayed 15-20 minutes
	Symptomatic Beta Blocker overdose	IV/IO/IM – 1-3 mg Do not repeat		
Glucose paste	Hypoglycemia	24 g PO	Not indicated with AMS or if patient cannot swallow	None
Glucola	Hypoglycemia	50 g PO	Not indicated with AMS or if patient cannot swallow	None
Lidocaine	Persistent V-Fib	1-1.5 mg/kg IV/IO May repeat 0.5 mg/kg to a maximum of 3 mg/kg	Use caution with bradycardia. Can cause cardiac dysrhythmia	None
	IO anesthetic	40 mg IO		
Midazolam	Seizure	IM – 10 mg May repeat x1 after 5 min. or IN – 10 mg (½ each nare) May repeat x1 after 5 min. or IV if established – 5 mg May repeat x1 after 5 min.	Use caution in patients over 60 years of age.	Monitor respiratory status after administration.

Adult Drug Reference

Drug	Indication	Dosing	Cautions	Comments
Midazolam	Agitated delirium	5 mg IM/IN May repeat x1 after 5 min.	Use caution in patients over 60 years of age.	Monitor respiratory status after administration.
	Sedation for pacing or cardioversion	2.5 mg IV/IO May repeat to a max of 5 mg		
	Sedation of patient with an advanced airway	2.5 mg IV/IO May repeat to a max of 5 mg		
	Dizziness/vertigo	2.5 mg IV/IN	Do not administer if patient is > 50 for dizziness/vertigo	
Naloxone	Respiratory depression or apnea associated with suspected opioid overdose	IN – 2 mg ½ dose each nare or IM/IV – 1-2 mg	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 autoinjector/preload	Overdose	1 preload syringe	See Naloxone	See Naloxone
Nitroglycerin	Chest pain	0.4 mg SL May repeat as needed every 5 min.	Can cause hypotension and headache. Do not administer if systolic BP < 110mmHg or heart rate < 50. Do not administer if patient has taken Viagra, Levitra, Staxyn, or Stendra within past 24 hours or Cialis if taken within 36 past hours.	None
	Pulmonary edema	0.4 mg SL if systolic BP > 110mmHg 0.8 mg SL if systolic BP > 150mmHg May repeat appropriate dose every 5 min.		
Ondansetron	Vomiting or severe nausea	4 mg IV/IO/IM/ODT May repeat after 15 min. to a maximum of 12 mg	Administer IV/IO dose over 1 minute as rapid administration may cause syncope.	For patients with nausea who are < 20 weeks pregnant, consider Diphenhydramine
	Nausea in > 20 weeks pregnant			

Adult Drug Reference

Drug	Indication	Dosing	Cautions	Comments
Sodium Bicarbonate	Tricyclic antidepressant overdose	1 mEq/kg IV/IO	Can precipitate with or inactivate other drugs.	Use only if life-threatening or in the presence of hemodynamically significant dysrhythmias.
	Crush injury			
	Hyperkalemia			
	Cardiac arrest with known renal failure			
Valium	Hazmat/WMD exposure	Refer to dosing guide attached to ChemPak kit	None	None

San Mateo County Emergency Medical Services

Assess and Refer – COVID-19

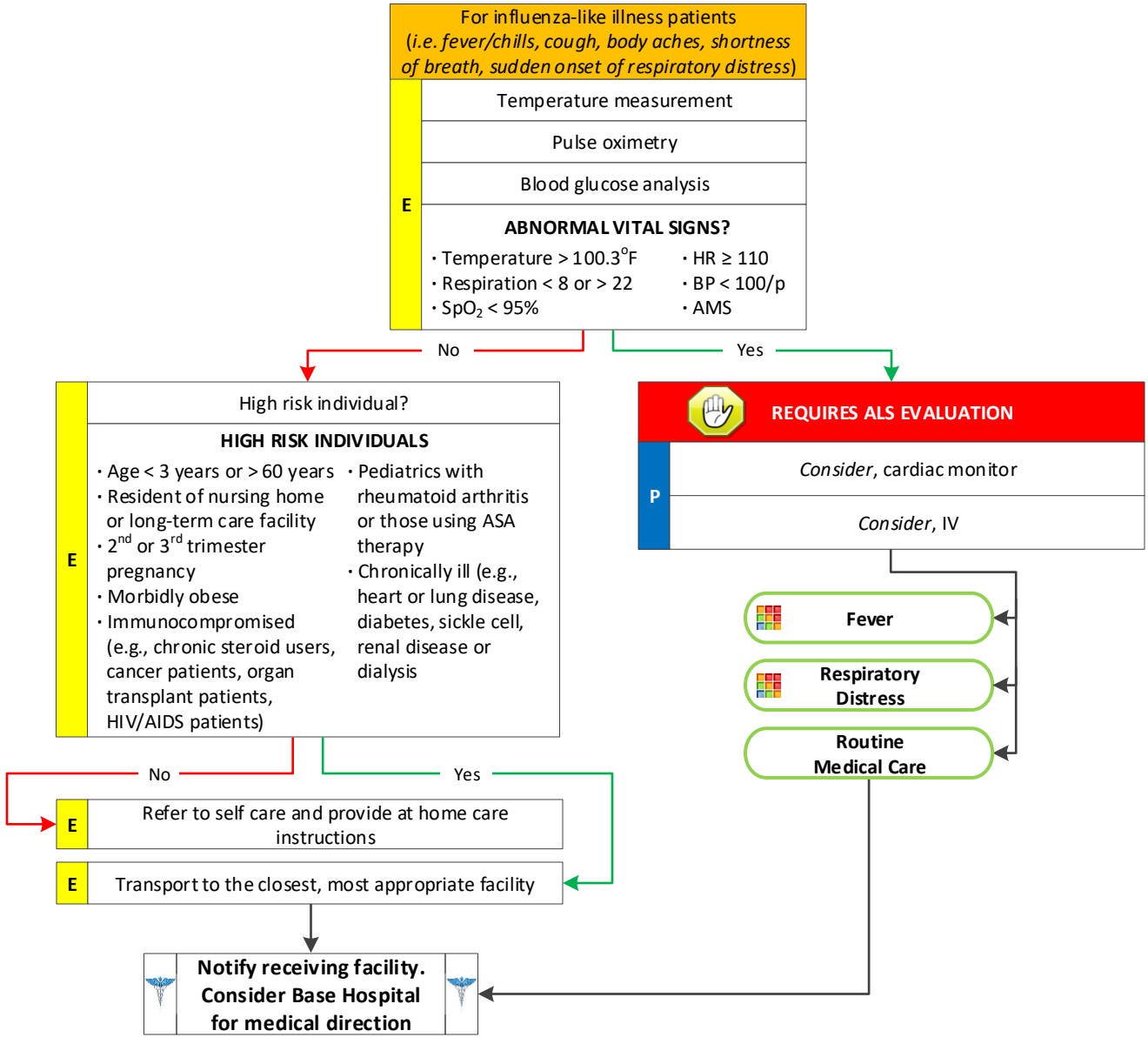
For influenza-like illness symptoms

History
- Age
- Duration of symptoms
- Maximum temperature
- Past medical history
- Medications
- Immunocompromised (e.g., transplant, HIV, diabetes, cancer)
- Risk factors (pregnant or morbidly obese)
- Last acetaminophen/ibuprofen/aspirin

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

Associated Symptoms (helpful to localize source)
- Malaise, cough, shortness of breath, or sudden onset of respiratory distress

Differential
- Influenza
- COVID-19
- Infection/sepsis
- Travel illness (e.g., Malaria, Ebola)

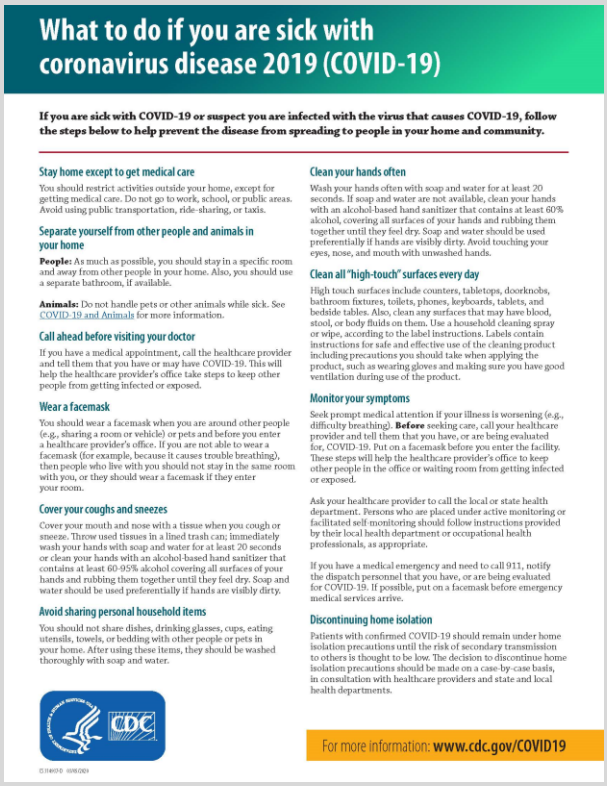


Epidemic/Pandemic Medical Treatment Protocols

Assess and Refer – COVID-19

For reported or tactile influenza-like illness symptoms

Suitability assessment for home care
· Appropriate caregivers are available, if needed · Patient is competent · There is an isolated room where the patient can recover · Access to food, water, bathroom facilities and other necessities · No household members with high risk conditions (see medical history) · **If suitable, leave at home with instructions**
If sending home from a public location
· Place surgical mask on patient · Have patient transport themselves home while minimizing exposure to others · Discourage public transportation



What to do if you are sick with coronavirus disease 2019 (COVID-19)

If you are sick with COVID-19 or suspect you are infected with the virus that causes COVID-19, follow the steps below to help prevent the disease from spreading to people in your home and community.

Stay home except to get medical care

You should restrict activities outside your home, except for getting medical care. Do not go to work, school, or public areas. Avoid using public transportation, ride-sharing, or taxis.

Separate yourself from other people and animals in your home

People: As much as possible, you should stay in a specific room and away from other people in your home. Also, you should use a separate bathroom, if available.

Animals: Do not handle pets or other animals while sick. See COVID-19 and Animals for more information.

Call ahead before visiting your doctor

If you have a medical appointment, call the healthcare provider and tell them that you have or may have COVID-19. This will help the healthcare provider's office take steps to keep other people from getting infected or exposed.

Wear a facemask

You should wear a facemask when you are around other people (e.g., sharing a room or vehicle) or pets and before you enter a healthcare provider's office. If you are not able to wear a facemask (for example, because it causes trouble breathing), then people who live with you should not stay in the same room with you, or they should wear a facemask if they enter your room.

Cover your coughs and sneezes

Cover your mouth and nose with a tissue when you cough or sneeze. Throw used tissues in a lined trash can; immediately wash your hands with soap and water for at least 20 seconds or clean your hands with an alcohol-based hand sanitizer that contains at least 60-95% alcohol covering all surfaces of your hands and rubbing them together until they feel dry. Soap and water should be used preferentially if hands are visibly dirty.

Avoid sharing personal household items

You should not share dishes, drinking glasses, cups, eating utensils, towels, or bedding with other people or pets in your home. After using these items, they should be washed thoroughly with soap and water.

Clean your hands often

Wash your hands often with soap and water for at least 20 seconds. If soap and water are not available, clean your hands with an alcohol-based hand sanitizer that contains at least 60% alcohol, covering all surfaces of your hands and rubbing them together until they feel dry. Soap and water should be used preferentially if hands are visibly dirty. Avoid touching your eyes, nose, and mouth with unwashed hands.

Clean all "high-touch" surfaces every day

High touch surfaces include counters, tabletops, doorknobs, bathroom fixtures, toilets, phones, keyboards, tablets, and bedside tables. Also, clean any surfaces that may have blood, stool, or body fluids on them. Use a household cleaning spray or wipe, according to the label instructions. Labels contain instructions for safe and effective use of the cleaning product including precautions you should take when applying the product, such as wearing gloves and making sure you have good ventilation during use of the product.

Monitor your symptoms

Seek prompt medical attention if your illness is worsening (e.g., difficulty breathing). **Before** seeking care, call your healthcare provider and tell them that you have, or are being evaluated for, COVID-19. Put on a facemask before you enter the facility. These steps will help the healthcare provider's office to keep other people in the office or waiting room from getting infected or exposed.

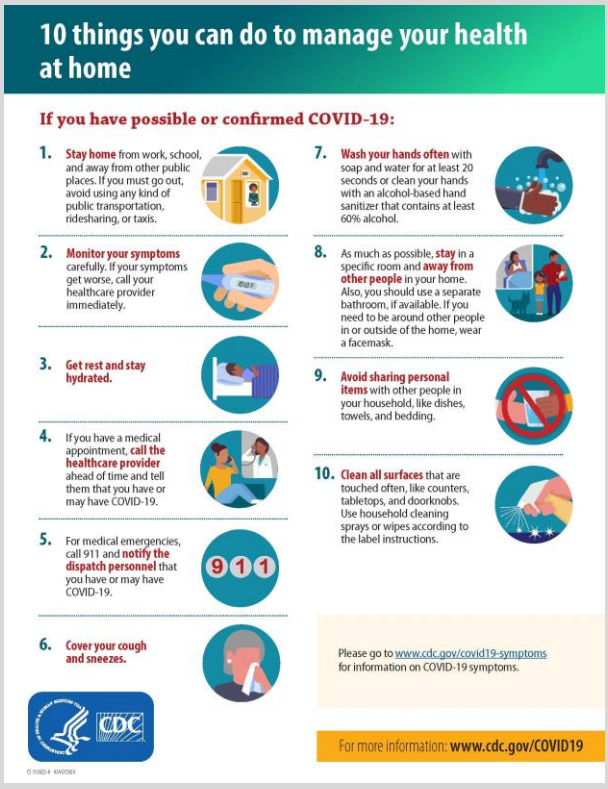
Ask your healthcare provider to call the local or state health department. Persons who are placed under active monitoring or facilitated self-monitoring should follow instructions provided by their local health department or occupational health professionals, as appropriate.

If you have a medical emergency and need to call 911, notify the dispatch personnel that you have, or are being evaluated for COVID-19. If possible, put on a facemask before emergency medical services arrive.

Discontinuing home isolation

Patients with confirmed COVID-19 should remain under home isolation precautions until the risk of secondary transmission to others is thought to be low. The decision to discontinue home isolation precautions should be made on a case-by-case basis, in consultation with healthcare providers and state and local health departments.

For more information: **www.cdc.gov/COVID19**



10 things you can do to manage your health at home

If you have possible or confirmed COVID-19:

1. **Stay home** from work, school, and away from other public places. If you must go out, avoid using any kind of public transportation, ridesharing, or taxis.
2. **Monitor your symptoms** carefully. If your symptoms get worse, call your healthcare provider immediately.
3. **Get rest and stay hydrated.**
4. If you have a medical appointment, **call the healthcare provider** ahead of time and tell them that you have or may have COVID-19.
5. For medical emergencies, call 911 and **notify the dispatch personnel** that you have or may have COVID-19.
6. **Cover your cough and sneezes.**
7. **Wash your hands often** with soap and water for at least 20 seconds or clean your hands with an alcohol-based hand sanitizer that contains at least 60% alcohol.
8. As much as possible, **stay** in a specific room and **away from other people** in your home. Also, you should use a separate bathroom, if available. If you need to be around other people in or outside of the home, wear a facemask.
9. **Avoid sharing personal items** with other people in your household, like dishes, towels, and bedding.
10. **Clean all surfaces** that are touched often, like counters, tabletops, and doorknobs. Use household cleaning sprays or wipes according to the label instructions.

Please go to www.cdc.gov/covid19-symptoms for information on COVID-19 symptoms.

For more information: **www.cdc.gov/COVID19**

Pearls

- Leave person with stay at home instruction sheet.
- Check "Treat and Defer" box in MEDS.
- Individuals with normal vital signs can be left at home if the guidelines of a suitability assessment for home care are met. Do not have the person sign an AMA if they meet assess and refer criteria and they are remaining/going home..
- If the patient does not meet the suitability assessment for home care guidelines, consider alternate housing options that meet guidelines that may be available (e.g., other family member's home, neighbor's home, fully functional RV with appropriate power, water, sewer connections)

Assess and Refer – COVID-19

San Mateo County Medical Clinics

Clinic Name	Address	Phone Number	Hours
Coastside Clinic	225 S. Cabrillo Highway, Suite 100A Halfmoon Bay	(650) 573-3941	Mon – Wed: 8:00 am – 5:00 pm Thu: 8:00 am – 8:00 pm Fri: 8:00 am – 5:00 pm Sat: 8:00 am – 4:00 pm
Daly City Health Center	380 90th Street Daly City	(650) 301-8600	Mon – Fri: 8:00am – 5:00pm
Daly City Youth Health Center	350 90th Street, Third Floor Daly City	(650) 877-5700	Mon – Fri: 8:00am – 5:00pm
Edison Clinic	222 W. 39th Avenue, First Floor San Mateo	(650) 573-2385	By appointment only Mon – Fri: 9:00am – 3:30pm
Fair Oaks Health Center	2710 Middlefield Road Redwood City	(650) 578-7141	By appointment only Mon – Fri: 8:00am – 7:00pm
San Mateo Medical Center	222 W. 39th Avenue San Mateo	(650) 573-2222	By appointment only
Innovative Care Clinic	222 W. 39th Avenue, Third Floor San Mateo	(650) 573-3702	By appointment only Mon – Fri: 8:00am – 5:00pm
Medical Specialty Clinic	222 W. 39th Avenue, Second Floor San Mateo	(650) 573-3982	By appointment only Mon – Fri: 8:00am – 4:30pm
Pediatric Clinic	222 W. 39th Avenue, Third Floor San Mateo	(650) 573-3702	Mon/Wed/Fri: 8:00am – 5:00pm Tue/Thu: 8:00am – 8:00pm
Senior Care Clinic	222 W. 39th Avenue, Third Floor San Mateo	(650) 573-2426	Mon – Fri: 8:00am – 5:00pm
Sequoia Teen Wellness Center	200 James Avenue Redwood City	(650) 366-2927	Mon – Fri: 8:30am – 4:30pm
South San Francisco Clinic	306 Spruce Avenue South San Francisco	(650) 877-7070	Mon – Fri: 8:00am – 5:00pm