

PATIENT TRANSFER AND TRANSPORTATION

Purpose

- To provide guidance regarding the movement of injured patients from non-trauma facilities to trauma facilities, from one level of trauma facility to a different level of trauma facility, and to review the availability of transportation for those purposes

Related Policies

- Interfacility Transfer, GPC 5
- EMS Aircraft, 5100
- Trauma Re-Triage, Adult, 4606A
- Trauma Re-Triage, Pediatric, 4604B

Definitions

- **Non-trauma facilities** are acute care facilities not holding a trauma center designation
- **Trauma facilities** are acute care facilities holding a trauma center designation of Level I, Level II, Level III, or EDAT

General Policy

- A. All acute care facilities in Marin County, as part of an inclusive trauma system, will provide care to injured patients and participate in the Trauma System Plan
- B. Prehospital care personnel will evaluate trauma patients on initial contact and determine the appropriate destination based on the apparent severity of the injury, the location of the patient, the time to transport to definitive care and the availability of transport resources related to the location of the appropriate facility
- C. Patient transfer may be accomplished in one of the following ways:
 - Transfer from a non-trauma facility to a trauma facility. To facilitate this type of patient transfer, a rapid re-triage for adults and pediatric patients may be used (see 4604A and B)
 - Transfer from a trauma facility to a trauma facility which a higher level of designation. 4606A and B may be used to identify the types of patients which may benefit from the transfer
 - Transfer after stabilization and initial care (per EMTALA regulations) to a like facility of the patient's choosing
 - Transfer after definitive care (per EMTALA regulations) to a non-trauma facility for on-going care. The transfer of patients from one facility to another must be based upon medical treatment decisions and not in whole or in part on the patient's financial or social status or their ability to pay for care or services. Decisions to transfer the patient at their request or the request of their insurer must, at all times, be made in the manner consistent with good medical practice
- D. As the lead agency, the Marin County EMS Agency will initiate and maintain contracts with Level I, Level II, and specialty care facilities on behalf of the Marin County Trauma System Plan
 - All contracts arranging for care of patients injured in Marin County will include provisions for the establishment of transfer guidelines indicating the type of patients or injuries anticipated to be transferred under the terms of the agreement

- Marin County facilities are required to have transfer agreements and to specify the type of patient or injury to be transferred under the terms of the agreement
 - Additional transfer agreements must include provisions assuring that required trauma data is provided to the transferring facility to complete data collection and quality improvement processes
- E. In all instances of patient transfer, it is the responsibility of the transferring facility to assure the following:
- That the transfers occur in accordance with all state and federal laws and regulations
 - That all pertinent patient records are transferred with the patient
 - That the receiving facility and receiving physician have accepted the patient
 - That the method of transfer is appropriate to the needs of the patient at the time that the transfer occurs
 - Arranging appropriate transportation for the patient
- F. If expected patient care is within Paramedic Scope of Practice and timely transfer is needed, contact 9-1-1 to request *Emergency Interfacility Transfer*. If expected patient care exceeds Paramedic Scope of Practice, contact appropriate transport agencies (CCT Transport) or arrange for nursing staff and/or MD to accompany paramedic or EMT during transport to the receiving facility
- Patients being transferred should receive during the transport a level of care and attention equivalent to the level of care necessary before and following the transfer
 - Level of care refers to the type of equipment and supplies needed and to the level of expertise of caregivers

TRAUMA TRIAGE AND DESTINATION

Purpose

- To provide additional explanation and guidance for the Marin County Trauma Triage Criteria Tool to help identify trauma patients in the field and based upon their injuries, direct their transport to an appropriate level of trauma care facility

Related Policies

- Service Area for Hospitals #4603
- Trauma Re-triage, Adult and Pediatric #4606A/B
- EMS Aircraft #5100
- Ambulance Diversion policy #5400
- Determination of Death, ATG 6
- Destination Guidelines, GPC 4
- Multi-Casualty Incident, GPC 12

Definitions

- **Designated Trauma Center** refers to an acute care facility holding designation as a Level I, Level II, Level III, or EDAT (Emergency Department Approved for Trauma). In Marin County, MarinHealth Medical Center is the designated Level III Trauma Center and Kaiser Permanente San Rafael Medical Center is the designated EDAT.
- **Provide Trauma Notification** means that field personnel will advise the trauma center as soon as possible of their impending arrival by providing a Trauma Notification (see Trauma Triage Tool)
- **Time closest facility** is that facility which can be reached in the shortest amount of time

General Policy

- A. It is the overall goal of the Marin County Trauma system to provide treatment of injured patients at Marin County hospitals
- B. Whenever physician consultation is indicated within this policy, contact shall be made with MarinHealth Medical Center Level III Trauma Center
- C. The following policy statements pertain to use of the Trauma Triage Tool (see 4613a)
 - Patients shall be determined to meet criteria for transport to a designated trauma center if they meet the criteria listed in the Trauma Triage Tool
 - Physician consultation is REQUIRED in the following circumstances:
 - I. The paramedic is unable to transport the patient to the indicated facility in an expedient manner
 - II. The paramedic assesses the patient and scene conditions and believes transport to a different level of care is indicated
 - III. Patient requests a facility not indicated by the Trauma Triage Criteria Tool
 - Physician consultation is RECOMMENDED whenever assistance in resolving treatment decisions or transport destinations is desired
 - Unmanageable airway: Patients with airway compromise unmanageable by BLS or ALS adjuncts will be transported to the closest receiving facility

- Traumatic Arrest: Determination of death can be made prior to, or immediately after, initiating resuscitation if:
 - I. In an MCI incident where START triage principles preclude initiation of CPR
 - Or if ALL of the following are present
 - II. A patient has sustained blunt, penetrating or profound multi-system trauma, or significant blood loss
 - III. Pulseless and/or apnea
 - IV. Absence of potentially reversible cause of arrest
- D. Destination for adult patients who meet Physiologic or Anatomic Criteria:
 - Transport to time closest trauma center
 - If the estimated ground transport time to the closest trauma center exceeds 30 minutes, consider use of air ambulance
 - I. Estimated ground transport time is evaluated from the time the patient is packaged and ready for transport. Consider traffic conditions, weather, and other relevant factors.
 - II. Estimated air transport time includes: minutes until arrival (if helicopter is not already on the ground); scene and load time of flight crew (typically 10 minutes); flight time to trauma center; and off-load time (typically 7-10 minutes). If helicopter is on the ground at the time the patient is ready for transport, then air transport time is evaluated as time to load, flight time to trauma center and time to off-load to the ED.
- E. For adult patients meeting mechanism of injury or additional factors criteria, transport to MarinHeath Medical Center
- F. Destination for pediatric patients who meet physiologic or anatomic criteria:
 - Transport directly to Children's Hospital Oakland (see Trauma Triage Tool)
 - If ETA (transport time) is anticipated to be >30 minutes, physician consultation should be obtained with the Level III trauma center to determine destination
- G. Incidents involving three or more patients meeting Physiologic or Anatomic Criteria will be handled in the following manner:
 - Use of air ambulance should be considered
 - Prehospital providers shall consult with the Level III trauma center regarding destinations
 - Patients that the Level III trauma center cannot accept should be transported to an out-of-county Level I or II trauma center in the most appropriate and expedient manner
 - If an incident is a Multi-Casualty Incident (MCI), prehospital providers will utilize the Multiple Patient Management Plan for destination guidelines. The term "Immediate Trauma Patient" will be used to describe an MCI patient that may need the services of a trauma center. The coordinating hospital should consider the capacity at the local and regional trauma centers when making destination decisions.
- H. The EDAT will be used for patients meeting mechanism of injury or additional factors trauma criteria that the Level III trauma center is unable to accept.

TRAUMA TRIAGE TOOL

Patients 14yrs and older

Uncontrolled Airway- Transport to closest Emergency Department

Major Physiologic Factors?

- GCS ≤ 13 (attributed to traumatic head injury)
- SBP < 90 mmHg
- Respiratory rate < 10 or > 29 breaths per min

Yes

Provide Trauma Notification and transport to closest trauma center: MarinHeath Medical Center (MHMC) by ground, or a Level II by air

No

Major Anatomic Factors?

- Penetrating injuries to head, neck, torso, or extremities proximal to elbow or knee
- Flail chest
- Two or more proximal long bone fractures
- Crushed, degloved, mangled or amputated extremity proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis (partial or complete)
- Burns with anatomic factors

Yes

No

Mechanism of Injury Factors?

- Falls > 20 ft (1 story = 10ft)
- High-risk auto crash and
 - Passenger space intrusion > 18 " ($> 12'$ occupant side)
 - Ejection (partial or complete) from vehicle
 - Death in same passenger compartment
- Auto vs. pedestrian or auto vs. bicyclist: thrown, run over, or with > 20 mph impact
- Motorcycle or bicycle crash: thrown and > 20 mph impact
- Burns with MOI factors

Yes

Provide Trauma Notification and transport to MHMC Level III Trauma Center

No

Additional factors?

Assessment of additional factors (e.g. age > 65 , anticoagulant use, antiplatelet use, bleeding disorders with head/torso injury, pregnancy > 20 wks, etc) or other complaints or exam findings cause paramedic to be concerned about the patient

Yes

Provide Trauma Notification and transport to MHMC Level III Trauma Center

No

Transport to closest ED or ED of patient's choice

Trauma Notification

- Field personnel will advise the trauma center a minimum of 10 minutes prior to arrival (or as soon as possible if transport is <10min) by providing a Trauma Notification. This information will be used to activate the trauma team. Communication with the hospital via MERA is preferred. The notification must include at a minimum the following information:
 - Medic unit and transport code
 - Trauma Notification
 - Patient age and gender
 - **M**- Mechanism of injury
 - **I**- Injury and/or complaints; significant injuries and findings
 - **V**- Vital signs; blood pressure, pulse, respiratory rate, GCS
 - **T**- Treatment/interventions
 - ETA

SPECIAL CONSIDERATIONS

- The clinical findings, including past medical history, are critical to identifying the trauma patient, especially when assessing Mechanism of Injury (MOI) and additional factors
- A thorough clinical assessment is especially important in patients with:
 - Persistent and unexplained respiratory difficulty, tachycardia, or peripheral vasoconstriction
 - Inability to communicate (e.g. language barrier, substance abuse or psychiatric impairment)
- There are MOI not identified in the Trauma Triage Tool that may be associated with trauma. Any fall or impact with significant velocity is likely to produce a candidate for trauma activation

☎ PHYSICIAN CONSULT

- Trauma Center consultation is recommended for questions about destinations for injured patients

PEDIATRIC TRAUMA TRIAGE TOOL

Pediatric Patients <14yrs

Uncontrolled Airway- Transport to closest Emergency Department

Major Physiologic Factors?

- GCS ≤13 (attributed to traumatic head injury)
- SBP <80mmHg age 7-14 or <70mmHg age <7
- Respiratory rate <20 in infant <1yr or requiring ventilatory support

Yes

Transport to Oakland Children's Hospital if ETA 30min or less, otherwise transport to MarinHealth Medical Center Level III Trauma center and provide Trauma Notification

No

Major Anatomic Factors?

- Penetrating injuries to head, neck, torso, or extremities proximal to elbow or knee
- Flail chest
- Two or more proximal long bone fractures
- Crushed, degloved, mangled or amputated extremity proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis (partial or complete)
- Burns with anatomic factors

Yes

No

Mechanism of Injury Factors?

- Falls >10ft or three times the height of the child
- High-risk auto crash and
 - Passenger space intrusion >18" (>12' occupant side)
 - Ejection (partial or complete) from vehicle
 - Death in same passenger compartment
- Auto vs. pedestrian or auto vs. bicyclist: thrown, run over, or with >20mph impact
- Motorcycle or bicycle crash: thrown and >20mph impact
- Burns with MOI factors

Yes

Provide Trauma Notification and transport to MHMC Level III Trauma Center

No

Additional factors?

Assessment of additional factors (e.g. anticoagulant use, anti-platelet use, bleeding disorders with head/torso injury, etc) or other complaints or exam findings cause paramedic to be concerned about the patient

Yes

No

Transport to closest ED or ED of patient's choice

Trauma Notification

- Field personnel will advise the trauma center a minimum of 10 minutes prior to arrival (or as soon as possible if transport is <10min) by providing a Trauma Notification. This information will be used to activate the trauma team. Communication with the hospital via MERA is preferred. The notification must include at a minimum the following information:
 - Medic unit and transport code
 - Trauma Notification
 - Patient age and gender
 - **M**- Mechanism of injury
 - **I**- Injury and/or complaints; significant injuries and findings
 - **V**- Vital signs; blood pressure, pulse, respiratory rate, GCS
 - **T**- Treatment/interventions
 - ETA

SPECIAL CONSIDERATIONS

- The clinical findings, including past medical history, are critical to identifying the trauma patient, especially when assessing Mechanism of Injury (MOI) and additional factors
- A thorough clinical assessment is especially important in patients with:
 - Persistent and unexplained respiratory difficulty, tachycardia, or peripheral vasoconstriction
 - Age <5yrs who has suffered major trauma but for whom it is not possible to fully determine physiologic status
 - Inability to communicate (e.g. language barrier, substance abuse or psychiatric impairment)
- There are MOI not identified in the Trauma Triage Tool that may be associated with trauma. Any fall or impact with significant velocity is likely to produce a candidate for trauma activation

☎ PHYSICIAN CONSULT

- Trauma Center consultation is recommended for questions about destinations for injured patients

EMS AIRCRAFT

Purpose

- To provide policy for integrating dispatch and utilization of aircraft into the Marin County EMS system as a specialized resource for prehospital response, transport, and care of patients. Aircraft utilization provides a valuable adjunct to the Marin County EMS System by minimizing the time to definitive care in prescribed circumstances.

Related Policies

- Emergency Medical Dispatch Policy, 4200
- Prehospital/Hospital Contact Policy, 7001
- Trauma Triage and Destination Guideline Policy, 4613

Authority

- California Administrative Code, Title 22, Divisions 2.5 and 9

Applicability

All aircraft providing prehospital patient transport within the Marin County EMS System must be authorized by the EMS agency in their county of origin, or by the EMS Authority, or by a United States Government agency

Policy

- A. The patient's condition, available ground resources, incident location in relation to receiving facility and call circumstances will be evaluated by caregivers in the field to determine if air transport is appropriate.
- B. The type of aircraft to be requested will be determined by the Incident Commander and/or the County Communications Center based on provider availability, response time criteria and nature of the service needed. See Appendix A.

Procedure for Aircraft Dispatch

- A. Aircraft will be dispatched simultaneously with ground units for specific circumstances as follows:
 - Area of the call is inaccessible to ground unit(s) or ground access is compromised;
 - Air assistance may be needed with rescue activities; or
 - Ground transport time to the hospital is > 30 minutes and the applicable Emergency Medical Dispatch Protocol (policy #4200, Appendix A) recommends simultaneous dispatch
 - Reported traumatic injury and Level III Trauma Center is on trauma diversion.
- B. Aircraft Dispatch may also occur in the following manner:
 - Upon request of the responding unit while en route to the scene.
 - Upon request of on-scene personnel following patient assessment

Procedure for Aircraft Use

- A. Consider use of an EMS aircraft where:
- A patient meets Trauma Triage Tool anatomic or physiologic criteria and the time closest facility is a Level II Trauma Center
 - Ground transport time is greater than 30 minutes
- B. Procedural Considerations
- EMS aircraft should not transport patients in cardiac arrest. Aircraft crew shall have discretion to transport patients receiving CPR in certain situations (refractory VF, unsafe scene conditions, hypothermia, etc)
 - Marin County Communications Center will notify law enforcement and fire agencies with jurisdiction over the landing zone
- C. Medical Control
- Treatment decisions will be made according to medical control policies and procedures governing the provider agency having responsibility for care

General and Related Procedures

- A. Marin County personnel may accompany a patient in an EMS aircraft during transport if all the following conditions are met:
- Personnel have been providing care for the patient prior to arrival of the aircraft
 - EMS aircraft crew will complete a PCR as required by policy/procedure within their county of origin and forward a copy to Marin County EMS Agency
- B. Patient care reports will be kept as follows:
- Marin County personnel will complete a Marin County PCR as per policy/procedure, and when known, forward it to the receiving hospital
 - EMS aircraft crew will complete a PCR as required by policy/procedure within their county of origin, and forward a copy to Marin County EMS Agency
- C. The following times, when available, will be relayed to and reordered by Marin County Communications Center:
- ETA at time of original dispatch request
 - When airborne, en route to scene
 - Arrival at scene
 - Destination hospital
 - Arrival at receiving hospital
- D. As part of the Quality Improvement Program, the EMS Agency will review all aircraft dispatches
- E. Aircraft may be utilized by acute care hospitals for interfacility transfers
- Hospitals will contact EMS aircraft providers directly
 - The hospital requesting an EMS aircraft will notify the Marin County Communications Center of aircraft activity so fire and law enforcement agencies can be notified of the probably aircraft landing site
 - Hospitals shall notify the Marin County EMS Agency of interfacility transfers by EMS aircraft on an annual basis

APPENDIX A

Provider List and Classification Definitions

Provider Name	Classification	Function	Staffing	Location
Stanford University Hospital Helicopter (LIFEFLIGHT)	Air Ambulance	Medical	Pilot Flight Nurses (2)	Palo Alto
California Shock/Trauma Air Rescue (CALSTAR)	Air Ambulance	Medical	Pilot Critical Care Nurses (2)	Concord
Redwood Empire Air Care Helicopter (REACH)	Air Ambulance	Medical	Pilot Critical Care Nurse Paramedic	Santa Rosa Concord
Sonoma County Sheriff's Department Helicopter (Henry 1)	ALS Rescue	Law Long-line Rescue Medical	Pilot Paramedic EMT	Santa Rosa
California Highway Patrol Helicopter (H-30)	ALS Rescue	Law Medical	Pilot Paramedic	Napa
U.S. Coast Guard Helicopter	Auxiliary	Long-line Rescue Water Rescue	Pilot (2) EMT Rescue Swimmer	San Francisco Airport

Classification Definitions

- A. **Air Ambulance** means any aircraft specifically constructed, modified, or equipped and used for the primary purpose of responding to emergency calls and transporting critically ill or injured patients whose medical flight crew has at a minimum two attendants certified or licensed in advanced life support
- B. **Rescue Craft** means an aircraft whose usual function is not prehospital emergency medical transport but which may be utilized for prehospital emergency patient transport when use of an air or ground ambulance is inappropriate or unavailable
- C. **ALS Rescue Aircraft** means a rescue aircraft that is equipped to provide ALS service, staffed with a minimum of one ALS medical flight crew member
- D. **Air Rescue Service** means an air service used for emergencies including search and rescue
- E. **BLS Rescue Service** means a rescue aircraft whose medical crew has, at a minimum, on attendant certifies as an EMT-1
- F. **Auxiliary Aircraft** is a rescue aircraft which does not have a medical flight crew or whose flight crew does not meet the minimum requirements of a BLS Rescue Aircraft

AMBULANCE DIVERSION POLICY

Purpose

- To define the circumstances under which ambulance traffic may be diverted from the intended receiving facility

Related Policies

- Trauma Triage and Destination Guideline Policy, 4613
- Destination Guidelines, GPC 4

Authority

"In the absence of decisive factors to the contrary, ambulance drivers shall transport emergency patients to the most accessible emergency medical facility equipped, staffed, and prepared to administer care appropriate to the needs of the patient." *California Administrative Code, Title 13, Section 1105 (c)*

Definitions

- **Full diversion** means a rerouting of all ambulance traffic
- **Condition specific diversion** may occur when a normally available service, procedure or piece of equipment is temporarily unavailable and results in the rerouting of specific patients, dependent on the reason for diversion. Condition specific diversion may include the following:
 - I. CT Scanner inoperable
 - II. Neurosurgeon not available
 - III. Trauma Center diversion
 - IV. Emergency Department saturation
 - V. Cath Lab diversion

Policy

- A. Each receiving hospital shall establish an internal hospital plan, approved by and on file with the EMS Agency. The plan shall include but not limited to the following:
 - Definitions and standards for activation which are consistent with this policy/procedure
 - Identification of the internal approval process, including persons or positions that must be involved in the decision-making process
 - Mechanisms for notification, on-going monitoring, removal from diversion status; identification and activation of back-up ED and ICU physical space per state licensing guidelines; call-in mechanism for additional staff; identification of patients who can be safely transferred within the facility; internal review of the diversion and reporting to the EMS Agency
- B. Full diversion may occur only if the receiving emergency department is incapacitated by a physical plant breakdown (i.e., fire, bomb threat, power outage, etc.) which renders patient care unsafe. In the event of a full diversion, **all patients will be rerouted to other facilities** as appropriate

- C. The need to institute a Conditions Specific Diversion is determined per each facility's plan, consistent with the following:
1. The following patients may not be rerouted:
 - Obstetrical patients in active labor
 - Patients with respiratory distress and unmanageable airway
 - Patients with uncontrolled external hemorrhage
 - Patients requiring ALS, but having no paramedic in attendance
 - Patients with CPR in progress (unless transporting to the nearest STEMI Receiving Center for patients in refractory VF)
 - Stable patients who insist on transport to a specific hospital. Ambulance personnel will inform the patient of the diversion status and document that the patient refused transport to an alternate facility
 2. CT Scanner Inoperable:
 - Patients who meet Physiologic and/or Anatomic Trauma Triage Criteria with signs and symptoms of head, neck or spinal cord injury will be transported to Level II Trauma Center; if conditions preclude air transport consult with MarinHealth Medical Center Level III Trauma Center
 - Patients who meet Mechanism of Injury and/or Additional Factors will be transported to Kaiser Permanente San Rafael EDAT
 - Patients with the following get transported to the closest facility with functioning CT scanner:
 - I. Signs or symptoms of a new CVA
 - II. Head injury patients not meeting trauma criteria with anticoagulant use and/or bleeding disorders
 3. Neurosurgeon Not Available:
 - Patients with signs and symptoms of head, neck or spinal cord trauma: transport to Level II Trauma Center; if conditions preclude air transport, consult with MarinHealth Medical Center Level III Trauma Center
 - Patients with signs and symptoms of CVA and/or medical conditions that may require neurosurgical intervention: transport to the closest appropriate facility in Marin County with a functioning CT scanner for initial evaluation and stabilization. Transfer, if indicated, is the responsibility of the hospital, including the maintenance of formal transfer agreements with other facilities
 4. Trauma Center Diversion:
 - Trauma patients will be diverted from the trauma center when the trauma surgeon and back-up trauma surgeon are encumbered with the care of trauma patients either in the operating room or emergency department
 - Patients who meet Physiologic and/or Anatomic Trauma Triage Criteria shall be transported to the time-closest Level I or Level II Trauma Center by air or ground
 - Patients who meet Mechanism of Injury and/or Additional Factors Trauma Triage Criteria shall be transported to the EDAT

- The following conditions DO NOT constitute acceptable grounds for Trauma Center Diversion:
 - I. A lack of clinical specialty back-up, inpatient bed space, monitored beds, or inpatient nursing staff
 - II. ED Saturation Diversion
 - III. Inoperable CT Scanner (see section 3B)

5. ED Saturation Diversion:

- Ambulance traffic may be diverted due to emergency department saturation when emergency department resources are fully committed and unable to accept incoming ambulance traffic
- Trauma, STEMI, suspected CVA, and OB patients >20 weeks (with a pregnancy related complaint), neonates (≤ 28 days) with evidence of shock, and/or OB patients 0-6 weeks postpartum will NOT be rerouted
- Under this policy, ED Saturation Diversion can occur up to four hours a day, two hours maximum at a time, and separated by a minimum of four hours
- At the beginning and end of any diversion period, a hospital must update ReddiNet
- Under no circumstance is lack of in-patient hospital beds, other than in the Emergency Department grounds for diversion. Hospitals are expected to accept ALL ambulance patients and to provide emergency stabilization and appropriate transfer if necessary
- In all cases of diversion, senior management or designee must be notified and must approve activation of the diversion status

6. Cath Lab Diversion

- STEMI ambulance traffic will be diverted when a STEMI Receiving Center Cath Lab is unavailable because of physical plant or mechanical problems
- Cath Lab diversion will not be declared when the Cath Lab is encumbered by routine medical care

D. If more than two receiving hospitals within Marin County meet their internal plan criteria and wish to activate diversion status at the same time, diversion status for all will be discontinued upon direction of the EMS Agency

E. Initiating and termination diversion status

1. Initiating diversion

- The facility shall implement the internal surge plan prior to initiating diversion status. The request to initiate status must be approved by senior management
- The facility shall update ReddiNet immediately to indicate their status as being on diversion
- Dispatch centers (public and private) shall monitor ReddiNet to inform providers of the hospital diversion status

2. Termination of diversion

- Diversion status will be terminated as soon as possible or within two hours of initiation, whichever comes first
- Diversion status is terminated when the hospital updates their status in ReddiNet to indicate that they are no longer on diversion or two hours from initiation has passed

- Dispatch centers (public and private shall monitor ReddiNet to inform providers of the hospital diversion status
3. The Communications Center shall notify the EMS Agency of changes in diversion status
 4. EMS Agency staff is available to assist with solving system-related problems and can be reached by contacting the Communications Center
 5. The EMS Agency will track the frequency and duration of diversion, making periodic reports to system participants
 6. Any problems associated with patient care, such as delays in transfer of care or patient safety, shall be submitted to the EMS Agency by either prehospital service provider or receiving facility, as applicable, per the Event Reporting Policy #2010

HOSPITAL REPORT/CONSULT

Purpose

- To provide guidelines for contact between prehospital care personnel and receiving facilities

Related Policies

- Trauma Triage and Destination Guideline Policy, 4613
- Communication Failure, 7002
- EMS Communication System, 7004
- Multiple Patient Management Plan (MPMP)
- BLS Treatment Guidelines
- STEMI, C 9
- CVA/Stroke, N 4
- Sepsis, M 6

Definitions

- **Report Only** is a notification to the receiving facility that a patient is enroute
- **Notification** is a communication meant to alert hospital staff that a specialty care patient is enroute. Notifications include:
 - I. Trauma
 - II. Stroke
 - III. STEMI
 - IV. Sepsis
- **Physician Consult** is a consultative discussion between field personnel and an ED physician

Policy

A. Report Only

- Shall occur anytime a prehospital unit transports a patient
- May be performed by any prehospital personnel
- Reports shall include the following:
 - I. Transport unit identification
 - II. Level of care being provided (ALS or BLS)
 - III. Estimated time of arrival to receiving facility
 - IV. Level of transport (code 2 or 3)
 - V. General category of patient (type of illness or injury) or treatment guideline being used for an ALS patient
 - VI. Condition of patient (stable, improving, or worsening)

B. Notification (Trauma/Stroke/STEMI/Sepsis)

- Field personnel will advise the receiving facility a minimum of ten minutes prior to arrival (or as soon as possible if transport less than ten minutes)

- Is required when patients meets notification criteria
 - Notifications shall include the following:
 - I. Unit and transport code
 - II. Notification type (e.g., Trauma, Stroke, STEMI, Sepsis)
 - III. Age/Gender
 - IV. Pertinent findings for the specific notification (see related protocol)
 - V. ETA
- C. Physician Consult
- Shall occur when specified in an ALS or BLS Treatment Protocol
 - Trauma Center consultation is recommended for questions about the destinations for injured patients. Consult shall be made with MarinHealth Medical Center Level III Trauma Center
 - Physician Consult shall include the following:
 - I. The need for physician consultation
 - II. Patient assessment information as appropriate
 - III. Policy or procedure being followed which mandates physician consult or order
- D. If attempts to contact for any of the reasons above and unable to contact the intended receiving facility, personnel may contact another in-county hospital. If no facility can be contacted, the following shall occur:
- Treatment should be administered according to the appropriate ALS or BLS treatment protocol
 - Medications or treatments listed as “physician consult required” may not be administered or performed
 - Documentation of the communications failure should be completed as detailed in policy #7002, Communication Failure
- E. In the event of a declared multiple patient incident, paramedics may operate according to the MPMP omitting contact or hospital consultation

PATIENT CARE RECORD (PCR)

Purpose

- To establish requirements for completion, reporting, and submission of Marin County approved Patient Care Records

Related Policies

- ALS to BLS Transfer of Care, ATG 4
- Release at Scene (RAS), GPC 3
- Against Medical Advice (AMA), GPC 2
- Trauma Re-Triage, 4604 A & B

Definitions

- *Patient*- someone who meets any one of the following criteria:
 - I. Has a chief complaint or has made a request for medical assistance
 - II. Has obvious signs or symptoms of injury or illness
 - III. Has been involved in an event when mechanism of injury would cause the responder to reasonably believe that an injury may be present
 - IV. Appears to be disoriented or to have impaired psychiatric function
 - V. Has evidence of suicidal intent
 - VI. Is dead
- *Emergency Medical (EM) Number*- assigned by the Marin County Communication Center to identify each 9-1-1 call dispatched for medical assistance
- *Incident Number*- The "F" number assigned to an incident
- *Electronic Patient Care Record (ePCR)*- the permanent record of prehospital patient evaluation, care, and treatment
- *Field Transfer Form (FTF)*- a temporary paper record of patient care used only when ePCR is unavailable
- *Quicksheet*- a single section within Elite Field that streamlines data entry
- *Short Form*- a printed report, typically received via fax at the ED containing a minimum set of data elements from the ePCR
- *Posting*- the process of uploading the ePCR from Elite Field to the ImageTrend server. The first time a record is posted, a fax will be sent to the ED. Each post to an out of county facility will result in a fax
- *Completed PCR*- the PCR is considered complete when it has been posted and locked
- *Triage Tag*- a paper record for multi-casualty incidents involving 6 or more patients

Policy

- A. An ePCR shall be completed for every call for which an EM is issued
- B. For all transported patients:
 - To ensure an informed continuum of care for all patients transported to the hospital, field personnel will post the ePCR no later than 10 minutes prior to ED arrival. If short ETAs

preclude posting before arrival, the ePCR must be posted soon as possible upon arrival. Immediate patient care needs shall take precedence over posting

- Once posted, hospital personnel can retrieve ePCR information from the ImageTrend Elite Viewer or secure the short form that is automatically faxed to their facility. If this patient information is not available, hospital personnel will notify field personnel. In no event shall field personnel leave the ED if the short form or posted patient information or similar document (e.g., FTF or locally printed short form) is not available. The transfer of care will include a verbal report to hospital clinical staff
- When available, posted information shall contain at a minimum:
 - I. Patient name
 - II. Patient address
 - III. Patient phone number
 - IV. Date of birth
 - V. Chief Complaint
 - VI. Contact information of the best medical historian
 - VII. Medical decision maker (when not the patient)
 - VIII. Pertinent findings on exam
 - IX. Last known well (if applicable)
 - X. Vital signs
 - XI. Medications
 - XII. Allergies
 - XIII. Presence of advanced directive/DNR
 - XIV. Medications administered
 - XV. Procedures performed
 - XVI. Kaiser/insurance number
- A paper FTF shall only be used as a backup during system downtime, equipment failures, loss of internet connectivity, while on a fire line assignment, or any incident/situation where personnel do not have the ability to capture and post data via imagetrend
- If the ePCR system precludes the transfer of information to the hospital and a compatible printer is available, the ePCR should be printed locally
- Data gathering and documentation responsibilities should never take precedence over hand-on rescue and patient care and therefore may not always be possible to complete during an incident. Nevertheless, prehospital information, particularly for critical patients, is essential for the emergency department and hospital course of care and every effort to obtain the information should be made
- A completed ePCR must be available to the receiving facility within 20 minutes of transferring care. If this is not possible (e.g. unite must leave for another call), then a complete and legible shore form or posted ePCR must be available to hospital staff prior to leaving the ED. When this occurs, an ePCR must be completed and available to the facility as soon as possible and no later than 3 hours after the transfer of care
- Notification patients (e.g. sepsis, stroke, STEMI, trauma) or critical patients (e.g. cardiac arrest and/or airway emergency) require a completed ePCR before field personnel leave the hospital with the exception being for a rapid re-triage patient that utilizes the same transport unit
- For all patients transported, the ePCR will be completed by the personnel assigned to the transport unit

- C. For non-transported patients (e.g. AMA, RAS, Dead on Scene), the ePCR will be completed as soon as possible and no later than three hours by the paramedic or EMT most involved in patient care and responsible for the patient's disposition
- D. For calls where there is no medical merit, the unit that completes the ePCR will be determined according to provider agency policy
- E. The ePCR is the permanent PCR and will be filled out in a complete manner and will include all care provided in the prehospital setting. When possible, it shall include all 12 lead ECGs and any ECG other than normal sinus rhythm. When possible, pertinent photographs from the scene should be attached to the ePCR (e.g. vehicle damage).
- F. The completed PCR includes all care rendered by the transporting providers as well as any care given prior to arrival of the transporting unit by bystanders and/or first responders. Documentation of care provided by first responder (of a different agency than the transport unit) may be required by their department policy
- G. For air ambulance transportations, a FTF will be given to the receiving provider
- H. Personnel assigned outside of the county to provide medical mutual aid (e.g. fire-line EMT/ Paramedic, cover engine assignment), shall complete a FTF for each patient contact. The FTF will be created on site and retained by the provider agency
- I. Willful omission, misuse, tampering, or falsification of documentation of patient care records is a violation under Section 1978.200 of the California Health and Safety Code

General Instructions

- A. The patient care record is part of the patient's permanent medical record and is used for, but not limited to, the following purposes:
 - Transfer of information to other healthcare providers
 - Medical legal documentation
 - Billing for services
 - Development of aggregate data reports for Continuous Quality Improvement (CQI), including specific quality indicators and identification of educational needs
 - EMS Agency case investigation
- B. Reference to a Marin County EMS Event Form or similar record should not be included on the patient care record
- C. If ALS to BLS transfer of care is determined to be appropriate, documentation of assessments and all care rendered must be completed by both the ALS and the BLS units according to policy ATG 4
- D. Prior agencies are responsible for training their employees in the initiation, completion, distribution of patient care records, HIPAA and any accompanying forms based on the EMS Agency's currently approved training curriculum

Documentation Requirements

- A. When reasonably possible, complete demographic information should be included in the PCR
- B. A clear history of the present illness with chief complaint, onset time, associated complaints, pertinent negatives, mechanism of injury, etc. The information should accurately reflect the patient's chief complaint as stated by the patient and should be sufficient to refresh the clinical situation after it has faded from memory

- C. An appropriate physical assessment that includes all relevant portions of a head-to-toe physical exam
- D. Check and document at least two complete sets of vital signs (VS) for every patient including pulse, respirations, blood pressure and pulse oximetry. Repeat and document VS every 5 minutes for emergent patients, and every 15 minutes for non-emergency patients (e.g. BLS patients). When required by policy, a temperature should also be documented at least once in the VS section. For children ≤ 3 years of age, blood pressure does not need to be documented unless the child is critically ill in whom blood pressure measurement may guide treatment decisions
- E. A pain scale shall be documented for all patients ≥ 6 months who have a GCS >14
- F. All pediatric patients being treated and transported by ALS will be measured with a color-coded resuscitation tape. The corresponding color wrist band will be applied, and the patient treated according to the Pediatric Dosing Guide (PTG 2A)
- G. Only approved medical abbreviations may be used- see 7006b
- H. All pertinent medications taken by the patient prior and/or administered by a first responder (e.g. erectile dysfunction medications, aspirin, medications used for OD, Narcan, etc.) should be documented if known
- I. The CAD to PCR interface should be used to populate all PCR data fields it supplies. Imported data may be manually corrected as needed
- J. When the cardiac monitor is applied, data will be transferred to the PCR from the device. If transferred automated VS do not correlate with manually obtained values, or are not consistent with the patient's clinical condition, providers should manually check VS and record manual results
- K. All 12-lead ECGs must be imported. Any significant rhythm changes should be documented. For cardiac arrests the initial strip, ending strip, pre and post defibrillation, and pacing attempts, should be attached
- L. For drug administrations, the drug dosages, route, administration time and response shall be documented
- M. Treatments should be documented in chronological order. Response to treatment shall also be documented
- N. For patients with extremity injury, neuromuscular status must be noted before and after immobilization
- O. For patient with spinal motion restriction, document motor function before and after mention restriction
- P. For IV administration, document catheter placement, catheter size, number of attempts, and flow rate if applicable
- Q. Any Physician Consult request and response will be documented
- R. All personnel information, including signatures, will be documented
- S. All crew members are responsible for accuracy of the content of the PCR

PEDIATRIC INTRAOSSEOUS INFUSION PROCEDURE

Indications

- Patient in extremis, cardiac arrest, profound hypovolemia, or sepsis and in need of immediate delivery of medications/fluids and immediate IV access is not possible within 90 seconds

Procedure Preparation

- Position and stabilize insertion leg
- Locate primary site 1-2cm distal to tibial tuberosity and 1-2cm medial
- Continuously following aseptic technique, prepare insertion site and allow to dry via air or gauze

Equipment

- Intraosseous infusion needle and/or mechanical insertion device
- Chlorhexidine with alcohol solution
- Sterile gauze pads
- Saline lock
- IV **NS** solution and tubing with 3-way stopcock
- Supplies to secure infusion
- Pressure bag
- **Lidocaine 2%** (preservative free)

Automatic IO Device

- Insert needle through skin at 90° angle until bone contact
- Rotate applying gentle, steady pressure, letting the driver do the work
- Stop when a change of resistance is felt
- Stabilize hub and remove stylet
- Attach primed saline lock, aspirate to confirm placement
- Flush with 5ml **NS**

Manual IO Needle

- Choose desired depth of injection according to manufacturer's instructions
- Insert needle at 90° angle and advance according to manufacturer's instructions
- Stabilize hub and remove stylet
- Attach primed saline lock, aspirate to confirm placement
- Flush with 5ml **NS**

If patient >3kg and awake and/or responsive to pain

- **Lidocaine 2%** 0.5mg/kg slowly
- **MR x1 1/2 initial dose**
- **Max dose:** 40mg
- Wait 30-60 seconds before fluid infusion

If resistance is met

- Remove needle, apply pressure to site and attempt at secondary site

Critical Information

- Absolute contraindications:
 - Recent fracture of involved bone (less than 6 weeks)
 - Vascular disruption proximal to insertion site
 - Inability to locate landmarks
- Relative contraindications:
 - Infection or burn overlying the site
 - Congenital deformities of the bone
 - Metabolic bone disease

- Stabilize as recommended by manufacturer
- Attach pre-flooded IV tubing
- Administer fluid boluses via syringe utilizing the 3-way stopcock

PELVIC BINDER APPLICATION PROCEDURE

Indications

- High risk mechanism of injury (e.g. falls, crush, MVC, auto vs ped) AND one of the following:
 - Pelvic instability
 - Lower back, hip, or groin pain
- The intention of application is to reduce potential life-threatening bleeding and provide stability for a suspected pelvic fracture

Equipment

- Commercial pelvic binder
(e.g. SAM Pelvic Sling II, T-Pod)

Position patient in supine position

Slide pelvic binder under patient, positioning and applying device according to manufacturer's recommendations

Critical Information

- Contraindication: Pediatric patients

ADULT INTRAOSSEOUS PROCEDURE

Indications

- Patient in extremis, cardiac arrest, profound hypovolemia, or sepsis and in need of immediate delivery of medications/fluids and immediate IV access is not possible

Procedure Preparation

- Position and stabilize insertion site
- Continuously following aseptic technique, prepare insertion site with antiseptic solution and allow to dry via air or gauze pad



Procedure

- Insert IO needle according to manufacturer's directions
- Confirm placement
- Attach primed extension set and flush with 10ml **NS**



If patient awake and/or responsive to pain

- **Lidocaine 2%** 20-40mg over 30-60 seconds
- Wait 30-60 seconds before fluid infusion
- **MR in 15 min** if needed



If resistance is met

- Remove needle, apply pressure to site and attempt at secondary site



- Stabilize as recommended by manufacturer
- Attach pre-flooded IV tubing with pressure bag for infusion
- Monitor insertion site and patient condition

Equipment

- Intraosseous infusion needle and/or mechanical insertion device
- Chlorhexidine with alcohol swab or ampule
 - If patient has allergy to Chlorhexidine, use alcohol swab only
- Sterile gauze pads
- 10ml **NS** syringe
- IV **NS** solution and tubing with 3-way stopcock
- Supplies to secure infusion
- Pressure bag
- **Lidocaine 2%** (preservative free)

Critical Information

- Absolute contraindications:
 - Recent fracture of involved bone (less than 6 weeks)
 - Vascular disruption proximal to insertion site
 - Inability to locate landmarks
- Relative contraindications:
 - Infection or burn overlying the site
 - Congenital deformities of the bone
 - Metabolic bone disease

ORAL ENDOTRACHEAL INTUBATION PROCEDURE

Indications

- Severe ventilatory compromise where the airway cannot be adequately maintained by BLS techniques

Procedure preparation

- Open airway and pre-oxygenate with BVM for 1-3 minutes with 100% O2
 - Avoid hyperventilation in cardiac arrest
- Select proper sized ETT and insert stylet
- Select proper sized laryngoscope blade and visualize larynx
- Suction as needed



Procedure

- Provide continuous high flow oxygen during procedure, if possible
- Under direct visualization, insert ETT 2-3cm past the cords.
 - Each attempt should not exceed 30 seconds, hyperventilating between attempts
- Remove stylet and inflate cuff



- Verify placement using all of the following:
 - Rise and fall of chest
 - Absence of epigastric sounds
 - Bilateral breath sounds
 - Presence of condensation in the tube
 - EDD or colorimetric CO2 device
 - Capnometry/capnography
- Secure the tube. Consider spinal immobilization to prevent extubation
- Reassess tube placement after each movement.
- If any doubt about placement, confirm by capnography or direct visualization

Equipment

- Battery powered laryngoscope handle and blades, extra batteries and bulbs
- Video Laryngoscope (if available)
- McGill forceps
- Cuffed endotracheal tubes
- ETTI
- Lubricating jelly
- Disposable stylets
- Suction
- Pulse oximetry
- End Tidal CO2 detector
- Esophageal Detector Device (EDD)
- Colorimetric CO2 device
- Capnometer or capnography

SPECIAL CONSIDERATIONS

- Defibrillation should precede intubation in VF/pulseless VT
- Consider use of ETTI if difficult intubation
- If unsuccessful after 1 attempt, may attempt King tube or iGel x1. If unsuccessful with King tube or iGel, then manage with BLS airway

Critical Information

- Absolute contraindications:
 - Patient whose height is less than the length of the color-coded resuscitation tape **and** <12 years of age
 - Epiglottitis
- Relative contraindications:
 - Spontaneous respirations are present
 - Responsive patient with intact gag reflex
 - Suspected opiate overdose
 - Profound hypoglycemia

ENDOTRACHEAL TUBE INTRODUCER (ETTI) PROCEDURE

Indications

- Airway structure or condition which prevents adequate visualization by standard tools of endotracheal intubation. May include:
 - Patients with Grade II through IV laryngeal views (Cormack-Lehane grade)
 - Patients with airway edema regardless of laryngeal view

- Perform laryngoscopy and obtain the best possible laryngeal view
- Holding the ETTI in your right hand and the angled tip pointing upward, gently advance the ETTI anteriorly (under the epiglottis) to the glottic opening (cords)

Equipment

- Intubation supplies
- ETT Introducer

- Gently advance the ETTI until resistance is encountered at the carina
- **NEVER** force the ETTI, pharyngeal/tracheal perforation may be caused
- If no resistance is encountered and the entire length of the ETTI is inserted, the device is in the esophagus
- The ETTI is correctly placed when you see the device going through the cords, when the ratcheting of the tip on the trachea, an/or when resistance is met while advancing the device

SPECIAL CONSIDERATIONS

- Use the confirmation methods standard for endotracheal intubation to verify placement of the ETT prior to and after initiating ventilation

- Once positioned, withdraw the ETTI until the 37cm black line mark is aligned with the lip and advance an ETT over the ETTI and into the trachea
- If resistance is encountered while advancing the ETT, withdraw the ETT slightly, rotate 90° and reattempt
- Once ETT is in position, inflate cuff, then while holding the tube, remove the ETTI through the ETT
- Confirm tracheal placement

Critical Information

- Contraindications:
 - Patient whose height is less than the length of the color-coded resuscitation tape **and** <12 years of age
 - ETT smaller than 6.0

I-GEL AIRWAY PROCEDURE

Indications

- When ventilation cannot be adequately maintained by BLS techniques, intubation is anticipated to be difficult, or intubation is unsuccessful after one attempt

Pre-procedure

- Open airway and pre-oxygenate with BVM for 1-3 min with 100% O₂. Avoid hyperventilation in cardiac arrest
- Apply water soluble lubricant to the back, sides and front of the cuff. Ensure no lubricant remains in the bowl of the cuff
- Position the head into the “sniffing” position or neutral position if trauma is suspected
- Remove dentures before inserting tube



Procedure

- With the cuff opening facing the patient’s chin, glide the device downwards and backwards along the hard palate with a continuous but gentle push until definitive resistance is felt. The incisor teeth should be resting on the integral bite block
- Attach bag-valve to I-gel Airway
- Verify placement using all of the following
 - Rise and fall of chest
 - Bilateral breath sounds
 - Capnometry/capnography or colorimetric device
- Secure the tube with provided strap or commercial tube holder

Equipment

- i-gel or i-gelO₂ airway device
- Water soluble lubricant
- Portable suction device
- Capnometry/capnography or colorimetric device
- Stethoscope

I-gel Sizing

Size	Patient Size	Color	Patient weight
3	Small adult	Yellow	30-60kg
4	Medium adult	Green	50-90kg
5	Large adult	Orange	90+kg

SPECIAL CONSIDERATIONS

- If there is any doubt about the proper placement of the i-gel airway, remove device; ventilate the patient with BVM for 30 seconds and repeat sequence of steps
- If unsuccessful on second attempt, resume BLS airway management
- If an excessive air leak during ventilation is noticed, use one or all of the following:
 - Hand ventilate the patient with gentle and slow squeezing of the reservoir bag
 - Limit estimated tidal volume to no more than 5ml.kg
 - If all of the above fail then change to one size larger I-gel

Critical Information

- Contraindications:
 - Responsive patient with an intact gag reflex
 - Patient with known esophageal disease
 - Tracheal stoma
 - Patient <4ft tall or <12 yrs
- Relative Contraindication:
 - Patients who have ingested caustic substances or have severe airway burns

INTRANASAL MEDICATION ADMINISTRATION PROCEDURE

Indications

- No IV access with the following symptoms:
 - Status epilepticus
 - Suspected narcotic overdose with respiratory depression
 - Apparent or reported pain level < 6

Equipment

- MAD adapter (atomizer)
- Syringe
- Suction

• With medication in syringe, attach atomizer
• Do not lubricate tip



• Stabilizing the head, place applicator in nares and briskly compress the syringe plunger

SPECIAL CONSIDERATIONS

- Be attentive to excessive oral recreations, vomiting, and adequate tidal volume

Critical Information

- Contraindications:
 - Epistaxis
 - Complete mucosal blockage of both nostrils
 - Nasal trauma
 - Any recognizable abnormalities
 - Retropharyngeal lacerations/dissections

NEEDLE THORACOSTOMY/ PLEURAL DECOMPRESSION PROCEDURE

Indications

- To relieve tension pneumothorax as indicated by a combination of the following:
 - Severe dyspnea and/or difficulty with ventilation, especially with an intubated patient
 - ALOC and/or agitation
 - Absent or unequal breath sounds on affected side
 - Signs of shock
 - Neck vein distention
 - Paradoxical movement of the chest
 - Hyper-resonance to percussion on the affected side
 - Tracheal shift away from the affected side

Procedure Preparation

- Choose appropriate site on the affected side:
 - If patient head is elevated, locate the second intercostal space, mid-clavicular line
 - If patient is flat, locate the 4th or 5th intercostal space, mid-axillary line
- Prepare site with Betadine or chlorhexidine
- Attach the large gauge IV needle to a large syringe

Equipment

- 14g or larger ≥ 3 inches
- Heimlich or other one-way valve
- 10ml syringe

Procedure

- With the patient exhaling, introduce the needle at a 90° angle, just over the rib at the selected site
- Advancing slightly superior to the rib, continue until lack of resistance or a “pop” is felt as the needle enters the pleural space

- If the air and/or blood returns under pressure or is easily aspirated, continue to advance the catheter superiorly and remove the needle
- When no further air escapes, attach a one-way valve
- Secure the catheter with the valve in a dependent position
- Reassess patient

VERIFICATION OF TUBE PLACEMENT PROCEDURE

Indications

- To verify the placement of an endotracheal tube

Equipment

- Esophageal Detector Device (EDD)
- Colorimetric CO2 device
- End tidal carbon dioxide detector
- Stethoscope
- Capnography device

After tube placement, apply EDD or
Colorimetric device prior to first ventilation

- Verify placement using all of the following:
 - Rise and fall of chest
 - Auscultate the lungs; assess for presence of equality of breath sounds
 - Presence of condensation in the tube
 - Auscultate the stomach; assess for absence of epigastric sounds

Apply capnometer or capnography if available

IV ACCESS PROCEDURE

Indications

- To describe a method for establishment of intravenous access in the pre-hospital setting

Equipment

- IV catheter
- Equipment to secure line
- Tourniquet
- Syringe
- Saline lock or IV fluid/tubing, if indicated

Procedure Preparation

- Select insertion site and IV catheter size as appropriate to the patient's condition
 - Use smallest catheter and most distal site indicated
- Apply tourniquet above insertion site
- Don clean gloves
- Clean insertion site using a back and forth motion for 30 seconds with chlorhexidine, allow to air dry for 2 minutes

Procedure

- Insert IV catheter; assure latency
- Attach appropriate solution, begin flow, adjust rate or attach a saline lock if appropriate
 - If saline lock was started, irrigate with 5ml NS
- Apply occlusive sterile dressing over the insertion site
 - Do not put tape over the occlusive dressing
 - Secure with anchoring tape

- Saline locks may be used in lieu of intravenous lines when:
 - Treatment protocol specifies IV NS TKO
 - Fluid resuscitation or bolus is not anticipated

EXTERNAL CARDIAC PACING PROCEDURE

Indications

- Symptomatic bradycardia which may include: HR <50 with decreasing perfusion, chest pain, shortness of breath, decreased LOC, pulmonary congestion or congestive heart failure

Procedure Preparation

- ALS RMC
- If tolerated, position patient supine, applying pacing electrodes to bare chest according to manufacturers recommendations (anterior/posterior or sternal/apex)
- Confirm and record ECG

Equipment

- Cardiac monitor/defibrillator/ external pacemaker
- Pacing capable electrode pads

If patient is conscious

- Administer **Midazolam** 1mg slow IV/IO
- **MR q3 min** to desired degree of sedation
- **Max dose:** 0.05mg/kg

Procedure

- Set pacing rate at 60, turn on pacing module, and confirm pacer activity on monitor. May increase rate to 80
- Increase mA until capture occurs or maximum output is reached
- Once capture is confirmed, increase output by 10%
- Confirm pulses with paced rhythm
- Monitor vital signs and need for further sedatives or pain control

If SBP <90

- Consider **NS** 250ml bolus IV/IO

Critical Information

- If patient is unstable, do not delay pacing for IV access

If SBP <80

- **PHYSICIAN CONSULT** for **Push-dose Epinephrine**
- Mix 1ml Epinephrine (0.1mg/ml concentration) with 9ml NS in a 10ml syringe
- Administer **Push-dose Epinephrine** 1ml IV/IO
 - **Repeat every 3-5 min**
- Titrate to maintain SBP >80mmHg

PHYSICIAN CONSULT

- Concomitant administration of **opioids** (Morphine and Fentanyl) and **Midazolam**
- If SBP <80, obtain physician consult for **Push-dose Epinephrine**

12-LEAD ECG PROCEDURE

Indications

- Patients with a medical history and/or presenting complaints consistent with Acute Coronary Syndrome (ACS). Indications for the procedure may include one or more of the following:
 - Chest or upper abdominal pain, described as pressure or tightness
 - Nausea or vomiting
 - Diaphoresis
 - Shortness of breath and/or difficulty with ventilation
 - Anxiety, feeling of “doom”
 - Syncope or dizziness
 - Other signs or symptoms suggestive of ACS

Equipment

- ECG machine and leads

Procedure

- Attach ECG limb leads to arms and legs
- Attach ECG chest leads as follows:
 - V1: right of sternum, 4th intercostal space
 - V2: left of sternum, 4th intercostal space
 - V3: halfway between V2 and V4
 - V4: left 5th intercostal space, mid-clavicular line
 - V5: horizontal to V4, anterior axillary line
 - V6: horizontal to V5, mid-axillary line
 - V4R-V6R: right 5th intercostal space, mid-clavicular line to mid-axillary line (for suspected right ventricular infarction (RVI) and/or physician request). Lead V4R must be obtained whenever ST segment elevation is noted in leads II, III, and AVF

SPECIAL CONSIDERATIONS

- If the 12-lead ECG demonstrates ST elevation and an acute STEMI is suspected, refer to STEMI Policy C 9
- Infarctions may be present with a normal 12-lead ECG. Consider taking a 15-lead ECG

📞 PHYSICIAN CONSULT

- If interpretation of ECG is inconclusive and ST segment elevation is present, seek immediate consultation with STEMI Receiving Center (SRC)

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) PROCEDURE

Indications

- Patients >8 years of age in severe respiratory distress and signs of CHF, COPD, and asthma
- Near drowning

Pre-procedure

- ALS RMC
- Place patient in a seated position with legs dependent
- Follow manufacturer directions for CPAP device set up
- Explain device to patient

Equipment

- CPAP equipment
- In-line nebulizer



Procedure

- Apply device to patient; set flow rate in excess of the patients inspiratory flow rate
- If albuterol and/or ipratropium appropriate, may administer with CPAP in-line nebulizer
- Reassess VS q5 min after CPAP applied, continuous SpO2 monitoring
- Increase oxygen percentage if patient does not demonstrate improvement after 5 minutes of application; repeat PRN to obtain improvement
- Remove the CPAP device and assist ventilations with BVM and/or intubation if patient condition worsens

Critical Information

- Contraindications:
 - Absolute:
 - Age <8 years
 - Respiratory or cardiac arrest
 - Agonal respirations
 - Severely depressed LOC
 - S/Sx of pneumothorax
 - Inability to maintain airway latency
 - Major trauma (especially head trauma with signs of ICP or significant chest trauma)
 - Facial anomalies or trauma
 - Vomiting
 - Relative contraindications
 - Systolic BP <100
 - History of pulmonary fibrosis or history of barotrauma
 - Decreased LOC
 - Claustrophobia or inability to tolerate mask (after 1-2 min trial)

SPECIAL CONSIDERATIONS

- Consider using sedation to alleviate possible anxiety associated with the CPAP device

KING AIRWAY PROCEDURE

Indications

- When ventilation cannot be adequately maintained by BLS techniques, intubation is anticipated to be difficult, or intubation is unsuccessful after one attempt

Pre-procedure

- Open airway and pre-oxygenate with BVM for 1-3 min with 100% O₂. Avoid hyperventilation in cardiac arrest
- Test cuff according to manufacturer’s instructions
- Apply water soluble lubricant to distal end of the tube
- Position the head into the “sniffing” position or neutral position if trauma is suspected
- Remove dentures before placing tube to prevent laceration of the cuffs



Procedure

- Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums
- Inflate cuffs based on size of tube
- Attach bag-valve to King Airway
- If necessary, withdraw airway until ventilation is easy and free flowing the
- Verify placement using all of the following
 - Rise and fall of chest
 - Bilateral breath sounds
 - Capnometry/capnography or colorimetric device
- Secure the tube with tape or commercial tube holder, noting depth marking on tube

Equipment

- King Airway
- Syringe
- Water soluble lubricant
- Portable suction device
- Capnometry/capnography or Colorimetric device
- Stethoscope

King Tube Sizing

Size	Patient Criteria	Color	Inflation Volume
3	4-5ft	Yellow	45-60ml
4	5-6ft	Red	60-80ml
5	>6ft	Purple	70-90ml

SPECIAL CONSIDERATIONS

- If there is any doubt about the proper placement of the King Airway, deflate the cuffs and remove device; ventilate the patient with BVM for 30 seconds and repeat sequence of steps
- If unsuccessful on second attempt, resume BLS airway management

Critical Information

- Contraindications:
 - Responsive patient with an intact gag reflex
 - Patient with known esophageal disease
 - Patients who have ingested caustic substances
 - Tracheal stoma
 - Patient <4ft tall or <12 yrs

METERED DOSE INHALER (MDI) FIRELINE MEDICINE PROCEDURE

Indications

- To deliver an aerosolized bronchodilator for patients experiencing bronchospasm in the fireline medicine setting

Equipment

- Metered dose inhaler of Albuterol or Atrovent

Pre-procedure

- Have patient sit or stand in an upright position
- Remove dust cap and have the patient hold the MDI in an upright position
- Gently shake MDI for 5-10 seconds
- Have patient tilt head back slightly and exhale normally and completely

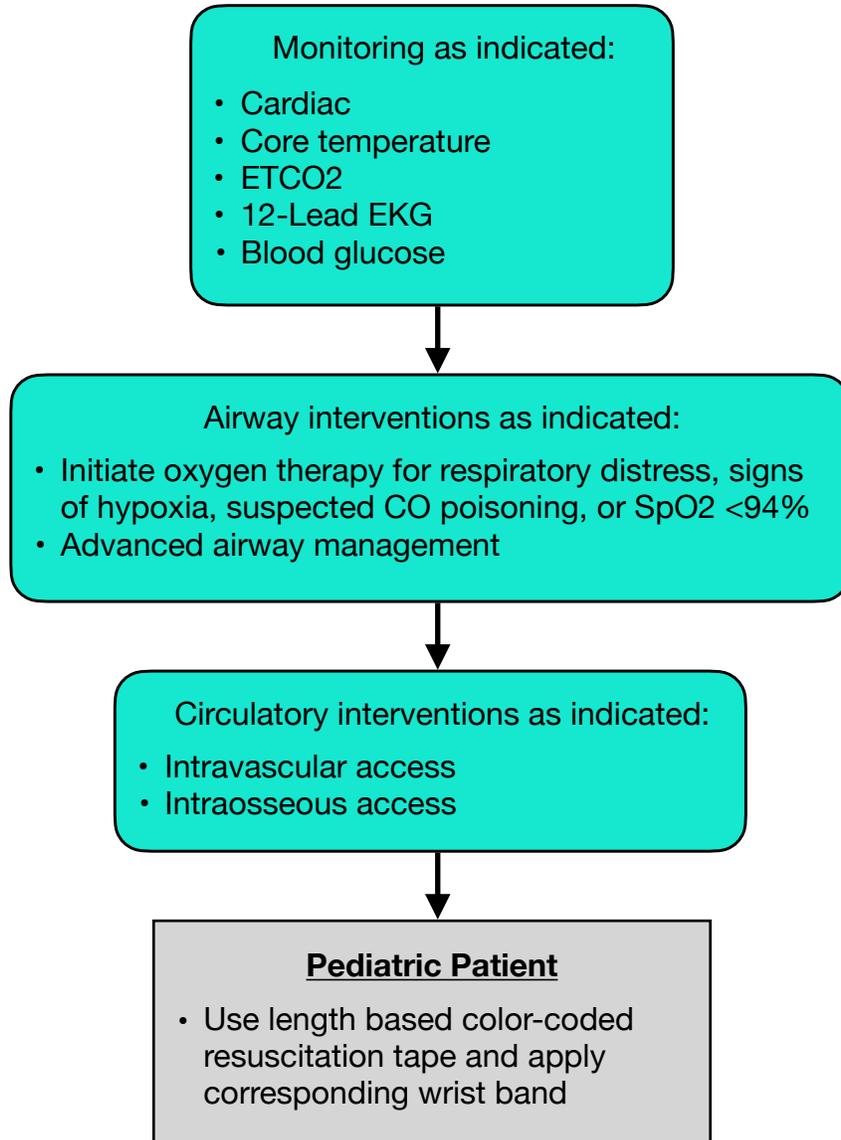
Procedure

- Have patient place lips around mouthpiece to produce a seal
- While inhaling slowly, have patient press down on inhaler to release the medication
- Inform patient to continue inhaling until they have taken the deepest breath possible
- Hold breath for 10 seconds
- Exhale slowly through pursed lips
- Administer a second dose as described above

ROUTINE MEDICAL CARE (RMC) ALS

Indications

- To define procedures indicated by ALS RMC per treatment guidelines
- Patient condition warrants ALS care/assessment, but does not meet the indication of any other treatment policy



CRITICAL INFORMATION

- Best practice is to maintain cardiac/ETCO2 monitoring all the way through transfer of care
- Continuous monitoring is required for any patient who has been administered a sedative or analgesic during EMS evaluation/transport

ALS TO BLS TRANSFER OF CARE

Indications

- Patient needs or desires transport to a hospital and does not meet criteria for ALS interventions

Criteria for transfer:

- Patent airway, maintained without assistance or adjuncts
- No hemodynamic changes are anticipated during transport
- No imminent changes are anticipated in the patient's present condition
- GCS ≥ 14

SPECIAL CONSIDERATIONS

- The ALS first responder or provider will complete a County approved Patient Care Record (PCR)
- The ALS first responder will hand off electronic patient care record to BLS transport unit

Critical Information

- The EMT in attendance must be comfortable with the patient's condition
- Transport by the ALS transport ambulance should be considered if the transfer of care to the BLS staffed ambulance would incur a time delay greater than the projected transport time to the intended receiving facility

ADULT INTRAOSSEOUS (IO) INFUSION

Indications

- Patient in extremis, cardiac arrest, profound hypovolemia, or is septic and in need of immediate delivery of medications/fluids and immediate IV access is not possible

SPECIAL CONSIDERATIONS

- Pressure bags for optimal flow of IO infusions
- Administer **Lidocaine 2%** prior to saline bolus if patient responsive to painful stimuli

Critical Information

- All approved ALS IV medications may be administered IO
- No more than 2 attempts for IO access at scene
- Absolute contraindications:
 - Recent fracture of involved bone (less than 6 weeks)
 - Vascular disruption proximal to insertion site
 - Inability to locate landmarks
- Relative contraindications:
 - Infection or burn overlying the site
 - Congenital deformities of the bone
 - Metabolic bone disease

ALS DETERMINATION OF DEATH

Indications

- Patient in cardiac arrest who does not meet criteria for BLS determination of death (DOD) and does not have a valid DNR order. **Excludes MCI incidents where triage principles preclude the initiation of CPR and circumstances where scene or bystander safety is threatened.**

- Apply leads and document rhythm in two leads for minimum of 1 minute
- DOD can be made prior to, or immediately after initiating resuscitation when:

Medical- ALL must be present

- Presenting rhythm is asystole
- Event was NOT witnessed
- Effective bystander CPR was NOT initiated
- No evidence of potentially reversible cause of arrest
- No AED or manual shock delivered

Trauma- ALL must be present

- Blunt, penetrating or profound multi-system trauma, or significant blood loss
- Pulseless and/or Apnea
- Absence of potentially reversible cause of arrest

If determination of death cannot be made

- Perform ALS resuscitation for 20 minutes on scene
- If patient is in refractory VFib after 3 unsuccessful shocks, immediately transport to nearest available STEMI Receiving Center
- If above procedures have been completed without ROSC, resuscitation may be discontinued, and determination of death made when **ANY** of the following are present:
 - A valid DNR or POLST form becomes available which precludes continuation of resuscitation efforts
 - ETCO2 ≤ 10mm/Hg and the rhythm is asystole or PEA

Does patient meet all above criteria?

Yes → Do not initiate resuscitation

No → Initiate resuscitation

If determination of death still cannot be made

- Continue resuscitation for ten additional minutes (30 minutes total) at which point resuscitation may be discontinued and determination of death made if ROSC has not occurred

- 📞 **Trauma center consult** for further care and destination decision
- If consult is not available, transport patient to the closest facility if there is the following:
 - Unmanageable airway
 - Uncontrolled external hemorrhage
 - CPR in progress (unless transporting to SRC for refractory V-Fib)

📞 PHYSICIAN CONSULT

- Evidence exists that resuscitative efforts are not desired or appropriate and above criteria is not met
- ETCO2 >10mm/Hg after 30 minutes of resuscitation efforts

When patient meets criteria for declaration of death in the field:

- Notify the appropriate law enforcement agency and remain on the scene until released by law enforcement
- Complete a Field Determination of Death Form at scene and leave copy for coroner if the patient will be transferred to coroner

ADULT MEDICATION STANDARD DOSAGES

DRUG	CONCENTRATION	STANDARD DOSE
Acetaminophen (Tylenol/Ofirmev)	1000mg/100ml	IV/IO 1000mg over 15-20 min
Adenosine	6mg/2ml	IV/IO 6mg rapid push followed by 20ml NS flush <i>Repeat:</i> 12mg
Albuterol	2.5mg/3ml NS	Nebulized 5mg/6ml NS
Amiodarone	150mg/3ml	IV/IO VF/Pulseless VTach: 300mg push <i>Repeat:</i> 150mg push in 3-5min Perfusing/Recurrent VTach: 150mg over 10 min (15mg/min) <i>Repeat:</i> q10 min PRN
Aspirin (Chewable)	Variable	PO 324mg
Atropine	1mg/10ml	IV/IO Bradycardia: 1mg <i>Repeat:</i> q3-5 min <i>Max total:</i> 3mg Organophosphate Poisoning: 2mg slowly <i>Repeat:</i> q2-5 min until drying of secretions
Calcium chloride 10%	1gm/10ml	IV/IO Suspected Hyperkalemia in: Asystole/PEA: 1gm Crush Syndrome: 1gm over 5 min Flush with NS before and after
Cyanokit	5gm/vial	IV/IO 5 grams over 15min <i>Repeat:</i> x1 if severe signs <i>Max total dose:</i> 10 grams

DRUG	CONCENTRATION	STANDARD DOSE
Dextrose 10%	25gm/250ml	IV/IO 125ml bolus over 10 min; recheck BG <i>Repeat:</i> as needed
Diphenhydramine (Benadryl)	50mg/ml	IV/IO/IM 50mg
Epinephrine	1mg/ml EpiPen ® 0.3mg	IM Allergic reaction/Anaphylaxis: 0.3mg or EpiPen ® <i>Repeat:</i> x1 in 5 min
Epinephrine	0.1mg/ml	IV/IO 1mg (10ml) followed by 20ml NS flush <i>Repeat:</i> q3-5min
Epinephrine (Push-Dose)	0.1mg/ml	IV/IO ☎ SBP <80: Mix 1ml Epinephrine (0.1mg/ml) with 9ml NS in a 10ml syringe <i>Initial:</i> 1ml <i>Repeat:</i> q3-5 min, titrate to maintain SBP >80
Fentanyl (Sublimaze)	100mcg/2ml	IV/IO 50mcg slowly <i>Repeat:</i> q5 min <i>Max dose:</i> 200mcg IM 50mcg <i>Repeat:</i> in 30 min IN 50mcg; administer 1/2 dose in each nostril <i>Repeat:</i> q5 min <i>Max dose:</i> 200mcg

ADULT MEDICATION STANDARD DOSAGES

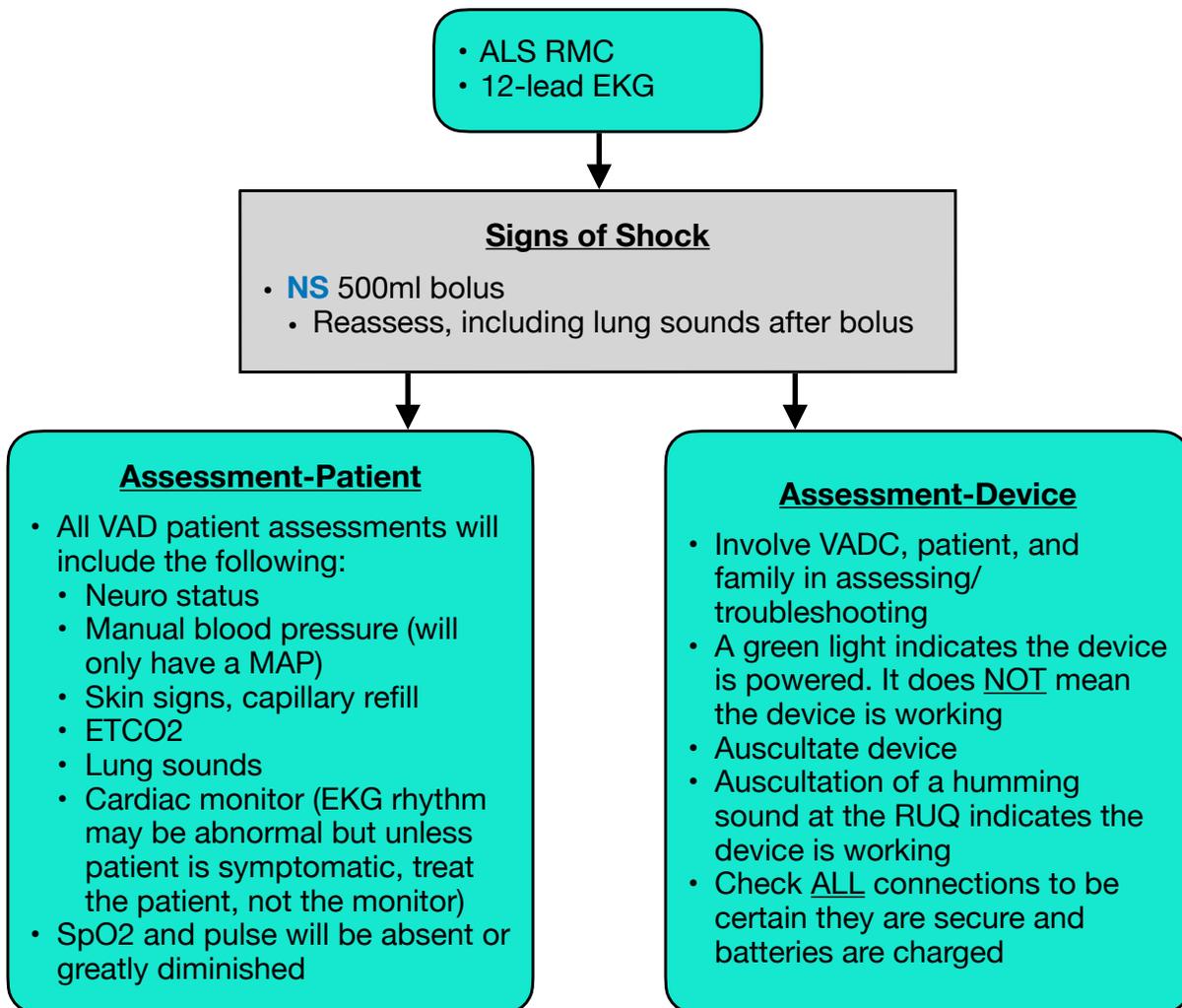
DRUG	CONCENTRATION	STANDARD DOSE
Glucose Paste	15 grams/tube	30 grams PO
Glucagon	1mg/ml	1mg IM
Ipratropium (Atrovent)	500mcg/2.5ml Unit dose	500mcg Nebulized
Lidocaine 2%	20mg/ml	20-40mg over 30-60 seconds <i>Repeat:</i> q15 min IO
Midazolam (Versed)	2mg/2ml (IV/IO/IM) 5mg/1ml (IN)	IV/IO Cardioversion/Pacing/Seizure (after EMS arrival): 1-2mg slowly <i>Repeat:</i> q3 min Sedation: See specific policy IM Seizure (after EMS arrival): 5mg <i>Repeat:</i> x1 in 2 min if still seizing Cardioversion/Pacing: 2-4mg Sedation: See specific policy IN Cardioversion/Pacing/Seizure (after EMS arrival): 5mg (2.5mg in each nostril) Sedation: See specific policy
Morphine Sulfate	10mg/1ml	5mg slowly <i>Repeat:</i> q5 min if SBP >100 <i>Max dose:</i> 20mg IM 5-10mg <i>Repeat:</i> q20 min <i>Max dose:</i> 20mg

DRUG	CONCENTRATION	STANDARD DOSE
Naloxone (Narcan)	2mg/2ml	0.4-4mg <i>Repeat:</i> q2-3 min until patient responds IV/IO, IM IN 2mg (1mg in each nostril) <i>Repeat:</i> q2-3 min until patient responds
Nerve Gas Auto-Injector (Atropine, Pralidoxime Chloride [2-PAM])	2mg (0.7ml) 600mg (2ml)	IM Small Exposure to Vapors/Liquids: 1 dose of both medications <i>Repeat:</i> x1 in 10 minutes Larger Exposure to Vapors/Liquids: 3 doses initially of both medications
Nitroglycerine	0.4mg/tablet or spray	1 tablet or spray SL <i>Repeat:</i> q5 min if SBP >100
Ondansetron (Zofran)	4mg	4mg slowly over 30 seconds <i>Repeat:</i> x1 in 10 min IV/IO 4mg <i>Repeat:</i> x1 in 10 min ODT/IM
Sodium Bicarbonate	50mEq/50ml	50mEq IV/IO

VENTRICULAR ASSIST DEVICE (VAD)

Indications

- For assessment, management, treatment, stabilization and/or transport of a patient with a VAD



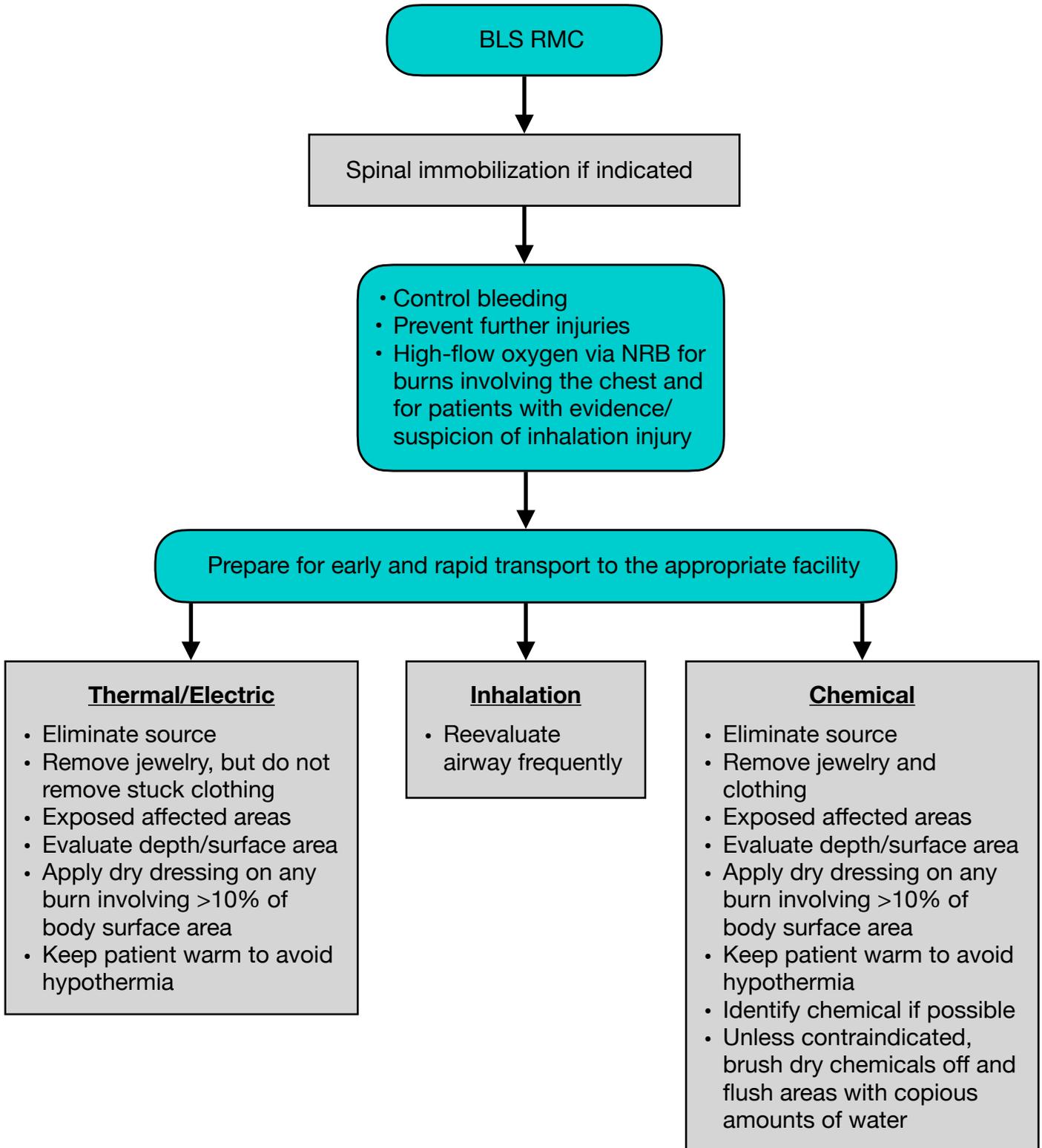
Critical Information

- If defibrillation is needed, do not place pads over pt's device
- Withhold chest compression unless the patient is pulseless, unconscious, and you and the VADC has determined the device has stopped working
- The VAD Coordinator (VADC) should be contacted immediately. Dispatch may have VADC contact information. The patient and caregiver will have contact information; it may also be found on the device, a medical alert bracelet, near a phone, or other obvious location. The VADC may be on the phone upon EMS arrival
- The VADC is a valuable resource but is NOT medical control. Request physician consult if necessary
- If appropriate, request POLST/DNR status

BURNS

Indications

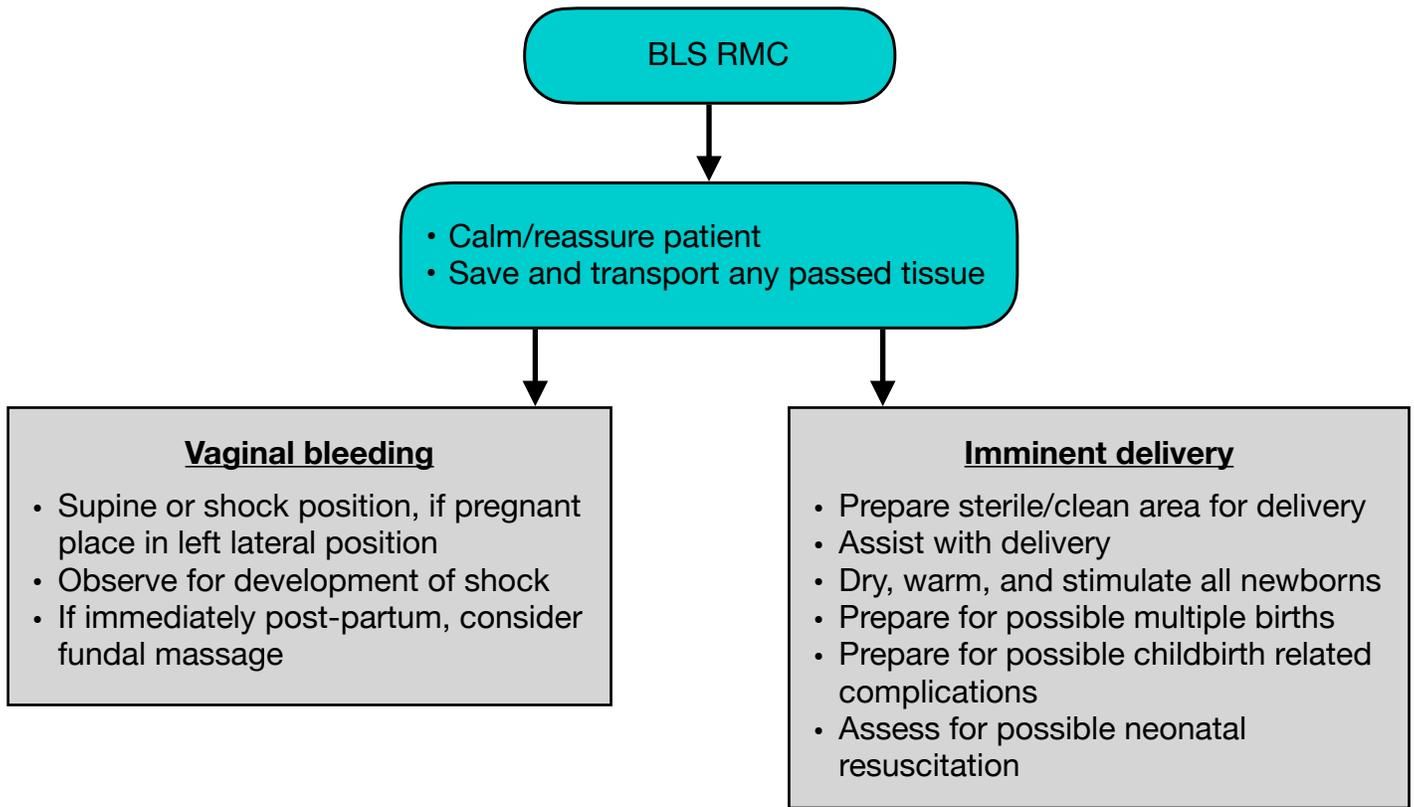
- Damage to the skin caused by contact with caustic material, electricity, or fire. Any burn associated with respiratory involvement



OBSTETRICAL EMERGENCIES

Indications

- Patient reports or demonstrates vaginal bleeding and/or imminent delivery (need to bear down, pushing, have urge for bowel movement)



APGAR SCORE

Sign	0	1	2
Heart Rate	Absent	Slow (<100)	≥100
Respirations	Absent	Slow, irregular	Good, crying
Muscle Tone	Limp	Some flexion	Active motion
Reflex Irritability	No response	Grimace	Cough, sneeze, cry
Color	Blue or pale	Pink body with blue extremities	Completely pink

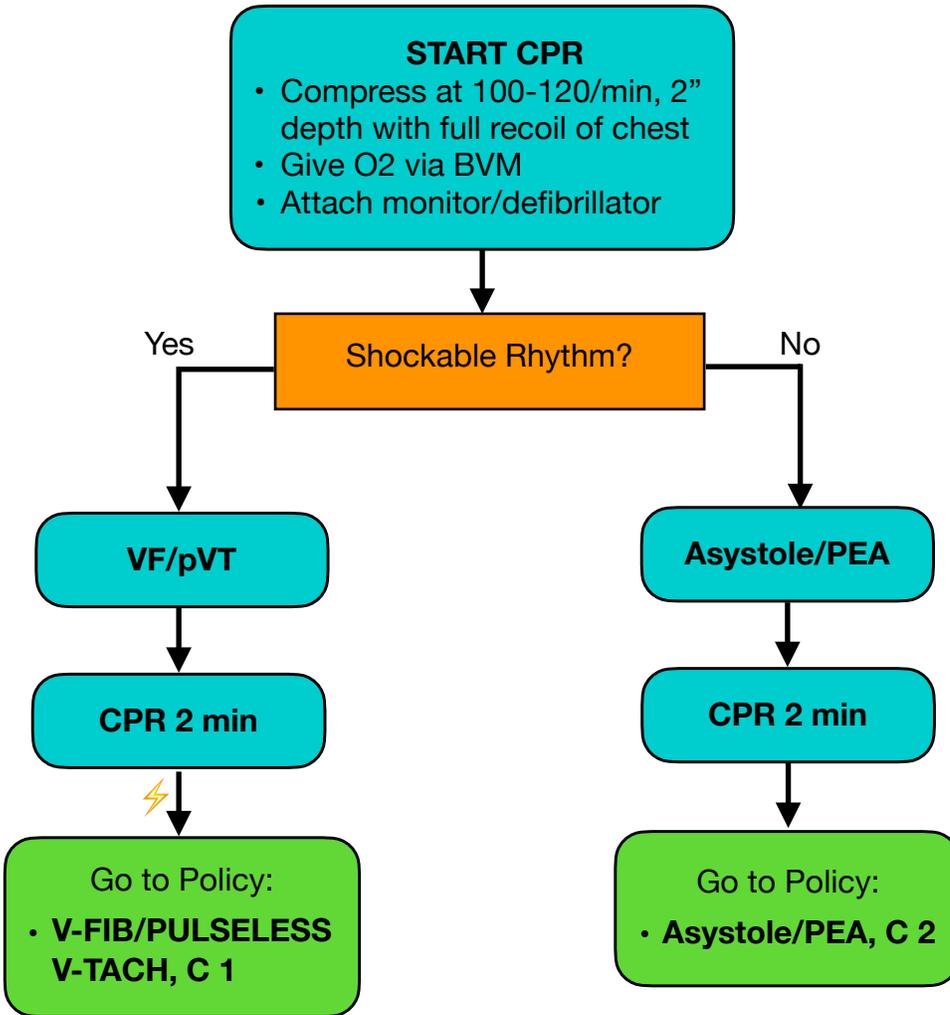
SPECIAL CONSIDERATION

- Prepare for rapid transport in both situations

ADULT CARDIAC ARREST

Indication

- Unresponsive; no breathing or has agonal respirations; no pulse



CRITICAL INFORMATION

- Witnessed vs Unwitnessed
- Consider pre-cordial thump if witnessed and defibrillator not immediately available
- Compress at 100-120bpm. Use metronome or similar device
- Mechanical CPR is mandatory during transportation
- Change compressors every 2 minutes
- Minimize interruptions
- Defibrillate at 200J, 300J, 360J
- Do not stop compressions while defibrillator is charging
- Resume compressions immediately after shock

BLS Airway Management

- BLS airway preferred during first 5 minutes
- Use two-person BLS airway management whenever possible
- Avoid excessive ventilation
- 30:2 compression/ventilation ratio

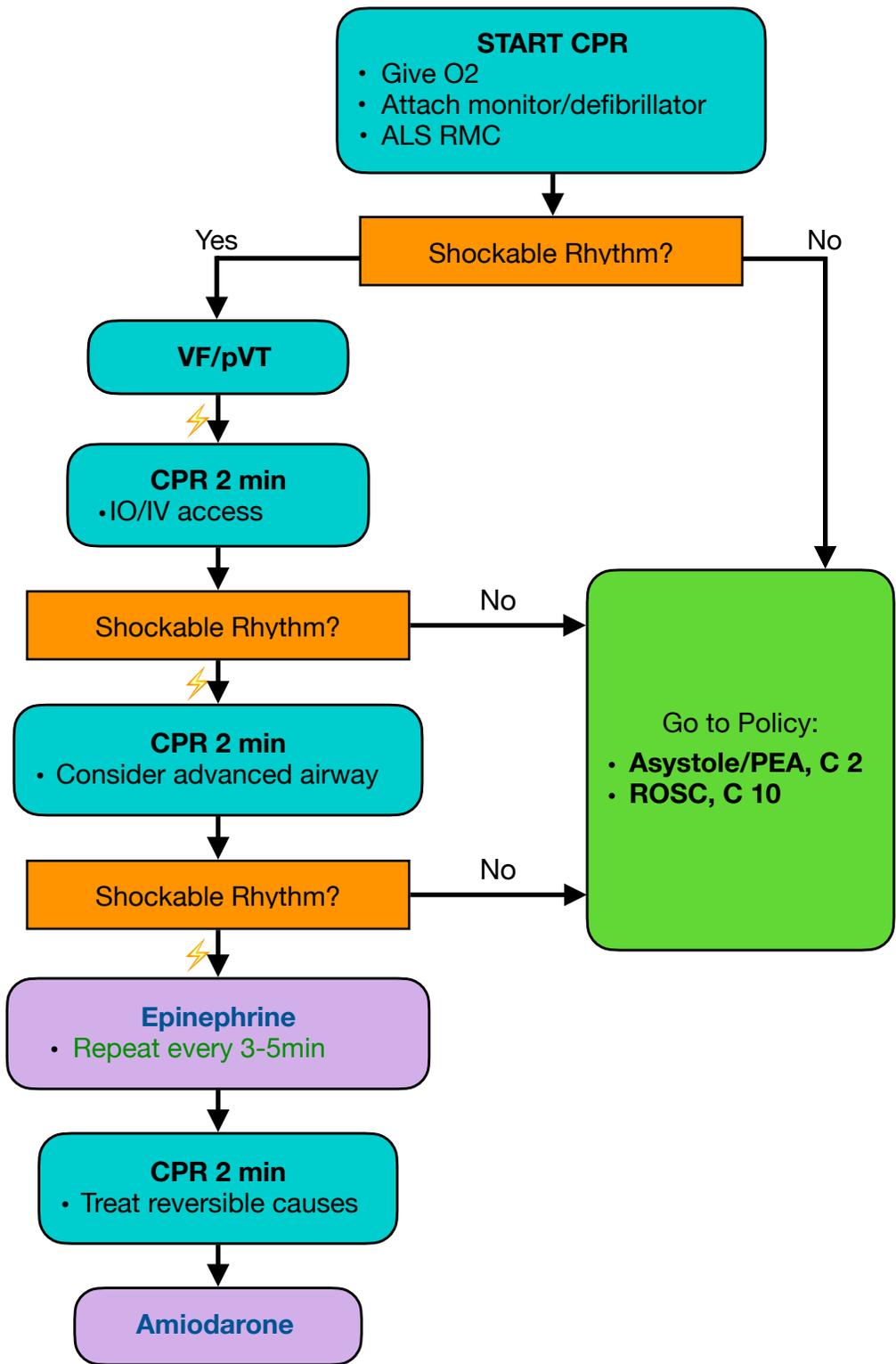
ALS Airway Management

- King Airway/iGel/Video laryngoscopy (VL)
- Laryngoscopy for ETT must occur with CPR in progress. Do not interrupt CPR for >10 seconds for tube placement
- Use continuous ETCO2 to monitor CPR effectiveness and advanced airway placement
- Maintain SpO2 94-99%
- 1 breath every 6 seconds

SPECIAL CONSIDERATIONS

- If patient is in refractory V-fib (3 unsuccessful shocks), transport to nearest available STEMI Receiving Center. Otherwise provide resuscitation on scene until ROSC or when patient meets Determination of Death criteria
- Regardless of the above, transportation is warranted in the following situations: unsafe scene conditions, unstable airway, hypothermia/hyperthermia as primary cause of arrest, any patient pulled from a fire in cardiac arrest
- To assure ROSC continues, remain on scene for 5-10 minutes and then transport to a STEMI Receiving Center

V-FIB/PULSELESS V-TACH



CRITICAL INFORMATION

- Mechanical CPR for transport

Airway Management

- BLS airway preferred during first 5 minutes
- Do not interrupt CPR for >10 seconds for intubation
- Use continuous ETCO2

Drug Therapy

- **Epinephrine** 1mg (0.1mg/ml) IV/IO. Repeat every 3-5 min
- **Amiodarone** first dose: 300mg IV/IO; second dose 150mg in 3-5 min.
 - If ROSC after **Amiodarone**, consider **Amiodarone drip** 150mg in 100ml NS, 1mg/min = 40gtts/min with 60gtt/ml tubing

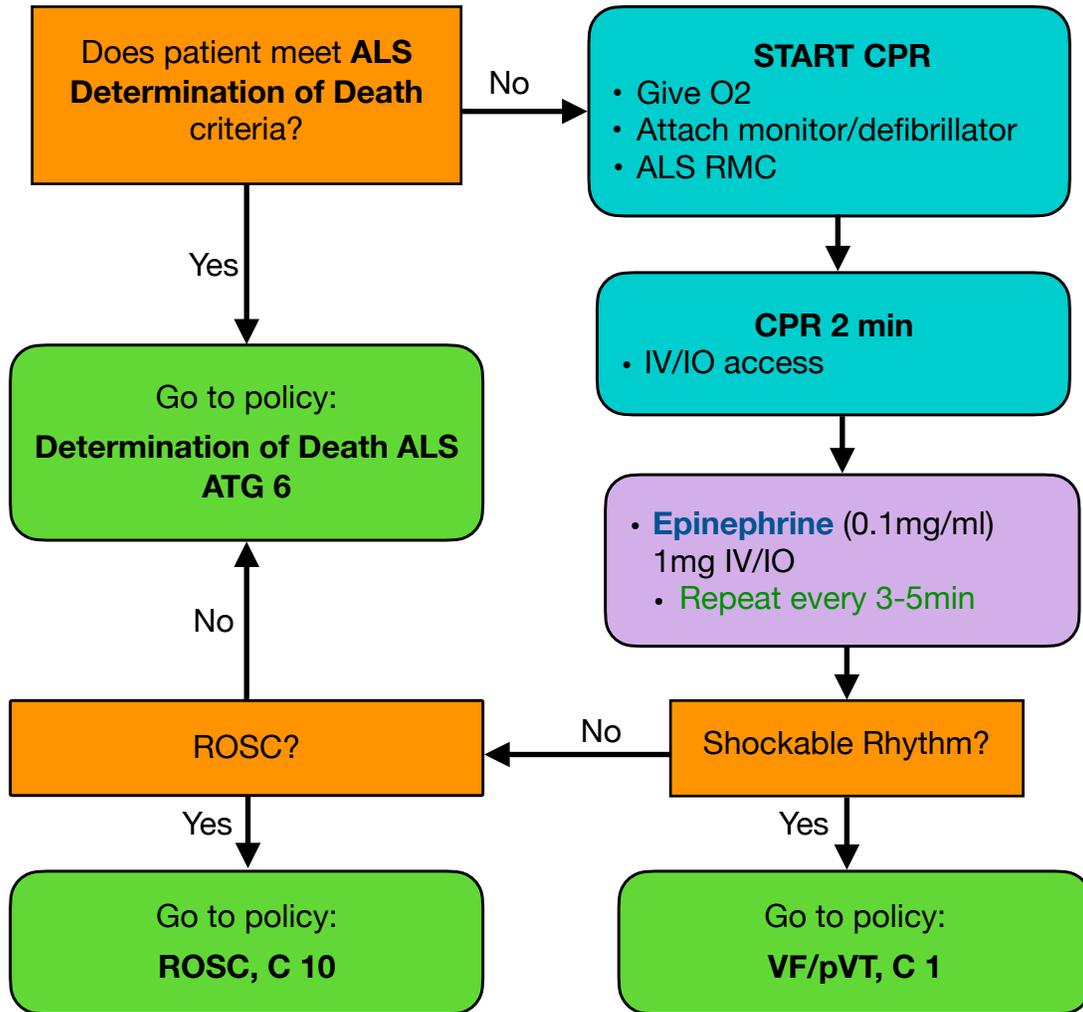
Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade (cardiac)
- Toxins
- Thrombus
- Trauma

• DO NOT transport rVF patients with any of the following: >75yrs, hospice, advanced dementia, irreversible neurological injury, active malignancy

• 📞 **PHYSICIAN CONSULT** to transport rVF patients with: unwitnessed arrest, >5min prior to resuscitation initiation (bystander or EMS personnel), non-cardiac etiology known or suspected

ASYSTOLE/PEA



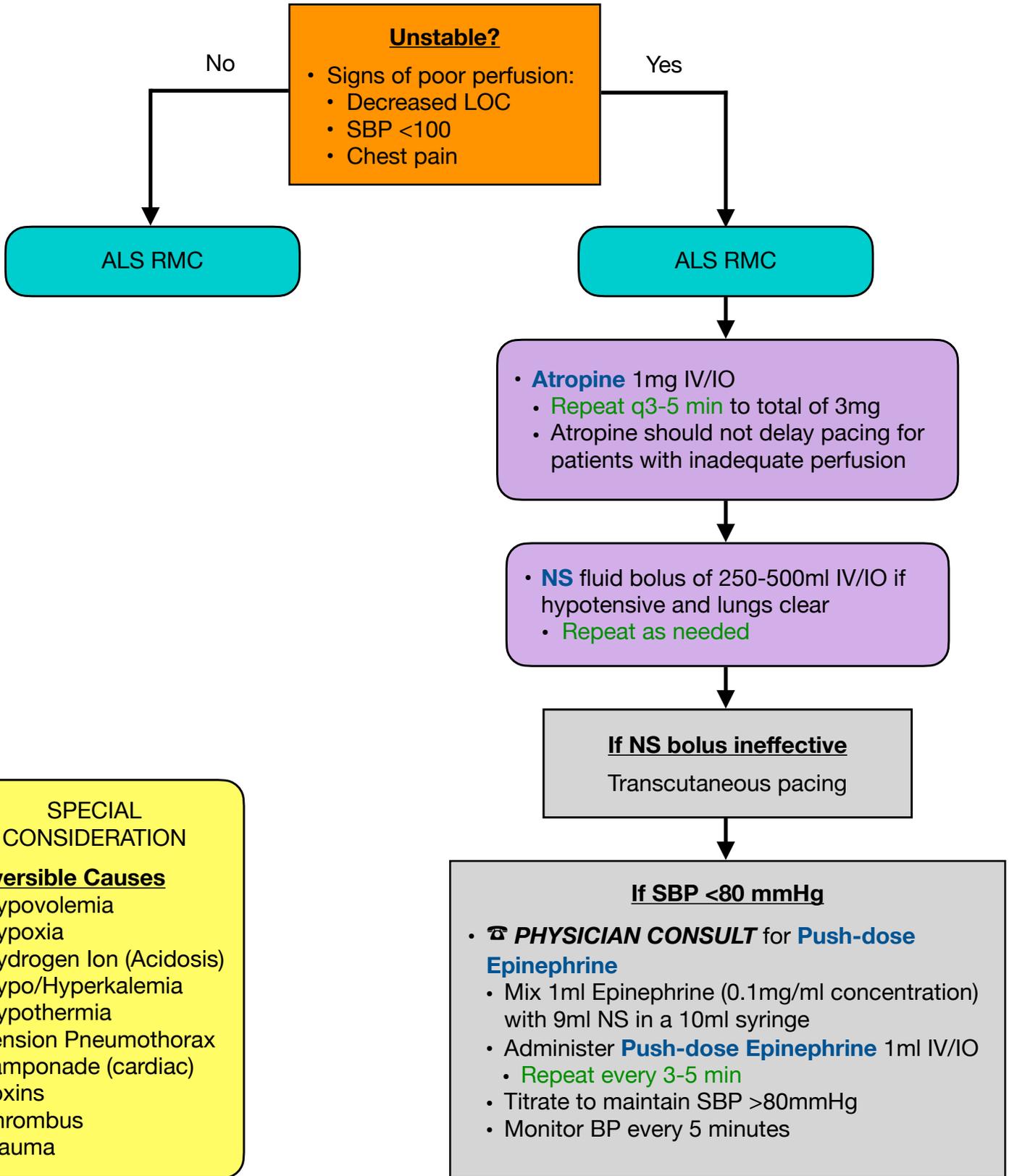
CRITICAL INFORMATION

- Immediate determination of death can be made if patient meets **Determination of Death ALS ATG 6** criteria
- If hyperkalemia is suspected in renal dialysis patients, administer 1 gram of 10% **Calcium Chloride** IV/IO and 50mEq of **Sodium Bicarbonate** IV/IO

BRADYCARDIA

Indications

- HR <50 with adequate or inadequate perfusion



SPECIAL CONSIDERATION

Reversible Causes

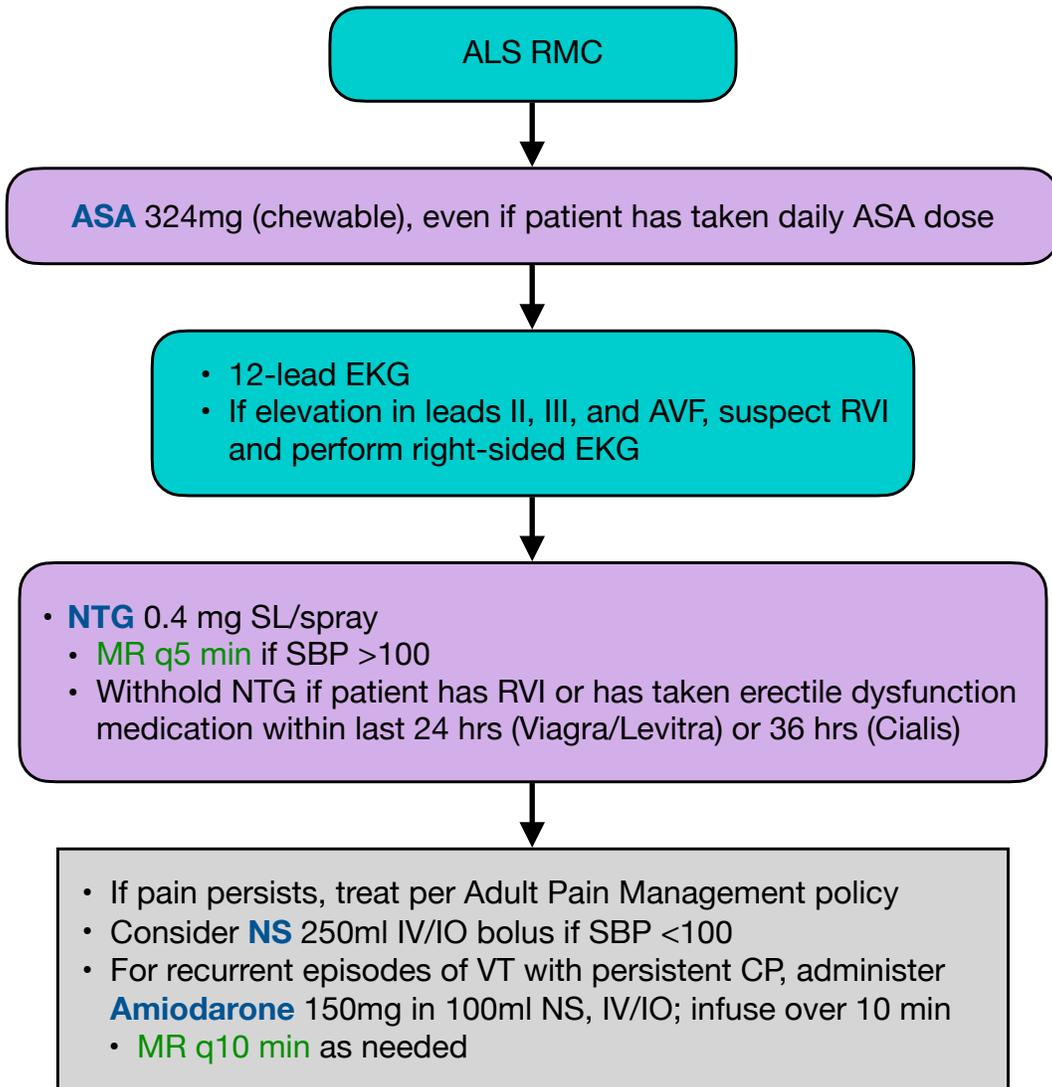
- Hypovolemia
- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade (cardiac)
- Toxins
- Thrombus
- Trauma

- **PHYSICIAN CONSULT** for **Push-dose Epinephrine**
 - Mix 1ml Epinephrine (0.1mg/ml concentration) with 9ml NS in a 10ml syringe
 - Administer **Push-dose Epinephrine** 1ml IV/IO
 - Repeat every 3-5 min
 - Titrate to maintain SBP >80mmHg
 - Monitor BP every 5 minutes

CHEST PAIN/ACUTE CORONARY SYNDROME

Indications

- Chest discomfort or pain, suggestive of cardiac origin.
- Other symptoms of Acute Coronary Syndrome (ACS) may include weakness, nausea, vomiting, diaphoresis, dyspnea, dizziness, palpitations, indigestion
- Atypical symptoms or “silent MIs” (women, elderly, and diabetics)



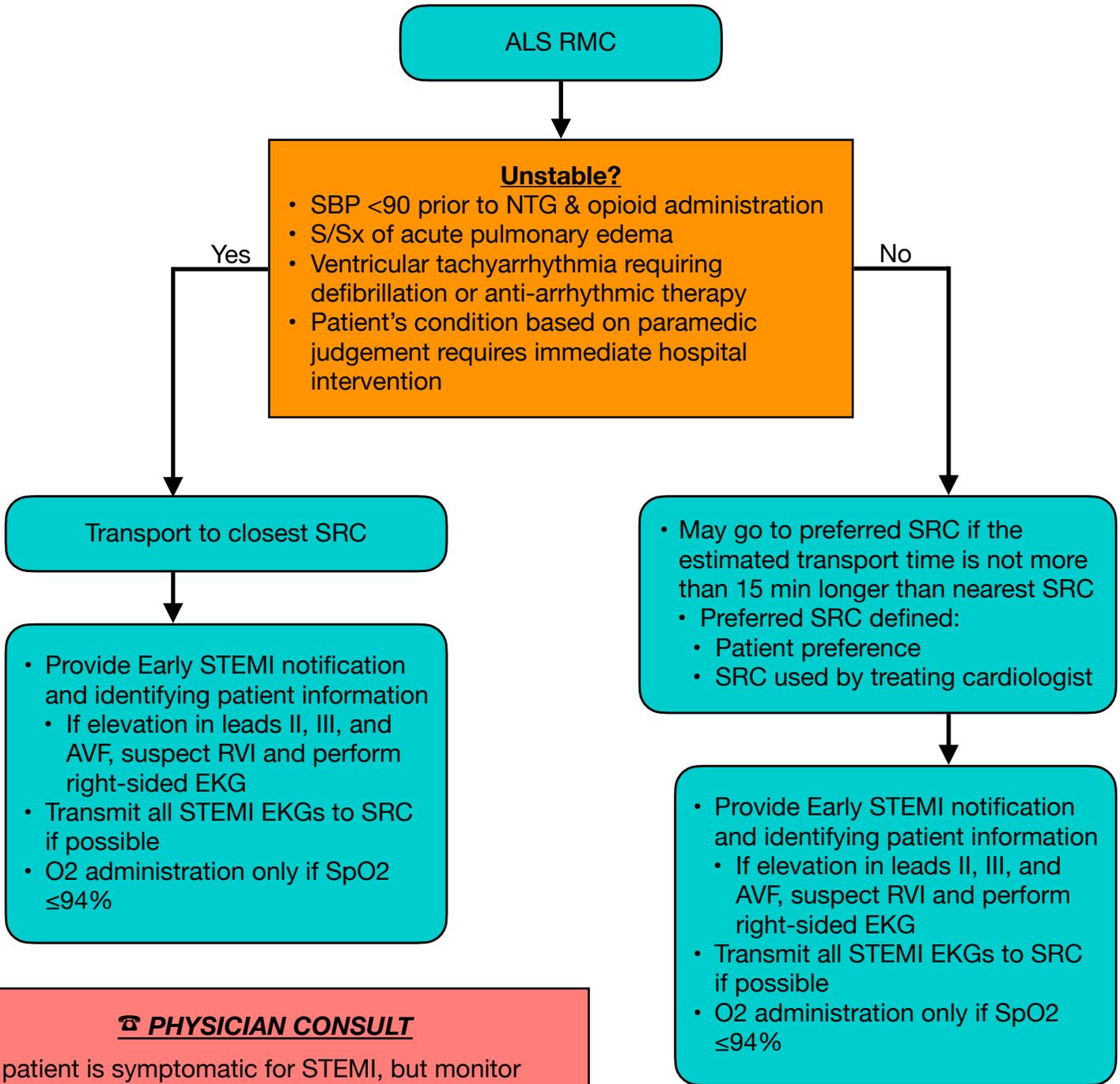
SPECIAL CONSIDERATIONS

- IV access before **NTG** if SBP <120 or Patient doesn't routinely take **NTG**
- Routine O2 administration unnecessary if SpO2 ≥94%
- Infarctions may be present with normal 12-leads
- Consider other potential causes of chest pain: pulmonary embolus, pneumonia, aortic aneurysm, and pneumothorax

ST ELEVATION MYOCARDIAL INFARCTION (STEMI)

Indications

- Patients with acute ST Elevation Myocardial Infarction (STEMI) as identified by machine read



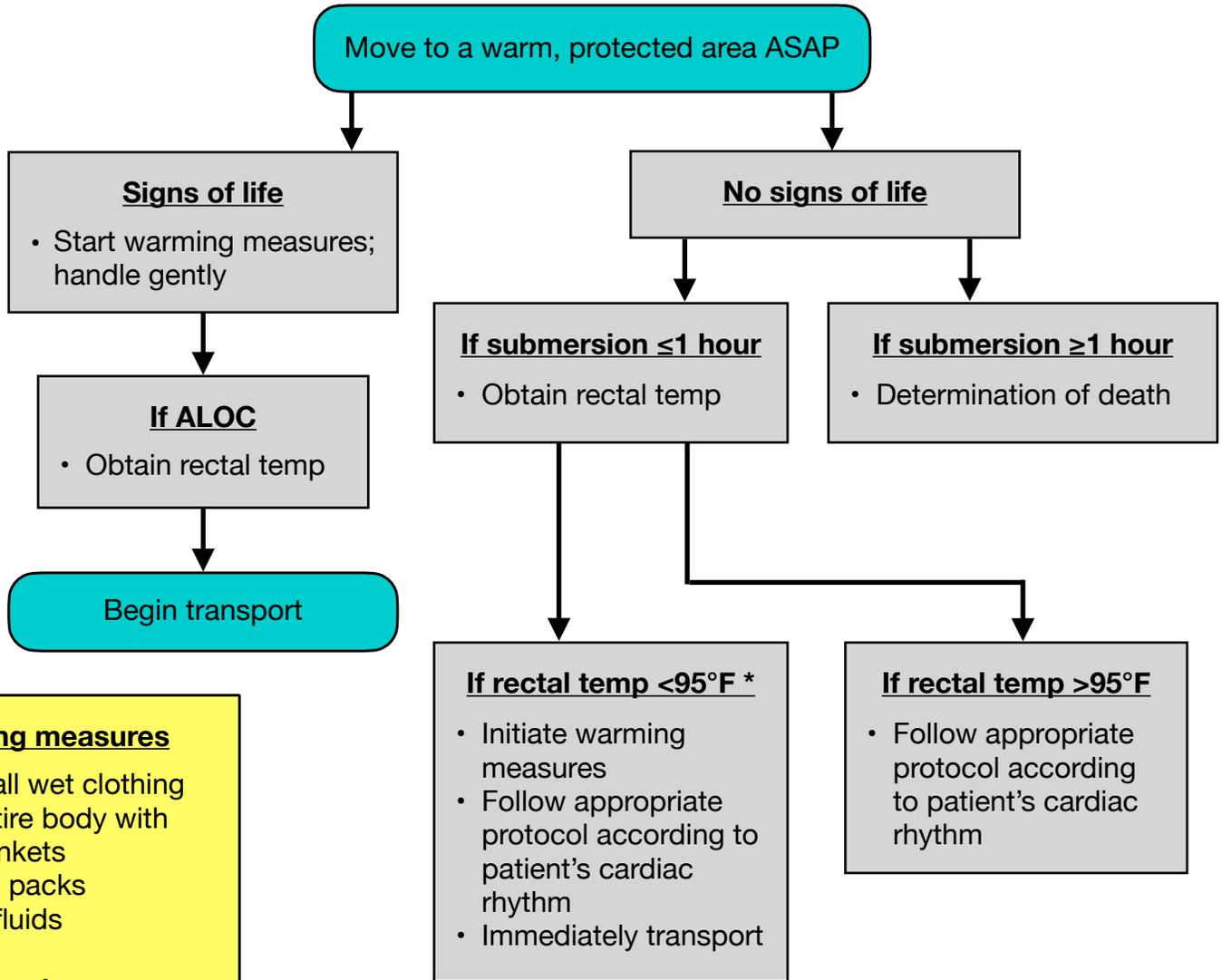
PHYSICIAN CONSULT

- If patient is symptomatic for STEMI, but monitor interpretation is not in agreement, **transmit EKG** and consult the SRC receiving physician
- If above findings occur, but transmission is not available, activate SRC with early STEMI notification

COLD INDUCED INJURY

Indications

- Exposure to cold or wet environment



Warming measures

- Remove all wet clothing
- Cover entire body with warm blankets
- Apply hot packs
- Warm IV fluids

Symptoms

- Mild: shivering, increased RR & HR
- Moderate/Severe: ALOC, slurred speech, unsteady gait, slow HR & RR, low BP, (ventricular) dysrhythmias

Special Consideration

- Subtler presentations exist in elderly, newborns, chronically ill and alcoholics

* Withhold ACLS meds if temp < 86°F

CANCELLATION OF ALS UNIT

Indication

- First Responders request to cancel an ALS unit

- First Responder personnel may cancel the response of ALS personnel under the following conditions:
 - Patient does not have a priority complaint or symptoms warranting a Level D response as outlined in Policy 4200, Emergency Medical Dispatch
 - Patient meets criteria for BLS Declaration of Death in the pre-hospital setting

AGAINST MEDICAL ADVICE (AMA)

Indication

- For patients or Designated Decision Maker (DDM) refusing medical care against the advice of the medical personnel on scene or of the receiving hospital

- All patients requesting medical attention will be offered treatment and/or transportation after a complete assessment
- Mentally competent patients/DDMs have the right to accept or refuse any or all pre-hospital care and transportation as long as EMS personnel have explained the care and the patient/DDM understands by restating the nature and implications of such decisions



- The following information must be provided to the patient or DDM by EMS personnel:
 - The recommended treatment and benefits for receiving care
 - The risks and possible complications involved
 - Reasonable consequences for not seeking care and treatment for the condition
 - Alternative care and transport options which may include private transport to a clinic, physician's office or an Emergency Department, or telephone consultation with a physician



Have patient/DDM sign the AMA form

⚠ PHYSICIAN CONSULT- required

- Patient requests transport to a facility that is not the recommended destination, and that decision would create a life-threatening or high-risk situation
- Patient requests an out of county transport when informed of the recommended destination within Marin County
- Pediatric brief resolved unexplained event (BRUE)

⚠ PHYSICIAN CONSULT- strongly recommended

- Patients ≥65 years requesting AMA with the complaint(s) of chest pain, SOB, syncope
- New onset of headache
- New onset of seizure
- TIA/resolving stroke symptoms
- Traumatic injuries (particularly head injury on anticoagulants)
- Pediatric complaints
- Pregnancy related issues

SPECIAL CONSIDERATIONS

- Consider early involvement of law enforcement if there is any threat to self, others or grave disability
- Treat as necessary to prevent death or serious disability
- If the patient cannot legally refuse care or is mentally incapable of refusing care, document on the PCR that the patient required immediate treatment and/or transport, and lacked the mental capacity to understand the risks/consequences of the refusal (implied consent)
- Do not request a 5150 hold unless the patient presents a danger to self or others as an apparent result of a psychiatric problem
- At no time are field personnel to put themselves in danger by attempting to transport or treat a patient who refuses. At all times, good judgment should be used, appropriate assistance obtained, and supporting documentations completed

CRITICAL INFORMATION

- Patients who may legally give consent or refuse medical treatment are as follows:
 - At least 18 years of age
 - A minor (<18 years) who is lawfully married/divorced, or on active duty with the armed forces
 - A minor who seeks prevention or treatment of pregnancy or sexual assault
 - A minor ≥ 12 years of age seeking treatment of rape, contagious diseases, alcohol or drug abuse
 - A self-sufficient minor, ≥ 15 years of age, caring for themselves
 - A legally emancipated minor
- DDM is an individual to whom the patient or a court has given legal authority to make medical decisions concerning the patient's healthcare (a parent or Durable Power of Attorney)
- An AMA may be obtained by telephone consent for patients who do not have a DDM physically present

RELEASE AT SCENE (RAS)

Indication

- EMS personnel and the patient or Designated Decision Maker (DDM) concur that the illness/injury does not require immediate treatment/transport via emergency/911 services

• All patients requesting medical attention will be offered treatment and/or transportation after a complete assessment

• Mentally competent patients/DDMs have the right to accept or refuse any or all pre-hospital care and transportation as long as EMS personnel have explained the care and the patient/DDM understands by restating the nature and implications of such decisions



• EMS personnel should advise the patient/DDM of alternative care and transport options which may include:

- Private transport to a clinic, physician's office, or an Emergency Department
- Telephone consultation with a physician



Have patient/DDM sign the RAS form

PHYSICIAN CONSULT

- If there are any questions or concerns regarding the patient's disposition

CRITICAL INFORMATION

- Patients who may legally give consent or refuse medical treatment are as follows:
 - At least 18 years of age
 - A minor (<18 years) who is lawfully married/divorced, or on active duty with the armed forces
 - A minor who seeks prevention or treatment of pregnancy or sexual assault
 - A minor ≥12 years of age seeking treatment of rape, contagious diseases, alcohol or drug abuse
 - A self-sufficient minor, ≥15 years of age, caring for themselves
 - A legally emancipated minor
- DDM is an individual to whom the patient or a court has given legal authority to make medical decisions concerning the patient's healthcare (a parent or Durable Power of Attorney)
- An RAS may be obtained by telephone consent for patients who do not have a DDM physically present

SPECIAL CONSIDERATIONS

- Consider early involvement of law enforcement if there is any threat to self, others or grave disability

DESTINATION GUIDELINES

Indication

- To identify destination choices and appropriate facilities for patients in Marin County

Kaiser Permanente San Rafael Medical Center

Emergency Department
Approved for Trauma (EDAT) -
Terra Linda -

- STEMI receiving center (SRC)
- Primary Stroke Center
- General Pediatric Receiving Center (PedRC)

MarinHealth Medical Center (MHMC)

Level III Trauma Center
- Greenbrae -

- Neurological Emergencies- sudden, witnessed onset of coma or rapidly deteriorating GCS with high likelihood of intracranial bleed
- Pregnant patients ≥ 20 wks with a complaint related to pregnancy
- Neonates (≤ 28 days) with signs of shock
- STEMI receiving center (SRC)
- Primary Stroke Center
- Advanced Pediatric Receiving Center (PedRC)

Novato Community Hospital

Basic level receiving facility
- Novato-

- Primary Stroke Center
- General Pediatric Receiving Center (PedRC)

📞 PHYSICIAN CONSULT

- Patient requests transport to a facility not capable of providing specific care for their needs

CRITICAL INFORMATION

- The destination for patients shall be based upon several factors including, but not limited to the clinical capabilities of the receiving hospital, the patient's condition, and paramedic discretion
- When the patient is unstable or life threatening, the patient should be transported to the time closest receiving facility:
 - Patients with unmanageable airway
 - CPR in progress (unless transporting to SRC for rVF)
 - Uncontrolled external hemorrhage
 - Patient requiring ALS but having no paramedic in attendance
- The following factors will be considered in determining patient destination:
 - Patient condition
 - Patient/family request
 - Clinical capabilities of the receiving hospital
 - Patient's physician request or preference
 - Paramedic discretion
- Patients with return of spontaneous circulation (ROSC) post cardiac arrest will be transported to the nearest SRC
- Burn patients, without other trauma mechanism, shall be transported by ground ambulance to the time closest emergency department (ED)
- Neonates (≤ 28 days) shall be transported to MarinHealth Medical Center
- Patients with psychiatric complaints will be transported to their preferred facility or the closest ED unless specialty care (trauma, STEMI, stroke, pregnancy) is warranted
- Ventricular Assist Device (VAD) patients: If patient is stable and complaint is not related to VAD, transport per above guidelines. If VAD related, the patient may need to bypass local facilities and go to VAD center. If concerned about patient stability, refer to guidelines and request physician consult
- Prior to arrival, prehospital personnel must notify the receiving facility of any patient with a known history of violence or behavior which may pose a risk to staff (uncooperative, aggressive, disruptive)

INTERFACILITY TRANSFER PROCEDURE

Indication

- Interfacility transfer of patients from Marin County healthcare facilities

Procedure

- Transporting personnel will operate under the medical direction of the transferring physician in compliance with the County of Marin, State, and Federal laws, through direct contact or standing orders, in a safe and timely manner as permitted by their scope of practice
- The transferring facility will have confirmed acceptance by receiving facility prior to the transferring unit transferring the patient. The transferring unit must receive an appropriate patient status report from the transferring physician and/or RN. If transferring personnel do not agree with or are unable to provide the level requested, they will confer with the transferring physician to assure the appropriate level of care during transfer
- The transferring physician will provide the following information:
 - Patient name
 - Diagnosis/level of acuity
 - Isolation precautions
 - Destination
 - Transfer date and time
 - Accepting unit
 - Accepting physician
 - Special equipment with patient
 - Orders for specific treatments to be conducted in transport and contact information for the transferring physician
 - Additional personnel attending patient or required for transport
 - Pertinent medical records
 - Insurance information, if available
 - Contact information for family/designated decision maker
- The following communication is required by each transporting unit:
 - For patients being transported to receiving hospital emergency departments:
 - Ringdown report and early notifications as required based on patient condition
 - For patients transported to other hospital departments or facilities:
 - Patient remains stable without change in status- no communication necessary
 - Patient unstable or change in status- contact transferring or another specified physician; if unavailable, request another physician in that facility or contact Marin County online medical control
- In addition to the procedures describe elsewhere in Marin County EMS protocols, upon completion of proper training and with provider agency medical director approval, specified personnel may perform the following procedures under the direction of the transferring physician:
 - **EMT**
 - Monitor intravenous lines delivering glucose solutions or isotonic balanced salt solutions including Ringer's Lactate. Monitor, maintain, and adjust if necessary, in order to maintain a preset rate of flow and turn off the flow of intravenous fluid

- Transfer patients who have nasogastric (NG) tubes, gastrostomy tubes, heparin locks, foley catheters, tracheostomy tubes with or without simple oxygen masks and humidification, wound-vac devices, Jackson-Pratt drains, clamp PleurX drains, and/or indwelling vascular access lines, excluding arterial lines
- Transfer patients with completely patient-controlled devices including CPAP/BiPAP, medication pumps, etc. requiring no monitoring or adjustment
- **Paramedic**
 - Monitor and adjust intravenous fluids containing potassium ≤ 40 mEq/L
 - Monitor thoracostomy tubes
 - Perform suctioning of patients not on mechanical ventilators with stomal intubation
 - Monitor patients with nitroglycerin paste initiated prior to transport
- Additional clarification on level of service in **Appendix A**

SPECIAL CONSIDERATIONS

- Medical emergencies which are immediately life-threatening events (cardiac arrest, new stroke symptoms, uncontrolled hemorrhage, etc) should utilize zone provider/911 resources
 - In the event ALS interventions are required beyond the orders of the sending physician, paramedic caregivers shall follow patient care protocols and request an EM number from Sheriff's County Communications and a Marin County Patient Care Record as specified in 7006 must be completed
 - For *emergent transfers* with CCT service requirements, when no provider is able to fulfill transfer request within the required ETA and further delay would cause significant risk of increased morbidity or mortality, under the direction of the transferring physician a facility caregiver (RN, NP, PA or physician; RT if continuous respiratory assistance is required) may attend to patient during transport utilizing the highest level ambulance available as a last resort.
 - All transporting team members shall provide care within their own scope of practice with ultimate responsibility for patient care in transport held by the orders of the transferring physician
 - All advanced monitoring equipment or medications anticipated to be required during transport which are not already present in the ambulance inventory must be brought with the caregiver
 - An EMS Event Form must be completed following any such transport
-
- **Documentation- Essential Elements**
 - Patient Care Records as specified in 7006 must be completed by ambulance personnel
 - Interfacility transfers with hospital contact will be reviewed by hospitals receiving the calls
 - Statistic on total numbers of ALS level transfer calls per month will be maintained by each provider and submitted to the EMS Agency on request (transfers with Paramedic, RN and/or MD)
 - Training records for procedures authorized in this policy shall be maintained by participating agencies
 - An EMS Event Form must be completed for any transport utilizing non-permitted ambulances, non-certified EMS providers or utilizing sending facility personnel as caregivers

Appendix A

Guideline for determining level of service

Condition	BLS	ALS	CCT
Oxygen by mask or cannula	✓		
IV fluids running (Normal Saline, Lactated Ringers, Dextrose)	✓		
Confuse/disoriented but stable LOC	✓		
Patient-controlled devices (medication pump, CPAP/BiPAP)	✓		
Tracheostomy not requiring suctioning	✓		
Central IV line, clamped	✓		
Medical devices including nasogastric (NG) tubes, gastrostomy tubes, heparin locks, foley catheters, tracheostomy tubes with or without simple oxygen masks and humidification, wound-vac devices, Jackson-Pratt drains, clamped PleurX drains, and/or indwelling vascular access lines, excluding arterial lines	✓		
Tracheostomy requiring suctioning		✓	
Pre-established IV containing potassium or nitroglycerin paste		✓	
Cardiac/pulse oximetry/capnography monitoring		✓	
Monitoring thoracostomy tubes		✓	
Medications in paramedic scope		✓	
Paramedic level interventions		✓	
Continuous respiratory assistance/mechanically vented			✓
Medications outside paramedic scope or mechanical IV pump			✓
Invasive monitoring including IABP, ICP, CVP, or PA lines			✓
Arterial line in place			✓
Blood or blood products			✓
Medical devices not managed by patient outside paramedic scope			✓

MEDICAL PERSONNEL ON SCENE

Indication

- Determination of patient care responsibilities at the scene of an emergency when someone present identifies themselves as medically trained

Person is not a physician

- First Responder/EMT or EMT-P should inform the non-physician individual that they may assist and/or offer suggestions within the scope of their licensure but may not assume medical management for the patient
- Continue with care in usual manner
- Ask to see proof of licensure/certification/accreditation

Person is a physician

- Unless physician is known to the prehospital personnel, ask to see proof of licensure
- First Responder/EMT yield medical management to the physician until the arrival of ALS personnel
- Upon arrival of ALS personnel, the EMT-P will provide the physician with “Note to Physicians on Involvement with EMT-Is and Paramedics” card (Appendix A) to determine option #1, 2 or 3, he/she has chosen to follow

Option #1

- The physician assists the ALS treatment team and/or offers suggestions, but allows the EMS personnel to provide medical treatment according to policy

Option #2

- The physician requests to provide on-scene medical advice and/or assistance after speaking with the intended receiving hospital physician

Option #3

- The physician is willing to take total responsibility for care, and will physically accompany the patient to the hospital
- Make all ALS equipment and supplies available to the physician and offer assistance as needed

Complete a “System Notification Form” for review of the call

☎ PHYSICIAN CONSULT

- On-scene physician has chosen option #2 or 3 on the “Note to Physicians on Involvement with EMT-Is and Paramedics” card and should speak directly with the receiving hospital physician

DO NOT RESUSCITATE (DNR) PHYSICIANS ORDER FOR LIFE-SUSTAINING TREATMENT (POLST)

Indication

- Patients in respiratory or cardiopulmonary arrest with valid DNR documentation on scene

Follow standard procedures on arrival and assess the patient



If information of a DNR exists

- Responders shall request to see the signed order, form or medallion
- If a DNR is not present at the scene, but a person who is present and can be identified as an immediate family member or spouse requests no resuscitation and has the full agreement of any others who are present on scene, resuscitation may be withheld or stopped if it has already been initiated

If patient with a DNR collapses in public

- Responders will notify the appropriate public safety agency and remain on the scene until their arrival

☎ PHYSICIAN CONSULT

- If there is any problem of any sort at the scene or if any therapy was instituted and the therapy is now in question

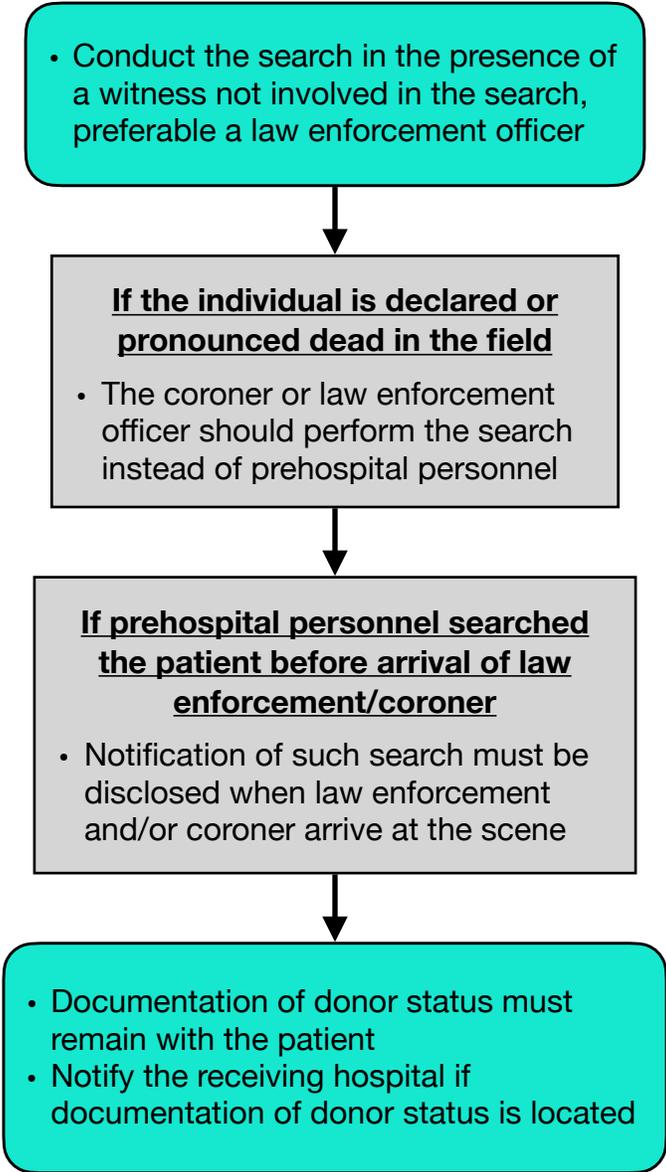
CRITICAL INFORMATION

- DNR order is not valid in suspected homicide or suicide situations
- If the patient or Designated Decision Maker (DDM) requests treatment, including resuscitation, the request should be honored
- The patient should receive treatment for pain, dyspnea, major hemorrhage, relief of choking or other medical conditions
- Do Not Resuscitate (DNR) means **NO**:
 - Assisted ventilation
 - Defibrillation
 - Cardiotoxic drugs
 - Chest compressions
 - Intubation
- Approved prehospital DNR directives include
 - A DNR directive signed by both the patient and physician; a copy or original is valid
 - A DNR ordered signed by a physician in the patient's chart at a licensed health facility
 - A Physician's Order for Life-Sustaining Treatment (POLST) form indicating DNR
 - An Emergency Medical Services Authority/California Medical Association (EMSA/CMA) "Prehospital Do Not Resuscitate" form
 - An approved medallion (e.g. Medic-Alert) inscribed with the words: "Do Not Resuscitate- EMS"
 - A DNR ordered issued by the patient's physician who is on scene, or who issues a DNR order verbally over the phone to field personnel
- If any doubt exists, begin CPR immediately. Once initiated, CPR should be continued unless it is determined the patient meets determination of death criteria or a valid DNR order/form is presented. If conflicting documents exist, follow the most recently dated document

ANATOMICAL GIFT/ DONOR CARD SEARCH

Indications

- Conducting a “reasonable search” on an unconscious adult patient for whom it appears death is imminent for the purpose of locating documents to identify organ donation requests



Critical Information

- This procedure shall be secondary to the requirement that ambulance or emergency personnel provide emergency services to the patient

SUSPECTED ABUSE/NEGLECT/ INFLICTED PHYSICAL INJURY

Indications

- Identification and guidelines for reporting and treating suspected child abuse (persons <18 years), dependent adults between the ages of 18 and 64 years (those with physical or mental limitations restricting their ability to carry out normal activities), domestic abuse (intimate partner violence, includes dating relationships), and elder adults (≥65 years)
- Abuse is defined as harmful, wrongful, neglectful or improper treatment which may result in physical or mental injury
- Physical injury includes any injury that is self-inflicted or inflicted by another person or any assaultive or abusive contact

• BLS/ALS RMC
 • Treat and transport the patient per Destination Guidelines Policy GPC4

If patient or patient's Designated Decision Maker (DDM) refuses transportation and patient's life IS in imminent danger
 • Stay on scene, request local law enforcement agency to respond and place patient in protective custody

If patient or patient's DDM refuses transportation and patient's life is NOT in imminent danger
 • Leave the scene, contact law enforcement, establish radio contact with the intended receiving hospital, describe situation including reasons for suspecting abuse

If abuse suspected in individuals other than the patient
 • Follow the procedures stated above for imminent and/or non-imminent danger

• Contact the local law enforcement agency and/or one of the following protective service agencies by phone within 24 hours and submit completed report within 36 hours of incident
 • Marin Children and Family Services Emergency Response 415-473-7153
 • State of California Report os Suspected Child Abuse (Form SS 8583- see GPC 9A)
 • Marin County Adult Protective Services 415-473-2774
 • State of California Report of Suspected Dependent Adult/Elder Abuse (Form SOC 341- See GPC 9B)

• For inflicted physical injury:
 • Healthcare provider shall place a telephone call to the law enforcement agency with investigative jurisdiction as soon as practically possible
 • A written report shall be completed (OES form 2-920) and faxed to the law enforcement agency within two working days (see below for fax numbers)
 • Both telephone and written reports shall be submitted if the patient has expired
 • The prehospital providers at the scene shall determine who amongst them submits the report

Critical Information

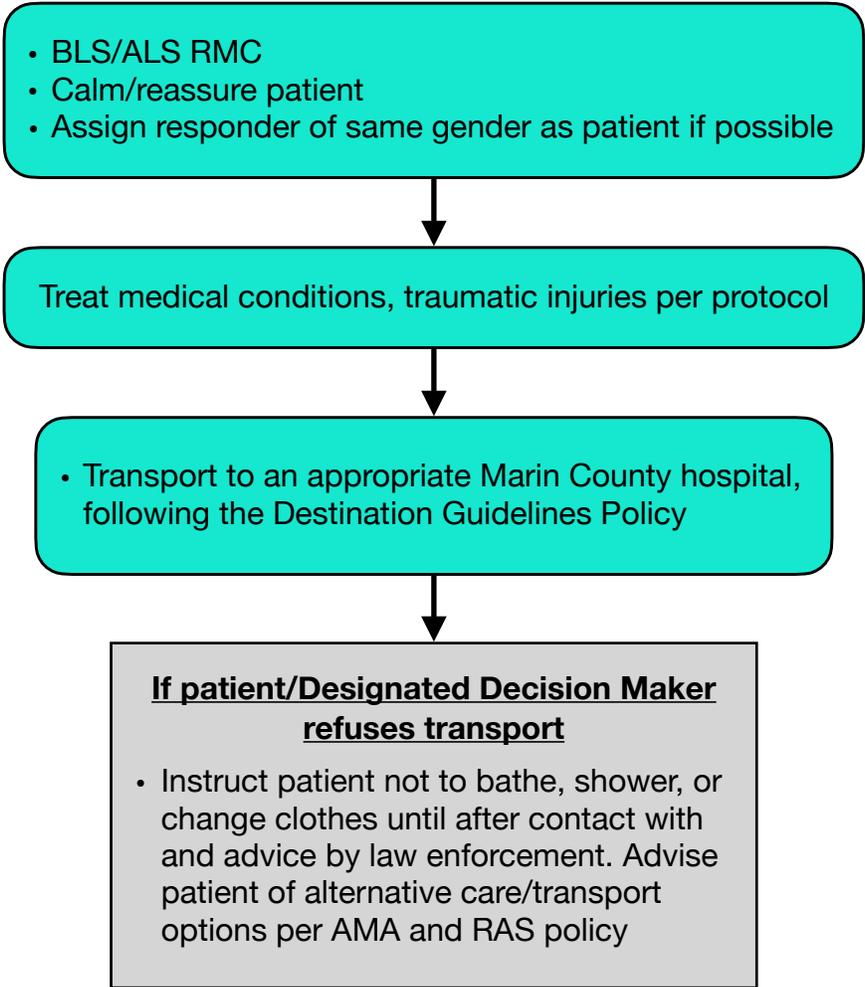
- Common findings in victims of child abuse are as follows:
 - Suspicious fractures in children <3yrs
 - Multiple fractures
 - Unexplained bruising
 - Starvation/dehydration
- Common findings in parents/guardians of abused child/elder/domestic partners/dependent adults are as follows:
 - Contradictory stories regarding patient's injury
 - Evasive answers to questions
 - Anger directed towards or little concern for the patient
 - Drug use
 - Inability to locate parent/guardian

Law Enforcement Agency	Fax
• Belvedere	415-435-9471
• Central Marin	415-927-5167
• Fairfax	415-457-8769
• Marin Sheriff	415-473-4126
• Mill Valley	415-389-4148
• Novato	415-898-5344
• Ross	415-453-6124
• San Rafael	415-485-3402
• Sausalito	415-289-4175
• Tiburon	415-789-2828

SEXUAL ASSAULT/HUMAN TRAFFICKING

Indication

- Patients with complaints consistent with sexual assault or evidence of human trafficking
- Human trafficking involves labor or services, through the use of force, fraud, or coercion for the purposes of subjection to involuntary servitude, peonage, debt bondage or slavery
- Commercial sex acts through the use of force, fraud or coercion
- Any commercial sex act, if the person is under 18 years of age, regardless of whether any form of coercion is involved



SPECIAL CONSIDERATIONS

- If patient's clothing is removed and law enforcement is not at scene, place clothing in a paper bag and bring to the hospital. Do not use a plastic bag
- A patient who requires/requests a specialized evidentiary examination will first be transported to a Marin County hospital. Once medically cleared, the patient will be transported by the appropriate law enforcement agency to Kaiser Permanente Vallejo Medical Center

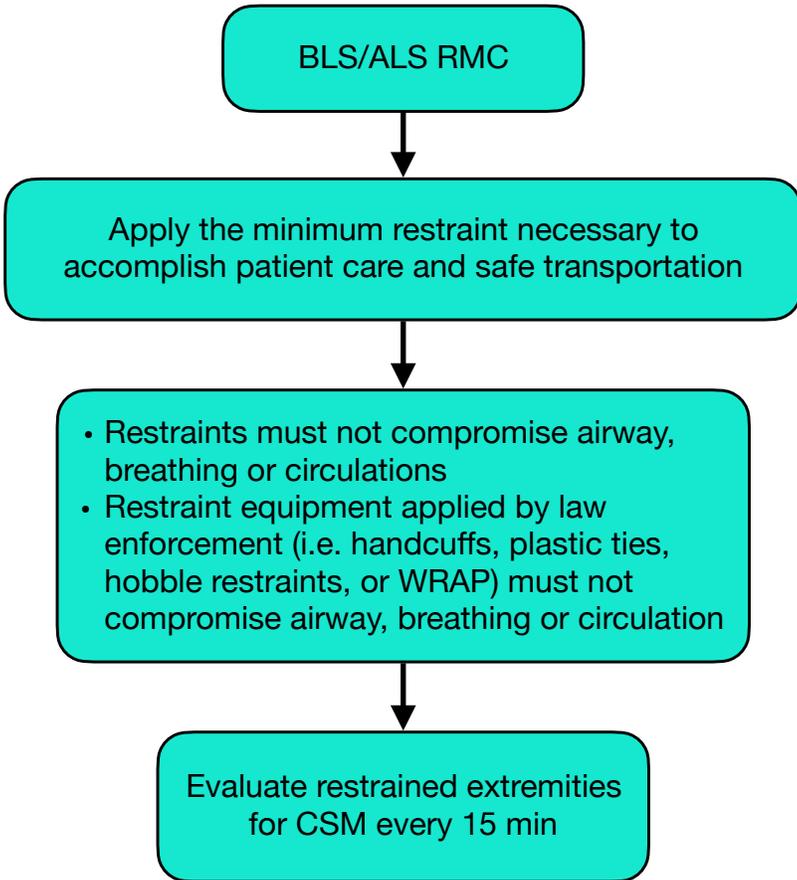
Critical Information

- Preserve possible evidence and advise patient not to clean, bathe or change clothes until examination by hospital personnel
- Notify police and dispatch of nature of call
- EMS personnel are encouraged to report to local law enforcement suspected human trafficking cases
 - Warning signs of human trafficking include:
 - Individuals who are segregated from contact with others, or don't have control of their own ID/documents
 - Locations with unsuitable living conditions or unreasonable security measures
 - Incidents where responders are approached and asked for protection/asylum from other individuals at a scene
 - For suspected human trafficking, offer the patient the 24/7 National Human Trafficking hotline number: 1-888-373-7888 or they can text "HELP" or "INFO" to 233733

PATIENT RESTRAINT

Indication

- Violent or potentially violent patient capable of harming themselves or others



Equipment

- Quick release synthetic, soft, or padded leather restraints

SPECIAL CONSIDERATIONS

- Aggressive or violent behavior may be indications of: head trauma, alcohol or drug ingestion, metabolic disorders, stress and psychiatric disorders which require ALS intervention
- Restraints applied by law enforcement require the officer's continued presence

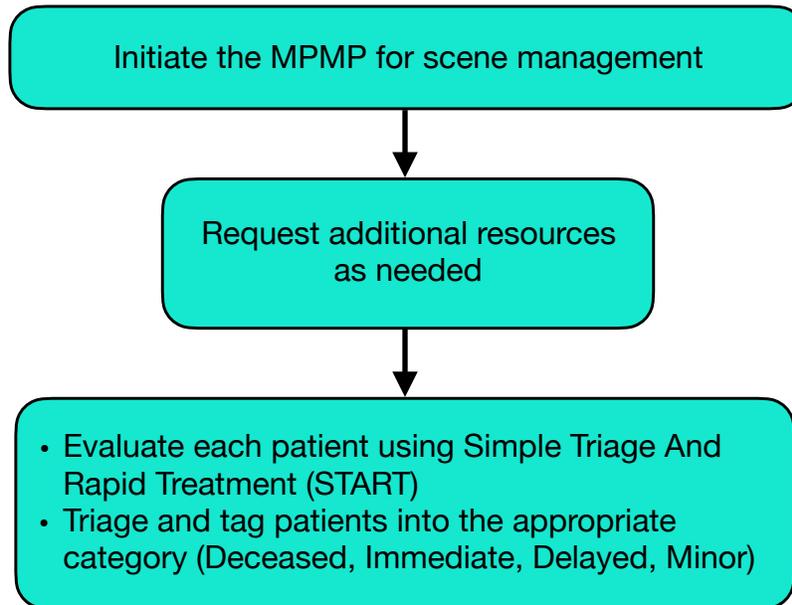
Critical Information

- Contraindications
- The following devices and restraint techniques should NOT be applied by EMS personnel:
 - Hard plastic ties or any restraint device requiring a key to remove
 - Backboard, scoop-stretcher or flat as a "sandwich" restraint
 - Restraining of a patient's hands and feet behind the patient
 - Methods or materials that could cause vascular or neurological compromise

MULTI-CASUALTY INCIDENT (MCI)

Indication

- Any incident with multiple patients may indicate the use of the County Multiple Patient Management Plan (MPMP)



SPINAL MOTION RESTRICTION (SMR)

Indication

- Any patient identified by Marin County's Spinal Injury Assessment (GPC 13a) to warrant full or modified SMR. The spinal injury assessment should be performed prior to application of SMR. SMR describes the procedure used to care for patients with possible unstable spinal injuries

Full SMR

(Cervical collar with full-length vacuum spring or rigid device with lateral immobilization and straps)

- Indications:
 - Patients with obvious acute neurologic deficit (paralysis or weakness)
 - Priapism or suspected spinal shock
- Procedure:
 - **Assess motor/sensory function before and after SMR application**
 - regularly reassess and document motor/sensory function (include finger abduction, wrist/finger extension, plantar/dorsal flexion and sharp/dull exam if possible) following application of SMR
 - **Remove athletic equipment (if applicable)**
 - **Apply rigid cervical collar**
 - Cervical collar may be omitted for patients with isolated lumbar and/or lower thoracic spine tenderness
 - If needed, **extricate patient** limiting movement of the spine
 - **Apply adequate padding** on backboards or use vacuum mattress to prevent tissue ischemia and increase comfort
 - Secure patient to device
 - **Consider the use of SpO2 and EtCO2** to monitor respiratory function

Modified SMR

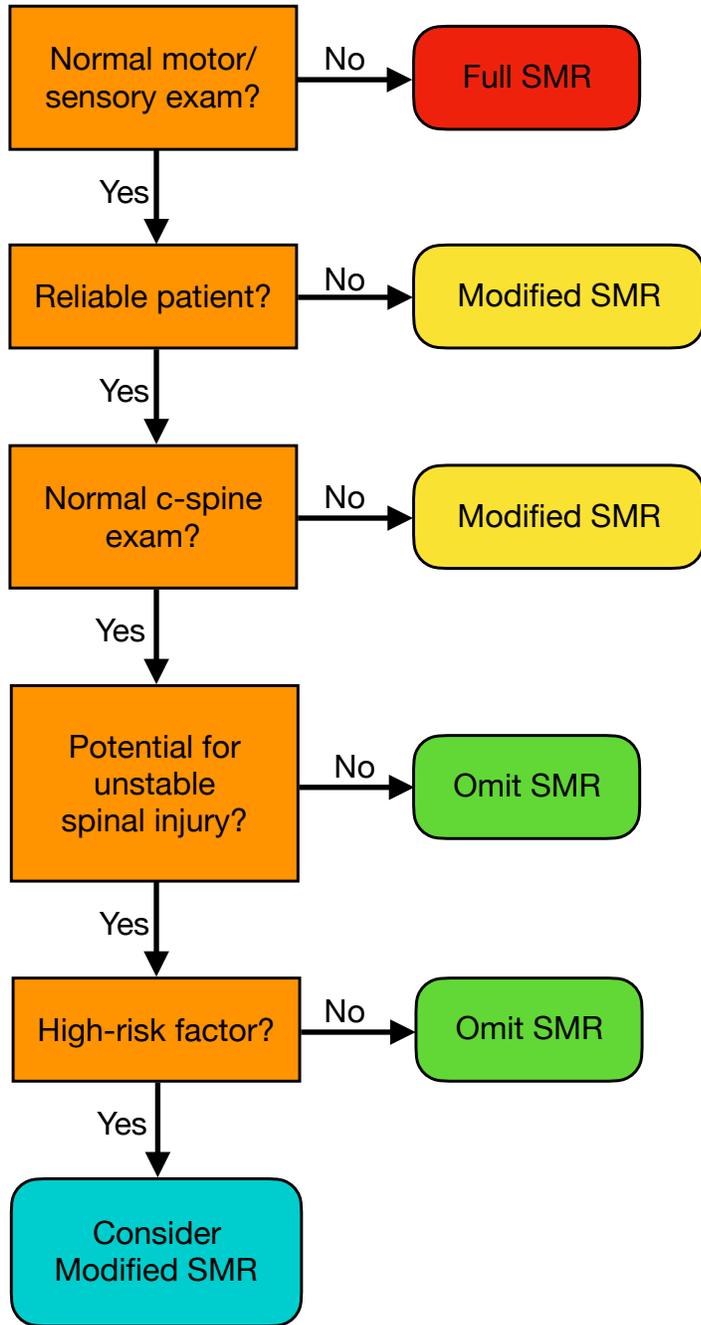
(May include any of the following: rigid cervical collar alone; self limiting motion; padding to limit movement; KED; or 1/2 length vacuum splint)

- Indications:
 - Patients who do not meet criteria for full SMR, but who are at high risk due to blunt trauma mechanism
 - Ambulatory/self-extricated patients who have mid-line neck pain and/or tenderness
- Procedure:
 - **Use the least invasive methods/tools available** which minimize patient discomfort and respiratory compromise
 - Least invasive examples: Lateral, semi-fowler's or fowler's position with cervical collar only; pillows; vacuum splint or gurney mattress; child's car seat
 - **Hard backboards should only be used when absolutely necessary** (e.g. patient transfer)
 - Consider pull sheets, other flexible devices (e.g. flat stretchers), or scoops and scoop-like devices
 - **Provide manual stabilization** restricting gross motion.
 - **Alert and cooperative patients** may be allowed to self-limit motion if appropriate with or without cervical collar
 - **Self-extrication** is allowable for patients meeting criteria for modified SMR

SPECIAL CONSIDERATIONS

- Full SMR is not benign; it can lead to pain, respiratory compromise, skin breakdown and contribute to cerebral hypoperfusion in patients with stroke or head injury
- **Routine use of SMR should be avoided.** Its use should be reserved for patients with confirmatory physical findings or high clinical suspicion of unstable spinal fracture
- **SMR is not indicated in patients with isolated penetrating trauma**
- Use SMR with caution with patients presenting with **dyspnea** and position appropriately
- If patient experiences negative effects of SMR methods used, alternative measures should be implemented as soon as possible
- **Pregnant patients >20 weeks:** should be positioned on the left side, immobilized as appropriate, supporting fetus
- **Combative patients:** Avoid methods that provoke increased spinal movement and/or combativeness
- **Athletic Equipment:** (football helmet and shoulder pads; lacrosse helmet and shoulder pads; baseball/softball helmet)
 - In event of suspected spine injury during participation in equipment-intensive sport, removal of equipment is strongly recommended prior to application of SMR
 - Equipment should be removed by the rescuers most familiar with the equipment (i.e. Athletic Trainers when present)
 - Removal of helmet and/or shoulder pads provides early access to the patient's airway/chest
- **Pediatric patients**
 - Consider the use of SpO₂ and EtCO₂ to monitor respiratory function
 - Consider use of padded pediatric motion restricting board
 - Avoid methods that provoke increased spinal movement
 - If choosing to apply SMR to patient in car seat, ensure that proper assessment of patient posterior is performed
 - Car seats:
 - Infants or children restrained in a front or rear-facing car seat (excludes booster seats) may be immobilized and extricated in the car seat. The infant or child may remain in the car seat if the immobilization is secure and his/her condition allows (no signs of respiratory distress or shock)
 - Children restrained in a booster seat (with or without a back) need to be extricated and immobilized following standard SMR procedures

SPINAL INJURY ASSESSMENT



CRITICAL INFORMATION

- See GPC 13, Spinal Motion Immobilization for full and modified SMR procedure, and pediatric/pregnancy considerations
- **Motor exam:**
 - Wrist/finger extension
 - Finger abduction
 - Plantar and dorsiflexion of both feet
- **Sensory exam:**
 - Check for abnormal sensation in all extremities
- **Unreliable patient:**
 - ALOC
 - Alcohol or drug impairment
 - Distracting injury
 - Language barrier
- **Spinal assessment:**
 - Palpate entire spine for pain, step off, and swelling
- **High-risk factors:**
 - Age ≥65 years
 - Meets trauma mechanism of injury
 - Axial load to the head

BARIATRIC PATIENT TRANSPORT

Indication

- To be used when the weight of the patient exceeds the weight limitations of ambulance equipment

- When ambulance crews are faced with a patient that exceeds the weight limitations of the standard ambulance equipment, personnel shall request a 'bariatric ambulance' from their dispatcher. Crews will provide the estimated weight of the patient



- The dispatcher shall contact the local private ambulance providers to determine if they have a bariatric unit available. The private ambulance provider will provide an ETA to the incident scene
- Dispatchers will relay this information to the personnel at the incident who will then confirm their need for the specialized equipment



If patient's condition is such that a delay in transport (caused by the use of a bariatric equipped ambulance) will potentially cause additional harm to the patient

- Ambulance personnel should consider transporting the patient on the floor of the standard ambulance. In those cases, floor and wall cot hardware shall be removed (if possible) as to not compromise patient safety



- Bariatric patients shall only be transported in an ambulance
- As early as possible, field personnel will relay to the destination hospital that they are inbound with a bariatric patient. The communication will include the approximate weight of the patient



- Field personnel shall notify their agency CQI coordinator and immediate supervisor of any incident involving the management and transport of a bariatric patient. Management personnel will review all cases for appropriate care

Critical Information

- The emergent need to transport a patient shall supersede the application of this policy
- At all times, the dignity of the patient will be preserved and considered a high priority for all personnel
- Ambulance cots shall be clearly labeled with weight capacity information
- Additional personnel shall be utilized when moving bariatric patients to prevent injury to rescue personnel and the patient
- The additional time to move the patient shall be considered when evaluating the decision to wait for a bariatric transport unit

SPECIALTY PATIENT

Indication

- A patient with unique medical or behavioral prehospital needs which fall outside current county protocols

Purpose

- Medical technology and increase home health capabilities have created a special population of patients that may interface with the EMS system. The purpose of this policy is to provide specifically approved care and EMS services to those who are identified as Specialty Patients
- The agency will work with that patient and/or Designated Decision Maker (DDM) and his or her primary care physician in order to develop and improve a Specialty Patient Protocol (SPP) which will provide guidance to EMS should the need arise

Active and Current SPP in place

- Comm Center will notify first responders of SPP enroute to call
- Responding EMS units are to follow current SPP for that particular patient which has been approved by the Marin County Medical Director and which will be located in the lock box of all ALS units and with the inventory checklist of all BLS units
- Unless specified in the SPP, transport the patient according to Destination Guidelines (GPC 4). In some cases, if the patient is stable, transport may involve bypassing the closest facility for a more distant yet medically appropriate destination
- If the patient or DDM requests changes to their current protocol, the transporting unit will contact the intended receiving facility for physician consult. Personnel shall not exceed their established scope of practice

No SPP in place

- When an EMS provider identifies the possible need for an SPP, the provider shall contact their immediate supervisor and the provider’s Medical Director (I.e., a fire department may be notified by a patient’s physician that the patient is in need of an SPP)
- If the possible need is identified during the course of rendering care to a patient, the provider shall treat the patient according to existing protocols. At the conclusion of the call, the provider shall contact their immediate supervisor and the providers’s Medical Director

- All established and approved SPPs will be written on official Marin County letterhead and signed by the current Marin County EMS Agency Medical Director. Issue date and expiration date will be included
- Current SPPs will be reviewed annually as par of Policy and Procedure updates

PEDIATRIC PATIENT TRANSPORT

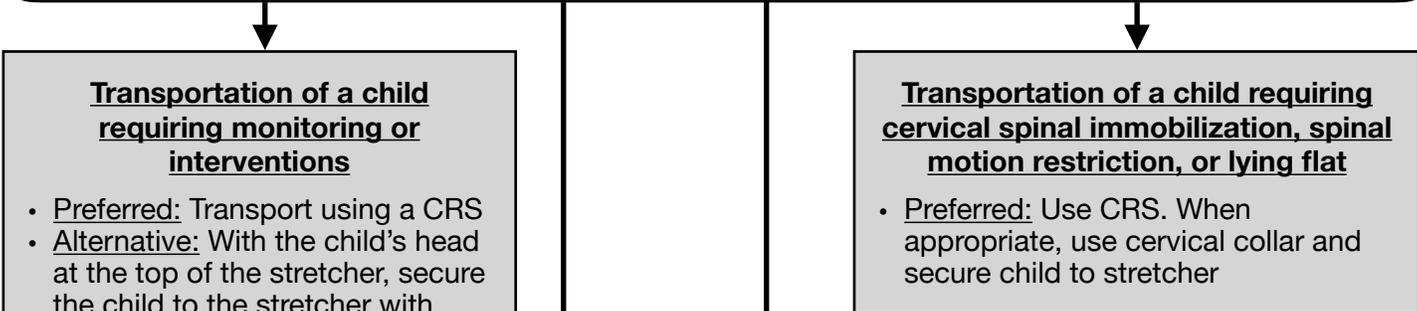
Purpose

- To provide guidance regarding the safe transport of the pediatric patient in an ambulance

General Information

- Under normal circumstances, transportation of a child in any of the following ways is not permissible:
 - Unrestrained
 - On a parent/caregiver’s lap or held in their arms
 - Using only horizontal stretcher straps if the child cannot be properly restrained according to the stretcher manufacturer’s specifications for proper restraint of patients
 - On the bench seat or any seat perpendicular to the forward motion of the vehicle
- “Car seat” refers to a size appropriate car seat which has rear and/or forward facing belt paths and which have been secured appropriately
- “CRS” refers to a child restraint system designed specifically for ambulance stretcher use and which has been properly secured

- The child’s age and weight shall be considered when utilizing an appropriate restraint system
- Use of child’s own car seat can be considered for the following (children <2 years must be rear facing):
 - No other restraint systems are available
 - Minor vehicle crash (ie: “fender bender”)
- The child shall be secured by the harness within the seat at all times. Whenever possible, procedures should be performed around the harness straps



Transportation of a child requiring monitoring or interventions

- Preferred: Transport using a CRS
- Alternative: With the child’s head at the top of the stretcher, secure the child to the stretcher with three horizontal straps and one vertical strap across each shoulder

Transportation of a child requiring cervical spinal immobilization, spinal motion restriction, or lying flat

- Preferred: Use CRS. When appropriate, use cervical collar and secure child to stretcher

Transportation of a child or children requiring transport as part of a multiple patient transport (newborn with mother, multiple children, etc)

- Preferred: If possible, transport each as a single child according to guidance above. Additional resources may be necessary
- Preferred for mother and newborn: Transport the newborn in a newborn transport wrap (i.e., Aegis Neonate wrap)
 - Transport newborn in a car seat properly installed onto or built into the rear-facing EMS provider captain’s chair, facing the rear of the ambulance.
- Even with child birth in the field, make every attempt to transport the infant in a car seat or CRS
- Alternative for mother and newborn: Transport the newborn in a CRS secured appropriately to stretcher. Transport mother in rear-facing EMS provider captain’s chair if mother is medically stable. Consider the use of additional units to accomplish safe transport

Transportation of a child who is not a patient

- Consider delaying transport until additional vehicles are available if it will not compromise other patient care or transport
- Preferred: Transport child in a vehicle other than an ambulance using a car seat
- Alternative: Transport child using a car seat in the front passenger seat of the ambulance with the airbags off OR transport in a car seat properly installed or built into rear-facing EMS provider captain’s chair

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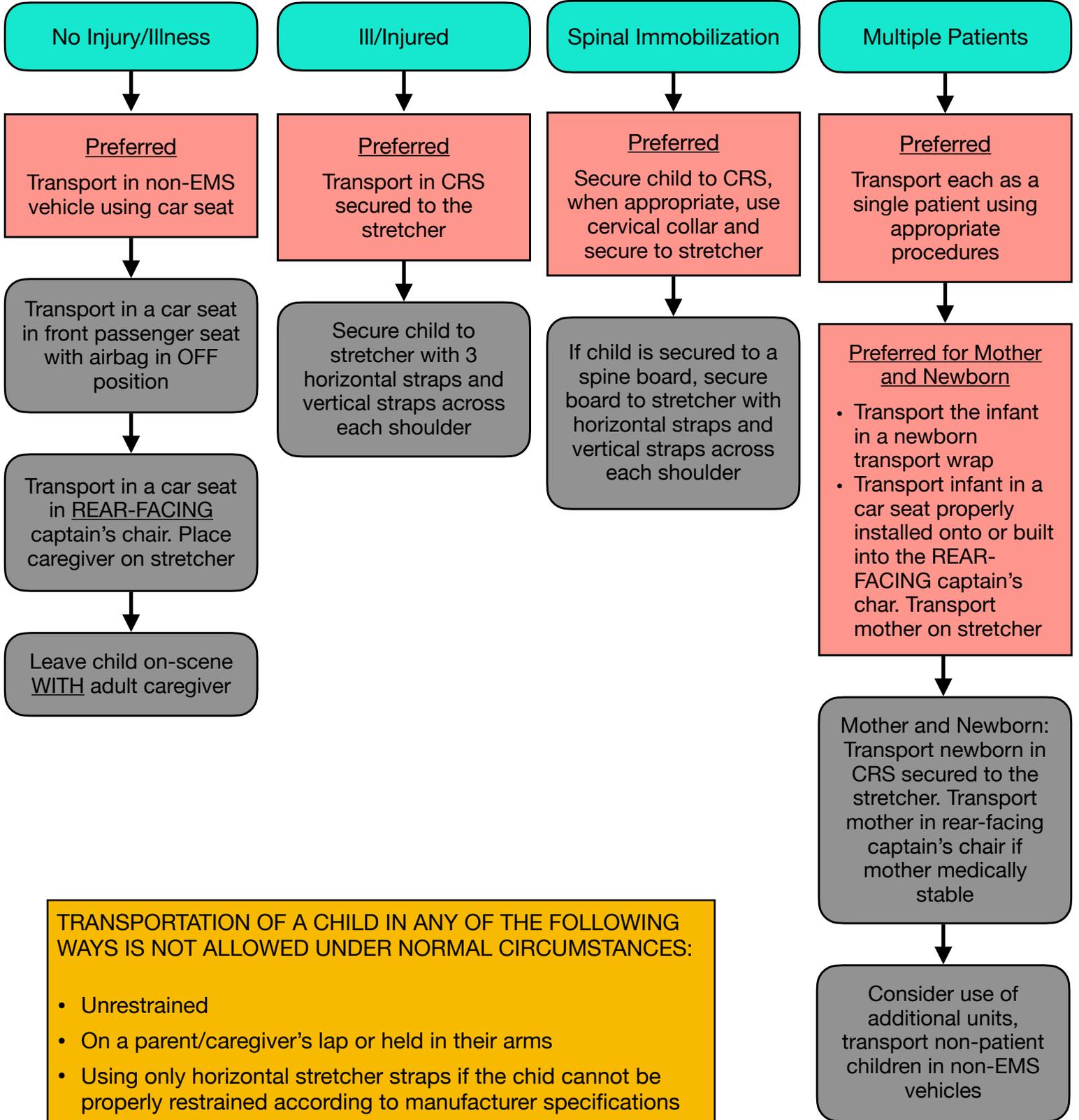
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PEDIATRIC PATIENT TRANSPORT FLOWCHART



TRANSPORTATION OF A CHILD IN ANY OF THE FOLLOWING WAYS IS NOT ALLOWED UNDER NORMAL CIRCUMSTANCES:

- Unrestrained
- On a parent/caregiver's lap or held in their arms
- Using only horizontal stretcher straps if the child cannot be properly restrained according to manufacturer specifications
- On the bench seat or any seat perpendicular to the forward motion of the vehicle

SEPSIS

Indications

- Documented or suspected infection with at least TWO of the following:
 - HR > 90
 - RR > 20
 - SBP < 90
 - Temperature >100.4 or <96
 - **AND** ETCO2 ≤25 mmHg

- ALS RMC
- ETCO2 monitoring



If patient meets criteria, provide Sepsis Notification

- Two large bore IVs or IOs
- **NS** bolus 20ml/kg IV/IO. May give up to two liters of fluid



If SBP <80 mmHg

- 📞 **PHYSICIAN CONSULT** for **Push-dose Epinephrine**
 - Mix 1ml Epinephrine (0.1mg/ml concentration) with 9ml NS in a 10ml syringe
 - Administer **Push-dose Epinephrine** 1ml IV/IO
 - **Repeat every 3-5 min**
 - Titrate to maintain SBP >80mmHg
 - Monitor BP every 5 minutes

CRITICAL INFORMATION

- If rales present, see Acute Pulmonary Edema Policy, R 5

COMA/ALOC

Indications

- GCS <15, etiology unclear (consider AEIOU TIPS); sudden onset of weakness, paralysis, confusion, speech disturbances, headache

• ALS RMC
• ETCO2 monitoring

Position patient with head elevated 30 degrees or left lateral recumbent if vomiting

BG <60 or immeasurable

- **Dextrose 10%** 25GM/250ml
- 125ml bolus IV/IO over 10 min
- Recheck BG and **repeat as needed**

BG <60 or immeasurable and unable to start IV

- **Glucagon** 1mg IM

Narcotic Overdose

- **Narcan**
- IV/IO/IM: 0.4-4mg
- **Repeat q2-3 min** until patient responds
- IN: 2mg (1mg per nostril)
- **Repeat q2-3 min** until patient responds

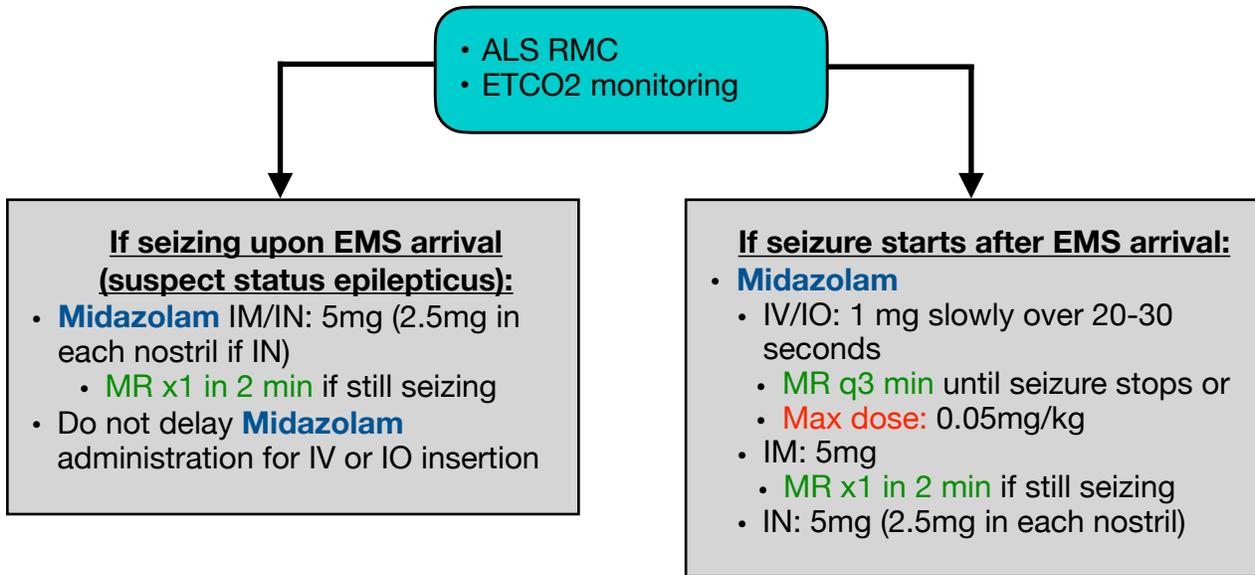
SPECIAL CONSIDERATIONS

- Indication for c-spine precautions
- Diabetic complications
- If CVA suspected, see CVA/Stroke Policy, N 4

SEIZURE

Indications

- Recurring or continuous generalized seizures with ALOC
- Status epilepticus (two or more successive seizures without a period of consciousness, or one seizure lasting longer than five minutes)



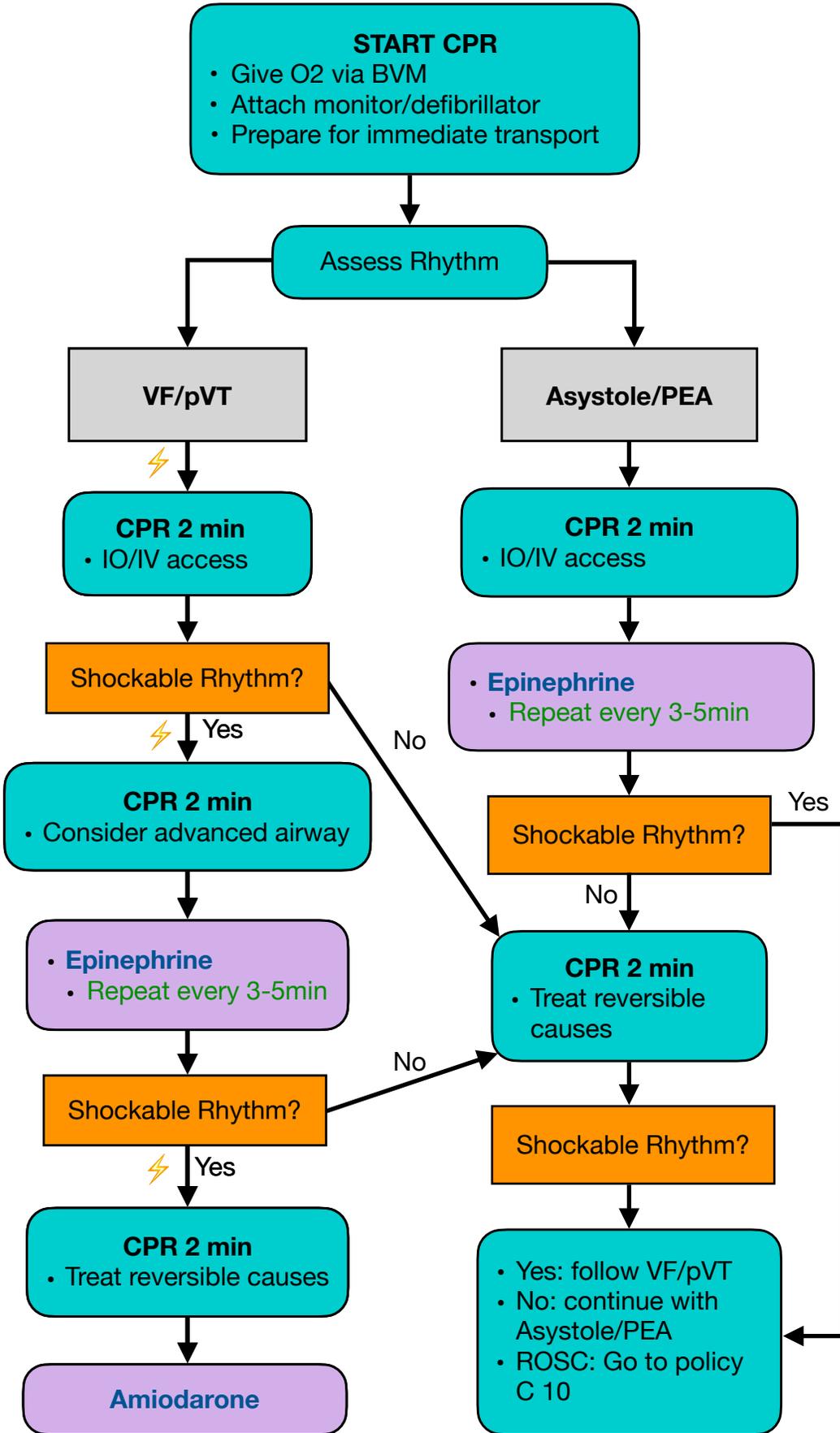
SPECIAL CONSIDERATIONS

- Consider treatable etiologies (hypoglycemia, hypoxia, narcotic overdose, unusual odor of alcohol, signs of trauma, medic alert tag) prior to administering anti-seizure medications.
- Expect and manage excessive oral secretions, vomiting, and inadequate tidal volume.
- Treatment should be based on the severity and length of the seizure activity.
- Focal seizures without mental status changes may not require pre-hospital pharmacological intervention.
- Never administer **Midazolam** rapid IV/ IO since cardiac and/or respiratory arrest may occur.

**Midazolam Weight Based Chart-
MAXIMUM DOSING for IV/IO
only**

Kg	Lb	Dose (0.05mg/kg)
40-50	88-110	2-2.5mg
51-60	111-132	2.5-3mg
61-70	133-154	3-3.5mg
71-80	155-176	3.5-4mg
81-90	177-198	4-4.5mg
91-100	199-220	4.5-5mg
>100	>220	5mg

PEDIATRIC CARDIAC ARREST



CPR Ratios

- One rescuer: 30:2
- Two rescuer: 15:2

Defibrillation

- 2-4J/kg

Airway Management

- BLS airway is preferred
- Avoid excessive ventilation
- Place younger child in sniffing position for neutral airway positioning
- Consider advanced airway only if patient height > color coded resuscitation tape **and** unable to ventilate with BVM
- Laryngoscopy for ETT must occur with CPR in progress.
- **Do not interrupt CPR for >10 seconds for tube placement**
- Use ETCO2
- Maintain SpO2 94-99%
- 1 breath every 2-3 sec.

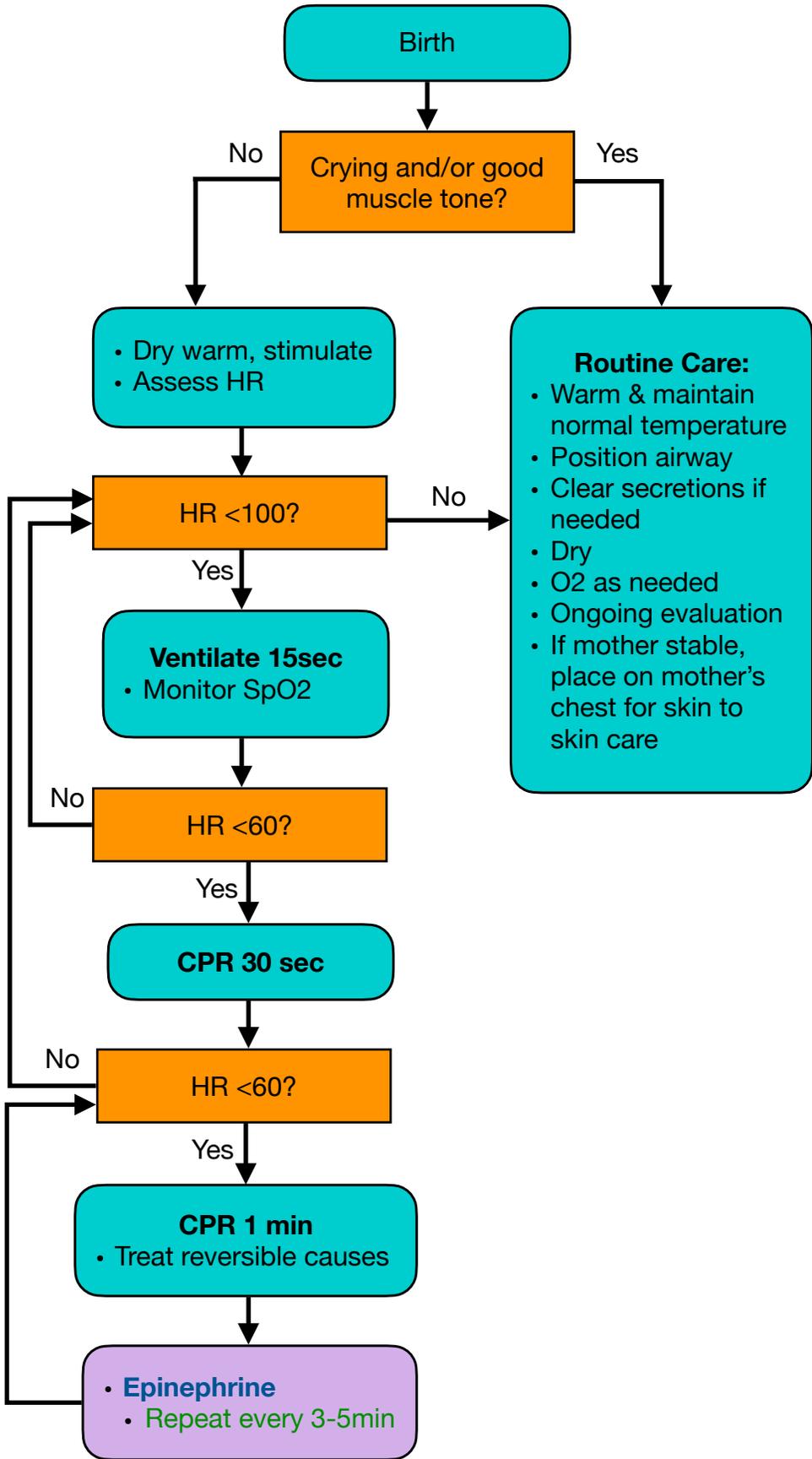
Drug Therapy

- **Epinephrine** 0.01mg/kg (0.1mg/ml) IV/IO
 - Repeat every 3-5 min
- **Amiodarone** 5mg/kg IV/IO followed by or diluted in 20ml NS after 3rd shock
 - **Max dose: 300mg**

Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade (cardiac)
- Toxins
- Thrombus
- Trauma

NEWBORN RESUSCITATION



CRITICAL INFORMATION

- Measure with color-coded resuscitation tape
- Compress at rate of 90bpm. Use metronome or similar device
- 3:1 compression/ventilation ratio with 2 person CPR
- Place pulse ox on right arm (due to ductus arteriosus)
- Peripheral cyanosis is a normal finding
- Delay cord clamping until 30-60 seconds after birth, then clamp 6-8" from baby
- If cord is around neck and can't be slipped over the head, double clamp and cut between clamps

Airway Management

- Suction mouth then nose
- Ventilate with room air at a rate of 60 breaths/min
- Use 2 person BLS airway management whenever possible
- Avoid excessive ventilation
- If HR >100 but SpO2 not in target range or central cyanosis present, administer blow-by O2 at 10LPM

Drug Therapy

- **Epinephrine** 0.01mg/kg (0.1mg/ml) IV/IO
 - Repeat q3-5 min
- **NS** fluid bolus 10ml/kg IV/IO

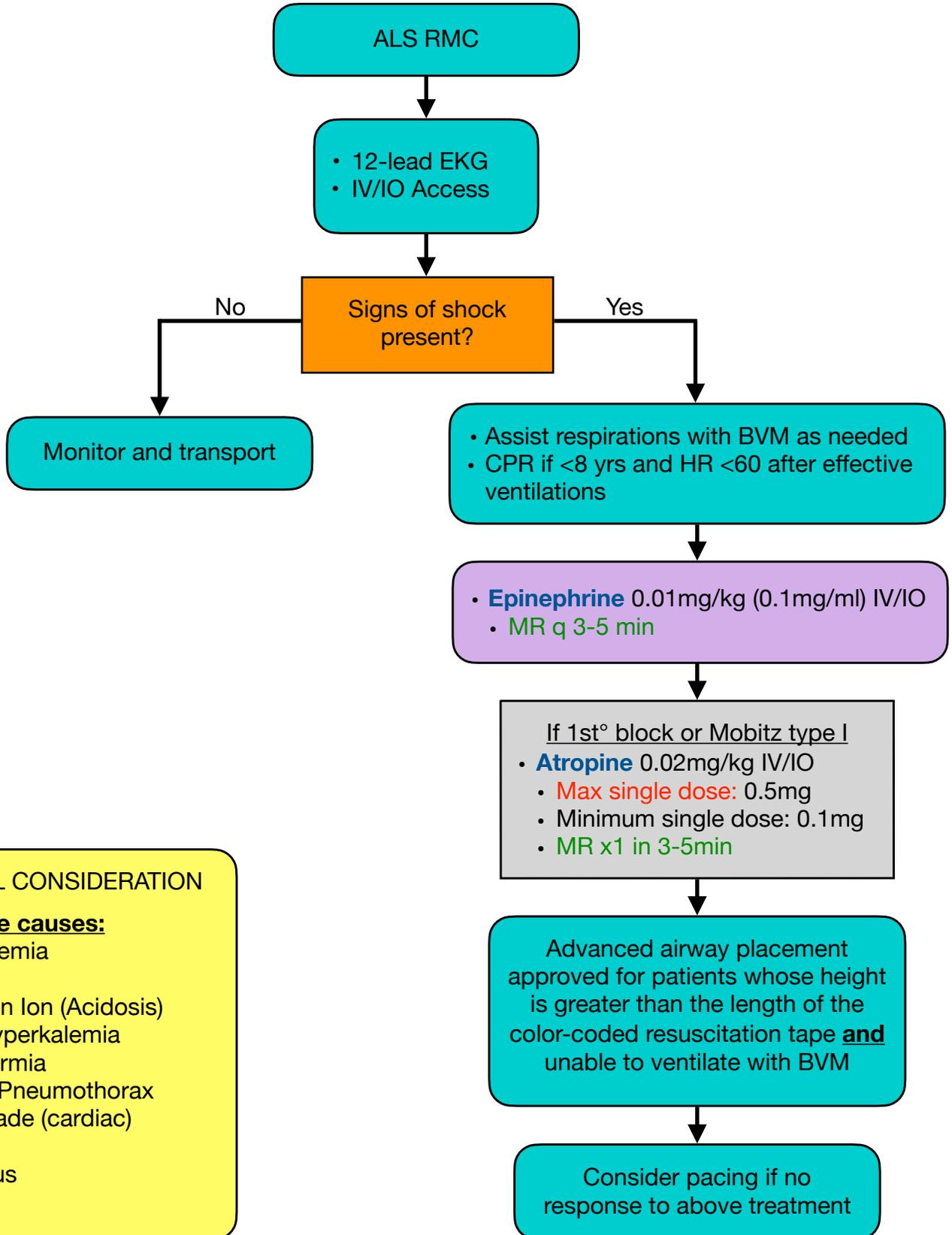
SpO2 Normal Values After Birth (in Min)

1 min	60-75%
2 min	65-70%
3 min	70-75%
4 min	75-80%
5 min	80-85%
10 min	85-95%

PEDIATRIC BRADYCARDIA

Indications

- HR <60 causing cardio-respiratory compromise



SPECIAL CONSIDERATION

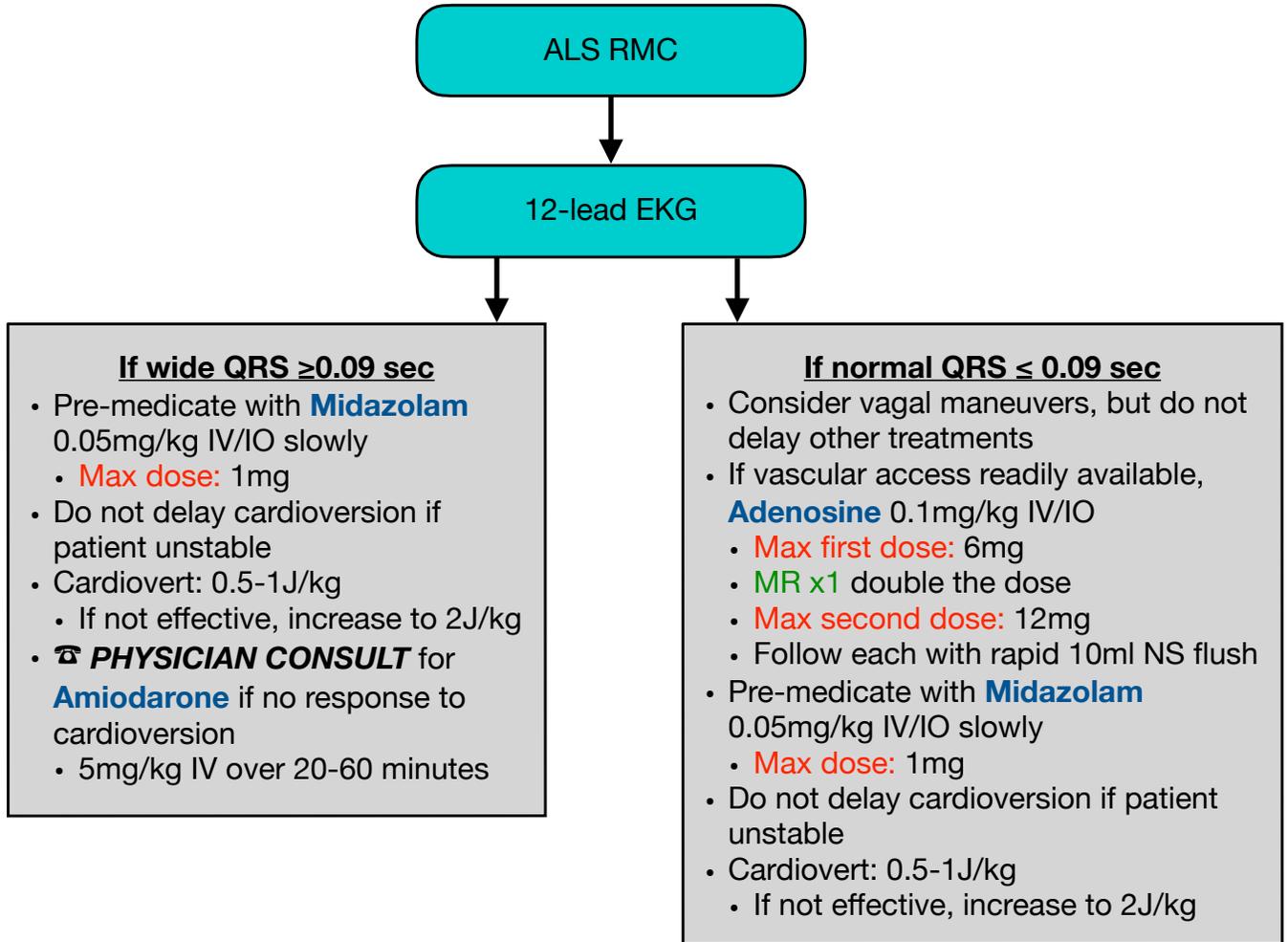
Reversible causes:

- Hypovolemia
- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade (cardiac)
- Toxins
- Thrombus
- Trauma

PEDIATRIC TACHYCARDIA POOR PERFUSION

Indications

- Rapid heart rate (infant HR >220 bpm; child HR >180 bpm) with pulse and poor perfusion



SPECIAL CONSIDERATION

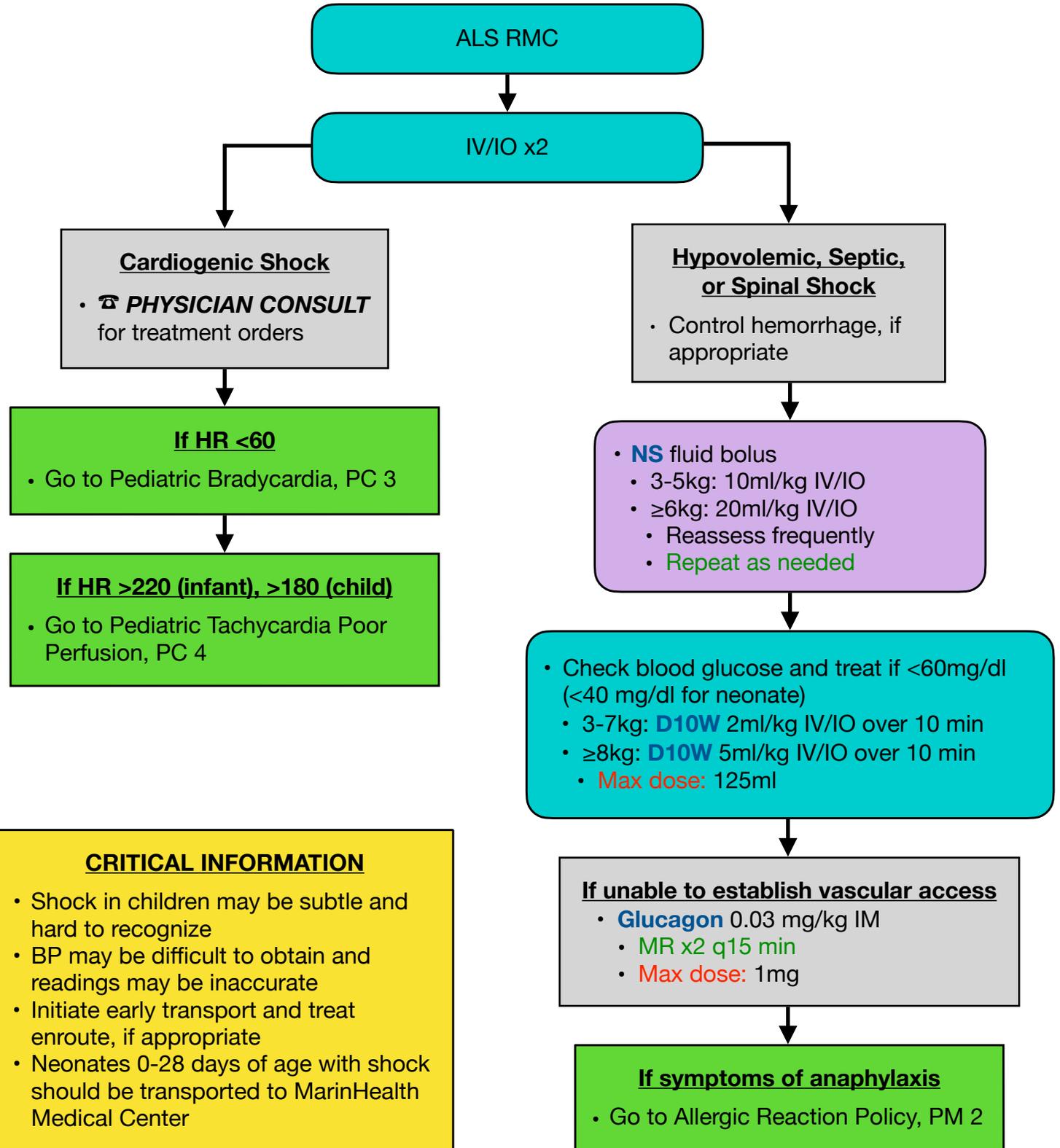
Reversible causes:

- Hypovolemia
- Hypoxia
- Hydrogen Ion (Acidosis)
- Hypo/Hyperkalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade (cardiac)
- Toxins
- Thrombus
- Trauma

PEDIATRIC SHOCK

Indications

- Inadequate organ and tissue perfusion to meet metabolic demands as seen in the following signs and symptoms: pale, cool, clammy and/or mottled skin, ALOC, SBP <70mmHg



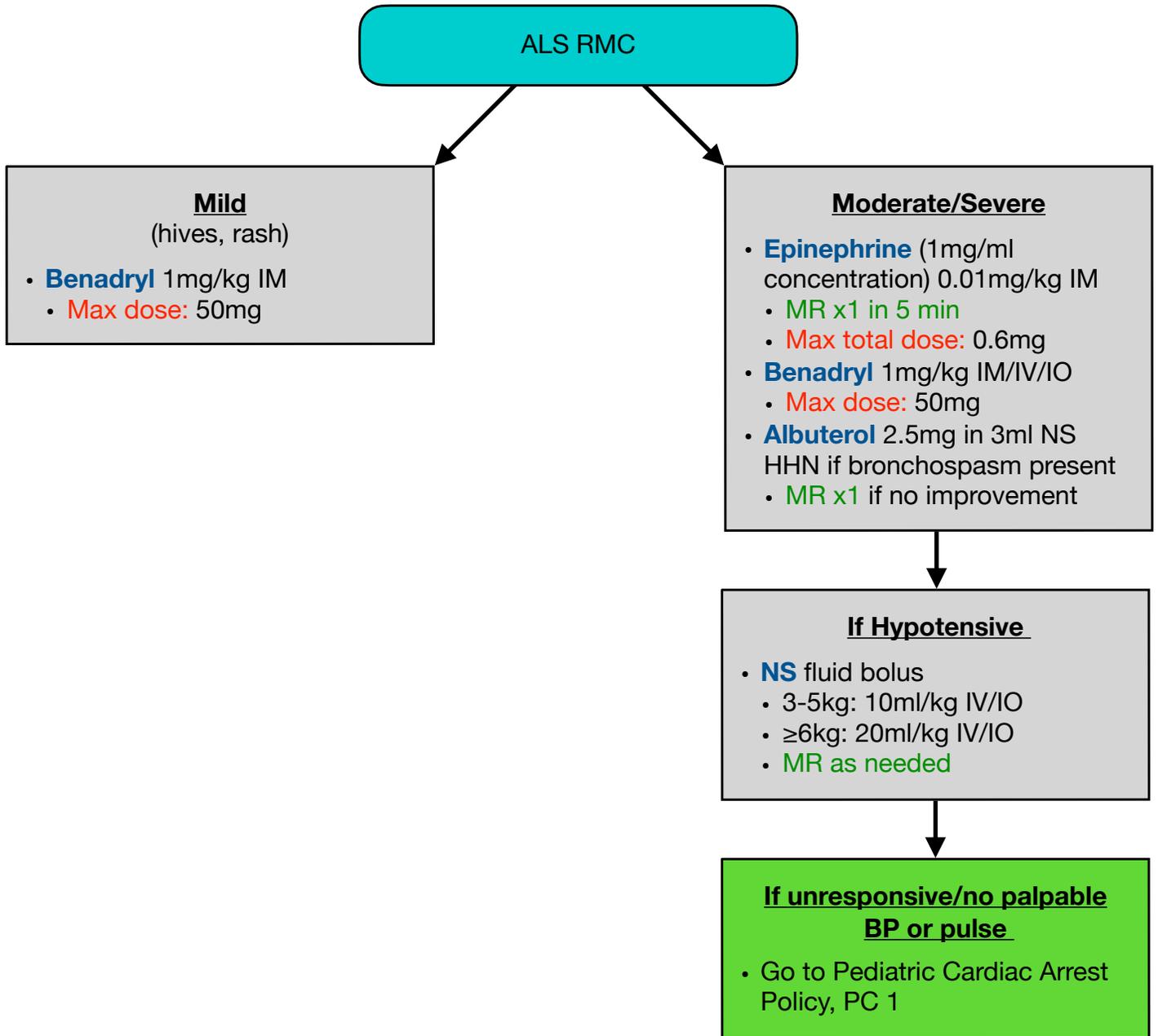
CRITICAL INFORMATION

- Shock in children may be subtle and hard to recognize
- BP may be difficult to obtain and readings may be inaccurate
- Initiate early transport and treat enroute, if appropriate
- Neonates 0-28 days of age with shock should be transported to MarinHealth Medical Center

PEDIATRIC ALLERGIC REACTION

Indications

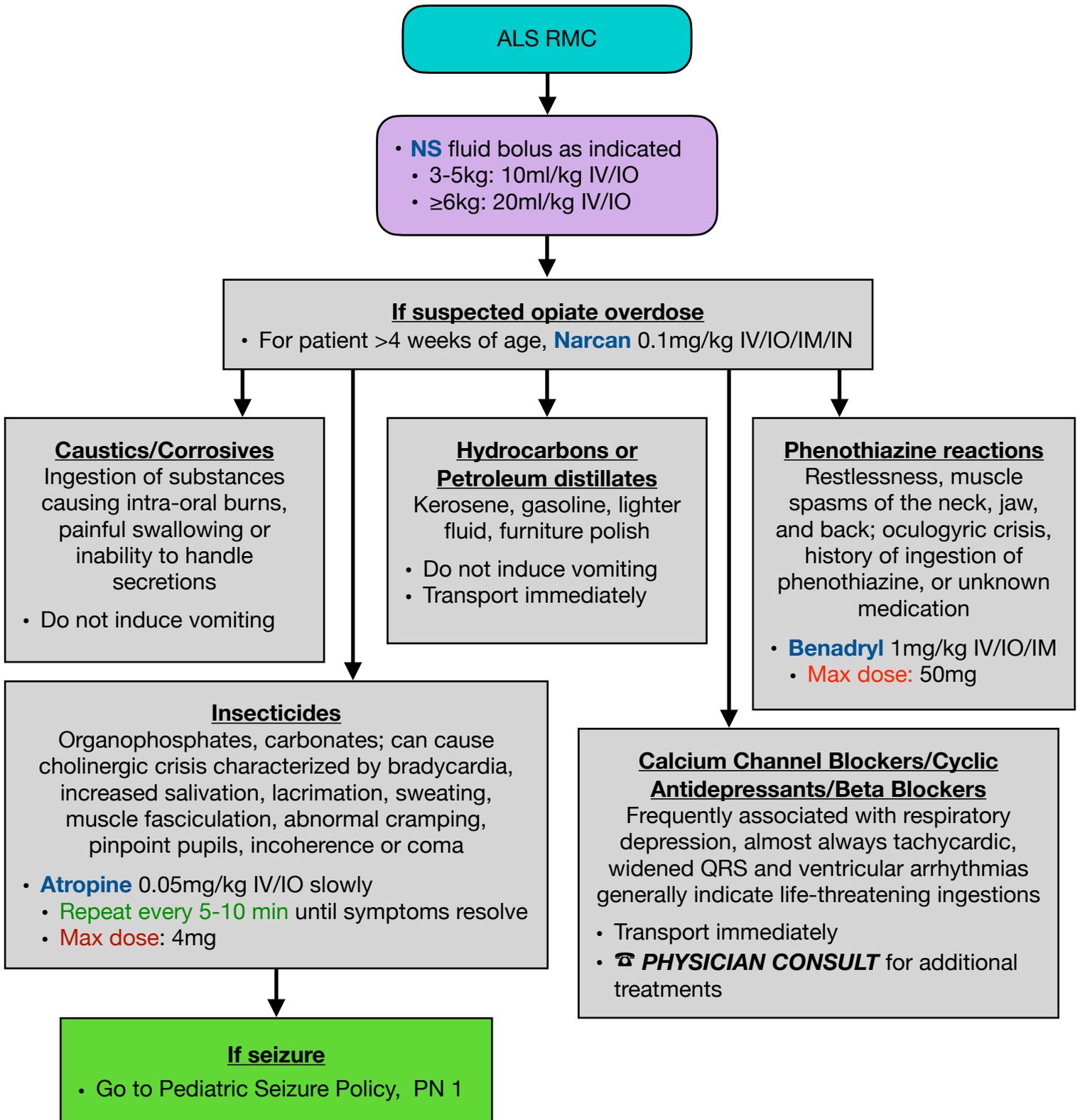
- Exposure to allergens causing airway, breathing and/or circulatory impairment



PEDIATRIC TOXIC EXPOSURE

Indications

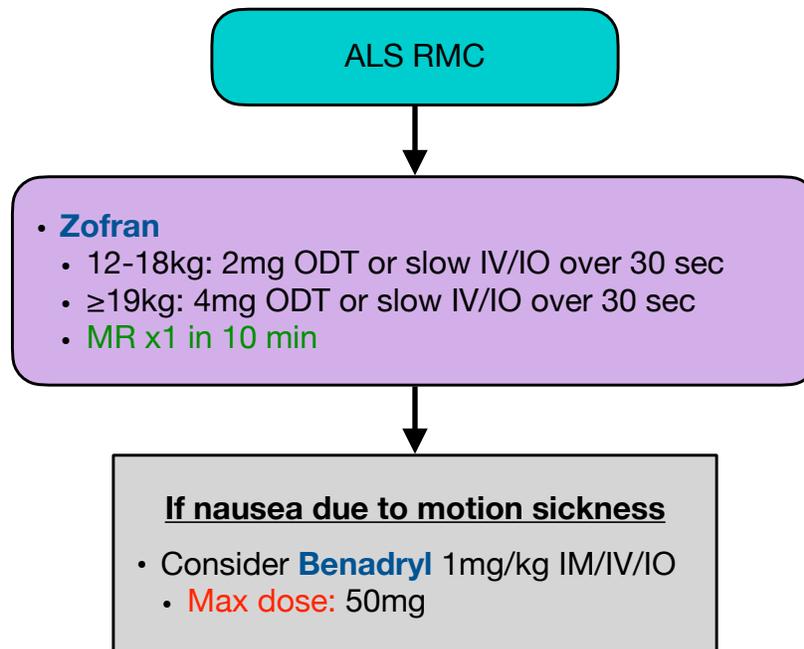
- Probable ingestion and/or exposure to one or more toxic substances, including alcohol and medications



PEDIATRIC NAUSEA/VOMITING

Indications

- Severe nausea
- Intractable vomiting
- Patients \geq 12kg
- Motion sickness



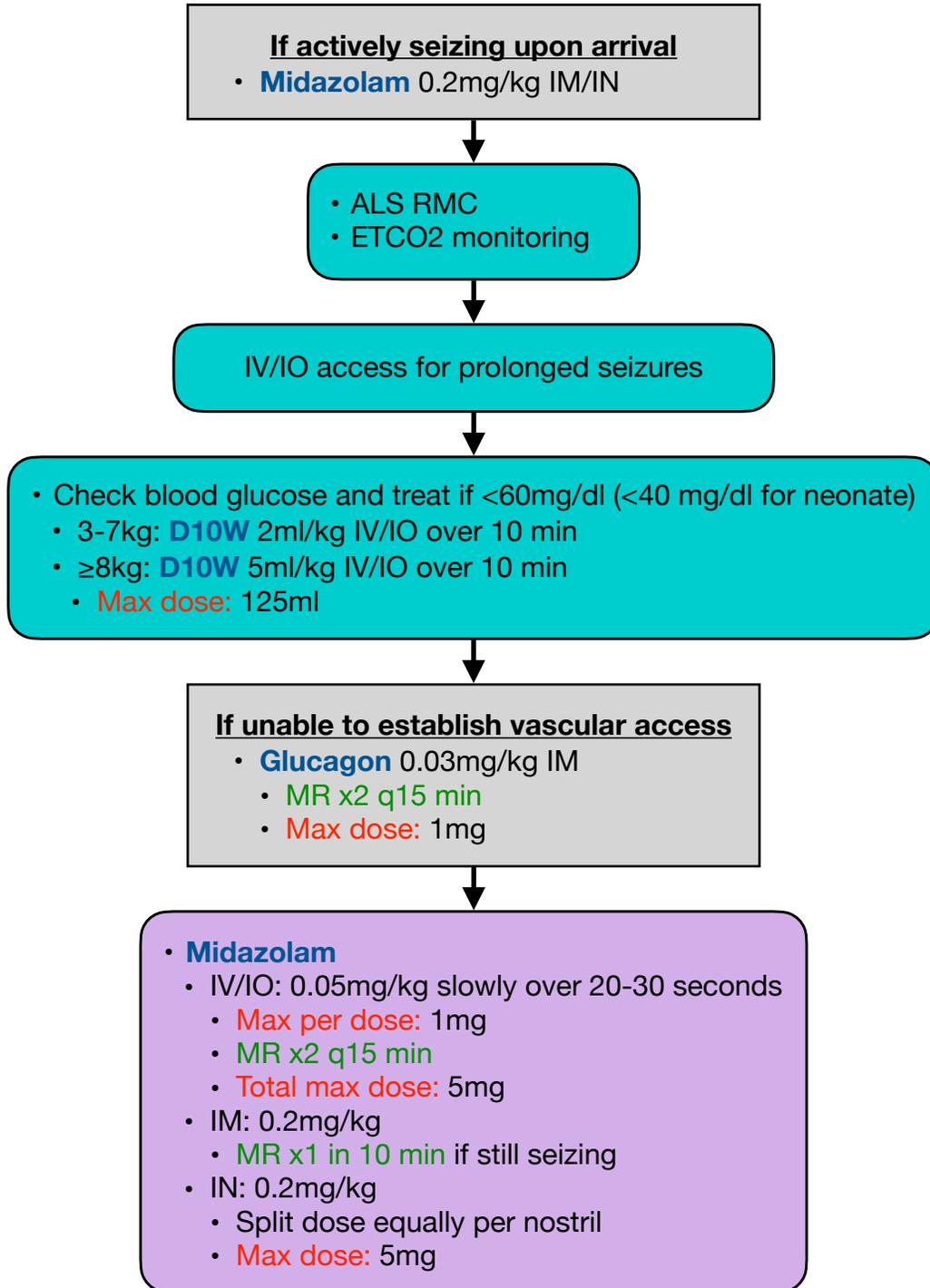
CRITICAL INFORMATION

- **Zofran** contraindicated in patients with known sensitivity to **Zofran** or other 5-HT₃ antagonists:
 - Granistron (Kytril)
 - Dolasetron (Anzemet)
 - Palonosetron (Aloxi)

PEDIATRIC SEIZURE

Indications

- Recurring or continuous generalized seizures with ALOC



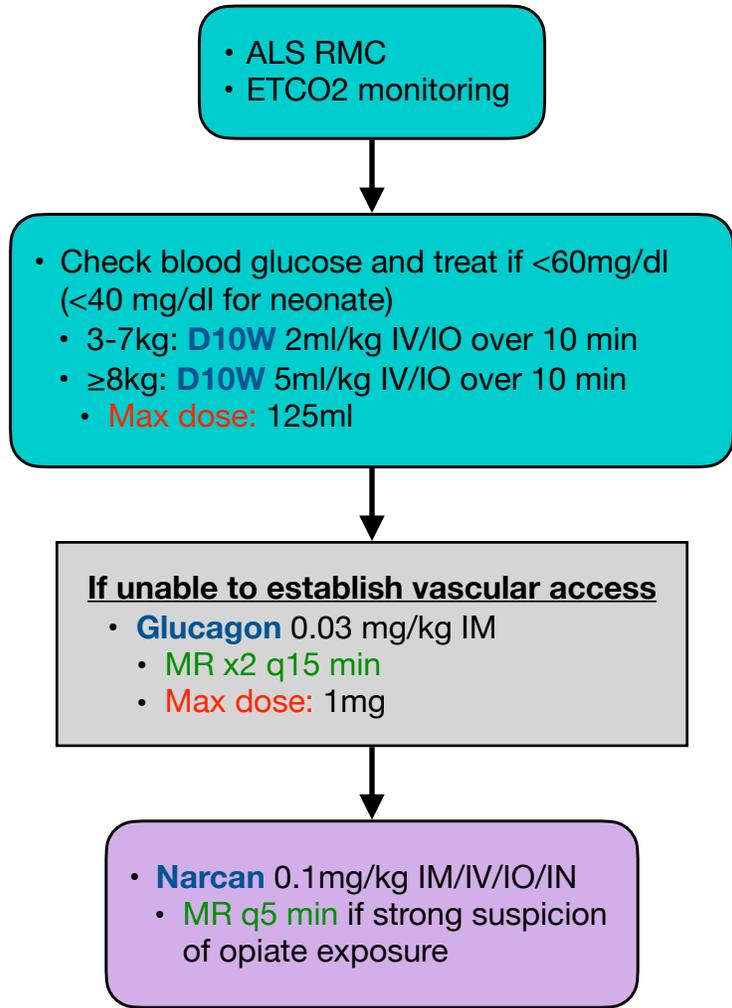
CRITICAL INFORMATION

- Evaluate for and treat hypoglycemia, hypoxia, narcotic overdose, trauma, fever, etc. prior to administering anti-seizure medications
- Never administer **Midazolam** rapid IV/IO since cardiac and/or respiratory arrest may occur

PEDIATRIC ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

Indications

- Abnormal neurologic state where child is less alert and interactive than is age appropriate



CRITICAL INFORMATION

- Narcan is contraindicated with neonatal resuscitation

PEDIATRIC RESPIRATORY DISTRESS

Indications

- Patient exhibits any of the following:
 - Wheezing
 - Stridor
 - Grunting
 - Nasal flaring
 - Apnea

ALS RMC

• Position of comfort
 • Allow parent to administer O2 if possible

**Upper Airway/
Stridor**

- **Mild-moderate distress:** NS 3ml HHN
- **Moderate to severe distress:** Epinephrine (1mg/1ml concentration) 5ml HHN

**Lower Airway/
Wheezing**

- **Albuterol** 2.5mg in 3ml NS HHN, mask, or BVM
 - MR x1
- Consider **Atrovent** 500mcg in 2.5ml NS HHN, mask or BVM
- If response inadequate, **Epinephrine** (1mg/1ml concentration) 0.01mg/kg IM
 - MR in 5 min
 - Max total dose: 0.6mg

Foreign Body Obstruction

- Attempt to clear airway
- <1 year: 5 back blows and 5 chest thrusts
- >1 year: 5 abdominal thrusts
- For FBO refractory to above attempts, utilize laryngoscopy to visualize and remove foreign body with Magill forceps

**Respiratory failure/
apnea/complete obstruction**

- Attempt positive pressure ventilation with BVM
- Advanced airway approved for patients whose height is greater than the length of the color-coded resuscitation tape **and** unable to ventilate with BVM

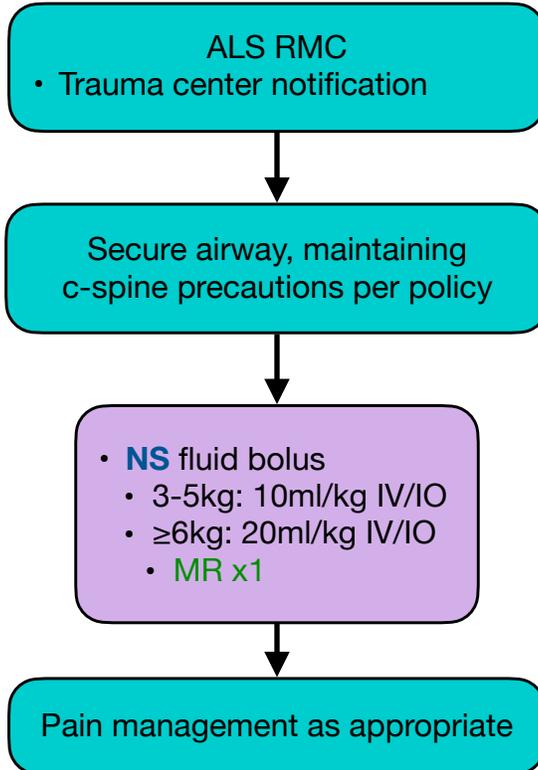
SPECIAL CONSIDERATION

- Assess key history factors: recent hospitalizations, asthma, allergies, croup, and medication usage

PEDIATRIC TRAUMA

Indications

- Suspected or apparent injuries which meet conditions listed on the Marin County Trauma Triage Tool



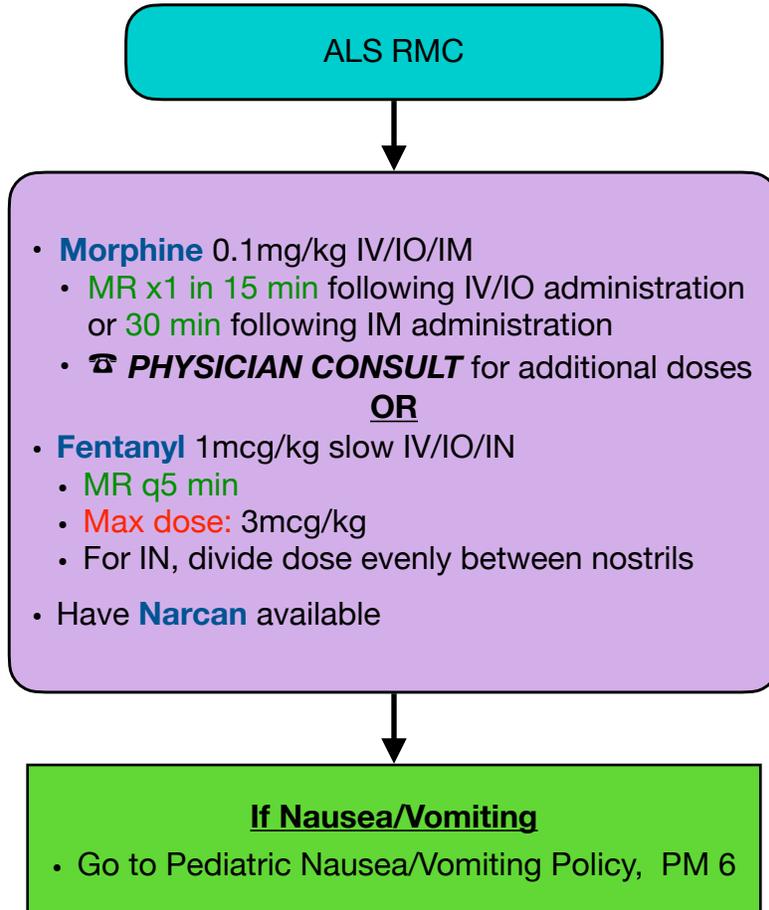
SPECIAL CONSIDERATION

- If injury may have resulted from abuse, neglect, assault, attempted suicide/homicide and/or other crimes, refer to Suspected Abuse/Neglect/Human Trafficking Policy for reporting

PEDIATRIC PAIN MANAGEMENT

Indications

- Patient with apparent or reported pain



📞 PHYSICIAN CONSULT

- Patient less than 6 months of age
- Patients with head, chest, or abdominal trauma; decreased respirations; ALOC (GCS <15)
- Additional doses of **Opioid** after initial dose administered

PEDIATRIC MEDICATIONS

DRUG	CONCENTRATION	STANDARD DOSE
Adenosine	6mg/2ml (3mg/ml)	0.1mg/kg rapid IV/IO push, followed by 5ml NS flush <i>Max first dose:</i> 6mg <i>Repeat:</i> x1 double the dose <i>Max second dose:</i> 12mg
Albuterol	2.5mg/3ml NS	2.5mg/3ml NS <i>Repeat:</i> x1
Amiodarone	150mg/3ml (50mg/ml)	<u>Pulseless Arrest:</u> 5mg/kg IV/IO, followed by or diluted in 20ml NS after 3rd shock <i>Max dose:</i> 300mg <u>Tachycardia with poor perfusion:</u> 5mg/kg IV/IO over 20-60 min
Atropine	<u>Preload:</u> 1mg/10ml (0.1mg/ml) <u>Vial:</u> 0.4mg/ml	<u>Bradycardia:</u> 0.02mg/kg IV/IO Minimum dose 0.1mg <i>Max single dose:</i> 0.5mg <i>Repeat:</i> x1 in 3-5 min <u>Organophosphate Poisoning:</u> 0.05mg/kg IV/IO <i>Repeat:</i> q5-10 min <i>Max dose:</i> 4mg or until relief of symptoms
Dextrose 10%	D10%	<u>3-7kg:</u> 2ml/kg IV/IO <u>≥8kg:</u> 5ml/kg IV/IO <i>Max dose:</i> 125ml
Diphenhydramine (Benadryl)	50mg/ml	1mg/kg IV/IO/IM <i>Max dose:</i> 50mg
Epinephrine	1mg/10ml (0.1mg/ml)	<u>Cardiac Arrest:</u> 0.01mg/kg (0.1ml/kg) IV/IO <i>Repeat:</i> q3-5 min
Epinephrine	1mg/ml EpiPen Jr ® 0.15mg	<u>Allergic Reaction:</u> 0.01mg/kg IM <i>Repeat:</i> x1 in 5 min <i>Max dose:</i> 0.6mg EpiPen Jr ®: repeat as needed in 5 min <u>Upper Airway/Stridor:</u> 5mg in 5ml via nebulizer
Fentanyl	100mcg/2ml (50mcg/ml)	1mcg/kg slow IV/IO/IM/IN <i>Repeat:</i> q5 min <i>Max dose:</i> 3mcg/kg For IN: divide dose evenly between nostrils

PEDIATRIC MEDICATIONS

DRUG	CONCENTRATION	STANDARD DOSE
Glucagon	1mg/ml	0.03mg/kg IM <i>Repeat:</i> x2 q15 min if no IV established <i>Max dose:</i> 1mg
Ipratropium (Atrovent)	500mcg/2.5ml Unit dose	500mcg/2.5ml Unit dose
Lidocaine 2%	20mg/ml	0.5mg/kg slowly <i>Repeat:</i> x1 half initial dose <i>Max dose:</i> 40mg
Midazolam (Versed)	2mg/2ml (1mg/ml) 5mg/ml	<u>Cardioversion:</u> 0.05mg/kg slow IV/IO <i>Max dose:</i> 1mg <u>Seizure:</u> IV/IO: 0.05mg/kg slowly <i>Repeat:</i> x2 q15 min <i>Max single dose:</i> 1mg <i>Total max dose:</i> 5mg IM: 0.2mg/kg <i>Repeat:</i> x1 in 10 min is still seizing IN: 0.2mg/kg <i>Max dose:</i> 5mg For IN: divide dose evenly between nostrils
Morphine	10mg/10ml (1mg/ml) 10mg/ml	<u>Pain Management:</u> 0.1mg/kg slow IV/IO/IM <i>Repeat:</i> x2 in 15 min (IV/IO), 30 min if IM <u>Burns:</u> 0.1mg/kg IV/IO/IM in incremental doses up to <i>max dose:</i> 0.3mg/kg
Naloxone (Narcan)	2mg/2ml	0.1mg/kg (0.25ml/kg) IV/IO/IM/IN <i>Repeat:</i> q5 min For IN: divide dose evenly between nostrils
Ondansetron (Zofran)	4mg ODT 4mg/2ml (2mg/ml)	<u>Patients 12-18kg:</u> 2mg ODT or slow IV over 30 seconds <i>Repeat:</i> x1 in 10 min <u>Patients >18kg:</u> 4mg ODT or slow IV over 30 seconds <i>Repeat:</i> x1 in 10 min
Sodium Bicarbonate	50mEq/50ml	1mEq/kg IV/IO

March 2022		MARIN COUNTY EMS PEDIATRIC DOSING GUIDE								PTG 2A	
		Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	
		kg	3 - 5	6 - 7	8 - 9	10 - 11	12 - 14	15 - 18	19 - 22	24 - 28	30 - 36
		lbs	6 - 11	13 - 15	18 - 20	22 - 24	27 - 31	33 - 40	42 - 51	53 - 64	66 - 80
NS Fluid Bolus			40ml	130ml	170ml	210ml	260ml	325ml	420ml	530ml	660ml
Blade size for foreign body removal			0	0	1	1	2	2	2	2	3
DEFIBRILLATION 2J/kg, 4J/kg		1st	8J	13J	17J	20J	26J	33J	40J	53J	66J
		2nd	16J	26J	34J	40J	52J	66J	80J	106J	130J
CARDIOVERSION 1J/kg, 2J/kg		1st	4J	7J	9J	10J	13J	17J	20J	27J	33J
		2nd	8J	13J	17J	20J	26J	34J	40J	54J	66J
ADENOSINE 0.1mg/kg RIVP w/ 10ml NS flush MR x1 double the dose Max 1st dose: 6mg, Max 2nd dose: 12mg Concentration: 6mg/2 ml (3 mg/ml)		1st	0.4mg 0.14ml	0.7mg 0.2ml	0.9mg 0.3ml	1mg 0.3ml	1.3mg 0.4ml	1.7mg 0.6ml	2.1mg 0.7ml	2.7mg 0.9ml	3.3mg 1.1ml
		2nd	0.8mg 0.27ml	1.3mg 0.4ml	1.7mg 0.6ml	2.1mg 0.7ml	2.6mg 0.9ml	3.4mg 1.1ml	4.2mg 1.4ml	5.4mg 1.8ml	6.6 mg 2.2ml
ALBUTEROL Unit dose vial via nebulizer MR x1 Concentration: 2.5mg/3ml			2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg	2.5mg
			3ml	3ml	3ml	3ml	3ml	3ml	3ml	3ml	3ml
AMIODARONE (Pulseless Arrest) 5mg/kg IV/IO followed by or diluted in 20ml NS flush after 3rd shock Max single dose: 300mg Concentration: 150mg/3ml (50mg/ml)			20mg	32mg	42mg	50mg	65mg	80mg	105mg	130mg	165mg
			0.4ml	0.6ml	0.8ml	1ml	1.3ml	1.6ml	2.1ml	2.6ml	3.3ml
ATROPINE (Bradycardia) 0.02mg/kg IV/IO MR x1 in 3-5 min Minimum single dose 0.1mg, Max single dose 0.5mg Concentration: 1mg/10 ml (0.1mg/ml)			0.1mg	0.1mg	0.2mg	0.2mg	0.3mg	0.3 mg	0.4mg	0.5mg	0.5mg
			1ml	1ml	2ml	2ml	3ml	3ml	4ml	5ml	5ml
ATROPINE (Organophosphate Poisoning) 0.05mg/kg IV/IO MR q5-10 min until symptoms resolve Concentration: (preload) 1mg/10ml (0.1mg/ml) Concentration: (multi-dose vial) 0.4mg/ml			0.2mg	0.3mg	0.4mg	0.5mg	0.7mg	0.8mg	1mg	1.3mg	1.7mg
			2ml	3ml	4ml	5ml	7ml	8ml	11ml	13ml	17ml
			0.5ml	0.8ml	1.1ml	1.3ml	1.6ml	2.1ml	2.6ml	3.3ml	4.1ml
DEXTROSE 10% 3-7kg: 2ml/kg IV/IO, ≥8kg: 5ml/kg IV/IO Give over 10 minutes Max dose: 125ml			8ml	12ml	42ml	53ml	65ml	83ml	105ml	125ml	125ml
DIPHENHYDRAMINE - Benadryl 1 mg/kg IM/IV/IO Max dose: 50mg Concentration: 50mg/ml			4mg	6.5mg	8.5mg	10.5mg	13mg	16.5mg	21mg	26mg	33mg
			0.08ml	0.1ml	0.2ml	0.2ml	0.3ml	0.3ml	0.4ml	0.5ml	0.7ml
EPINEPHRINE (Cardiac Arrest/Bradycardia) 0.01mg/kg IV/IO MR q3-5 min Concentration: 1mg/10 ml (0.1mg/ml)			0.04mg	0.07mg	0.09mg	0.1mg	0.13mg	0.17mg	0.2mg	0.26mg	0.33mg
			0.4ml	0.7ml	0.9ml	1ml	1.3ml	1.7ml	2ml	2.6ml	3.3ml
EPINEPHRINE (Allergic Reaction/Asthma) 0.01mg/kg IM MR x1 in 5 min Total max dose: 0.6mg Concentration: 1 mg/1 ml			0.04mg	0.7mg	0.9mg	0.1mg	0.13mg	0.17mg	0.2mg	0.26mg	0.33mg
			0.04ml	0.07ml	0.09ml	0.1ml	0.13ml	0.17ml	0.2ml	0.26ml	0.33ml
EPINEPHRINE (Upper Airway/Stridor) 5mg via nebulizer Concentration: 1 mg/1 ml			5mg	5mg	5mg	5mg	5mg	5mg	5mg	5mg	5mg
			5ml	5ml	5ml	5ml	5ml	5ml	5ml	5ml	5ml

March 2022		MARIN COUNTY EMS PEDIATRIC DOSING GUIDE								PTG 2A	
		Gray	Pink	Red	Purple	Yellow	White	Blue	Orange	Green	
WEIGHT		kg	3 - 5	6 - 7	8 - 9	10 - 11	12 - 14	15 - 18	19 - 22	24 - 28	30 - 36
		lbs	6 - 11	13 - 15	18 - 20	22 - 24	27 - 31	33 - 40	42 - 51	53 - 64	66 - 80
FENTANYL (Pain) 1mcg/kg slow IV/IO/IM/IN MR q5 min For IN split dose evenly per nostril Max dose: 3mcg/kg Concentration: 100mcg/2ml (50mcg/ml)		4mcg	6.5mcg	8.5mcg	10.5mcg	13.5mcg	16.5mcg	21mcg	26.5mcg	33mcg	
		0.08ml	0.13ml	0.17ml	0.21ml	0.27ml	0.33ml	0.42ml	0.53ml	0.66ml	
GLUCAGON (Hypoglycemia/Beta blocker OD) 0.03mg/kg IM MR x2 q15 min if no IV established Max dose: 1mg Concentration: 1mg/1ml		0.12mg	0.2mg	0.25mg	0.3mg	0.4mg	0.5mg	0.6mg	0.8mg	1mg	
		0.12ml	0.2ml	0.25ml	0.3ml	0.4ml	0.5ml	0.6ml	0.8ml	1ml	
IPRATROPIUM - Atrovent Unit dose vial via nebulizer Concentration: 500mcg/2.5ml		500mcg	500mcg	500mcg	500mcg	500mcg	500mcg	500mcg	500mcg	500mcg	
		2.5ml	2.5ml	2.5ml	2.5ml	2.5ml	2.5ml	2.5ml	2.5ml	2.5ml	
LIDOCAINE 2% - (IO Insertion) 0.5mg/kg slow IO MR x1 half initial dose Max dose: 40mg Concentration: 20mg/1ml		1st	2mg	3mg	4mg	5mg	6mg	8mg	10mg	13mg	17mg
			0.1ml	0.2ml	0.2ml	0.3ml	0.3ml	0.4ml	0.5ml	0.7ml	0.8ml
		2nd	1mg	2mg	2mg	3mg	3mg	4mg	5mg	6mg	8mg
			0.05ml	0.1ml	0.1ml	0.2ml	0.2ml	0.2ml	0.3ml	0.4ml	0.4ml
MIDAZOLAM -Versed (Seizure) IM: 0.2mg/kg MR x1 in 10 min if still seizing Concentration: 5 mg/ml		0.8mg	1.3mg	1.7mg	2.1mg	1.3mg	1.7mg	2.1mg	2.6mg	3.3mg	
		0.16ml	0.25ml	0.3ml	0.4ml	0.3ml	0.3ml	0.4ml	0.5ml	0.7ml	
MIDAZOLAM - Versed (Seizure) IN: 0.2mg/kg Split dose equally per nostril Max dose: 5mg Concentration: 5 mg/ml		0.8mg	1.3mg	1.7mg	2.1mg	2.6mg	3.3mg	4.2mg	5mg	5mg	
		0.16ml	0.3ml	0.3ml	0.4ml	0.5ml	0.7ml	0.8ml	1ml	1ml	
MIDAZOLAM - Versed (Seizure) slow IV/IO: 0.05mg/kg MR x2 in 15 min Max single dose: 1mg, Total max dose: 5mg Concentration: 2mg/2ml (1mg/ml)		0.2mg	0.3mg	0.4mlg	0.5mg	0.7mg	0.8mg	1mg	1mg	1mg	
		0.2ml	0.3ml	0.4ml	0.5ml	0.7ml	0.8ml	1ml	1ml	1ml	
MIDAZOLAM - Versed (Cardioversion) slow IV/IO: 0.05mg/kg Max dose: 1mg Concentration: 2mg/2ml (1mg/ml)		0.2mg	0.3mg	0.4mlg	0.5mg	0.7mg	0.8mg	1mg	1mg	1mg	
		0.2ml	0.3ml	0.4ml	0.5ml	0.7ml	0.8ml	1ml	1ml	1ml	
MORPHINE (Pain/Burns) 0.1mg/kg IV/IO/IM MR x2 in 15 min (IV/IO) MR in 30 min (IM) Concentration: 10 mg/1 ml		0.4mg	0.7mg	0.9mg	1mg	1.3mg	1.7mg	2.1mg	2.6mg	3.3mg	
		0.04ml	0.1ml	0.1ml	0.1ml	0.1ml	0.2ml	0.2ml	0.3ml	0.3ml	
NALOXONE - Narcan 0.1 mg/kg IV/IO/IM/IN MR q5 min For IN split dose evenly per nostril Concentration: 2mg/2 ml (1mg/ml)		0.4mg	0.7mg	0.9mg	1mg	1.3mg	1.7mg	2mg	2mg	2mg	
		0.4ml	0.7ml	0.9ml	1ml	1.3ml	1.7ml	2ml	2ml	2ml	
ONDANSETRON - Zofran Concentration: 4mg ODT, 4mg/2ml (2mg/ml)						2mg	2mg	4mg	4mg	4mg	
						1ml	1ml	2ml	2ml	2ml	
SODIUM BICARBONATE 1mEq/kg IV/IO Concentration: 1mEq/ml		4mEq	6.5mEq	8.5mEq	10mEq	13mEq	17mEq	21mEq	26mEq	33mEq	
		4ml	6.5ml	8.5ml	10ml	13ml	17ml	21ml	26ml	33ml	

PEDIATRIC DOSING GUIDE

GRAY: 3-5kg/6-11lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
90-160	100-205	30-53	67-104	35-56	45-62

NS Fluid Bolus: 10ml/kg	40ml
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DEFIBRILLATION: 2, 4J/kg	1st: 8J	2nd: 16J
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Blade for Foreign Body Removal	0
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CARDIOVERSION: 1, 2J/kg	1st: 4J	2nd: 8J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	<u>1st:</u> 0.4mg <u>2nd:</u> 0.8mg	<u>1st:</u> 0.14ml <u>2nd:</u> 0.27ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR X1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	20mg	0.4ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.1mg	1ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	<u>Preload:</u> 1mg/10ml (0.1mg/ml) <u>Vial:</u> 0.4mg/ml	0.05mg/kg IV/IO	0.2mg	<u>Preload:</u> 2ml <u>Vial:</u> 0.5ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	2ml/kg IV/IO Max dose: 125ml		8ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	4mg	0.08ml	
EPINEPHRINE (Cardiac arrest/Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.04mg	0.4ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.04mg	0.04ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

GRAY: 3-5kg/6-11lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	100mcg/2ml (50mcg/ml)	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	4mcg	0.08ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.12mg	0.12ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 2mg <u>2nd:</u> 1mg	<u>1st:</u> 0.1ml <u>2nd:</u> 0.05ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	0.8mg	0.16ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	0.8mg	0.16ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	0.2mg	0.2ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max dose: 1mg	0.2mg	0.2ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	0.4mg	0.04ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	0.4mg	0.4ml	MR q5 min For IN: split dose equally in each nostril
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	4mEq	4ml	

PEDIATRIC DOSING GUIDE

PINK: 6-7kg/13-15lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
90-160	100-180	30-53	72-104	37-56	50-62

NS Fluid Bolus: 20ml/kg	130ml	DEFIBRILLATION: 2, 4J/kg	1st: 13J	2nd: 26J
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Blade for Foreign Body Removal	0	CARDIOVERSION: 1, 2J/kg	1st: 7J	2nd: 13J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	1st: 0.7mg 2nd: 1.3mg	1st: 0.2ml 2nd: 0.4ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR X1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	32mg	0.6ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.1mg	1ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	Preload: 1mg/10ml (0.1mg/ml) Vial: 0.4mg/ml	0.05mg/kg IV/IO	0.3mg	Preload: 3ml Vial: 0.8ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	2ml/kg IV/IO Max dose: 125ml		13ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	6.5mg	0.1ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.07mg	0.7ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.07mg	0.07ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

PINK: 6-7kg/13-15lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	6.5mcg	0.13ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.2mg	0.2ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 3mg <u>2nd:</u> 2mg	<u>1st:</u> 0.2ml <u>2nd:</u> 0.1ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	1.3mg	0.3ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	1.3mg	0.3ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	0.3mg	0.3ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow IV/IO Max dose: 1mg	0.3mg	0.3ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	0.7mg	0.1ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	0.7mg	0.7ml	MR q5 min For IN: split dose equally in each nostril
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	6.5mEq	6.5ml	

PEDIATRIC DOSING GUIDE

RED: 8-9kg/18-20lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
90-160	100-180	30-53	72-104	37-56	50-62

NS Fluid Bolus: 20ml/kg	170ml	DEFIBRILLATION: 2, 4J/kg	1st: 17J	2nd: 34J
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Blade for Foreign Body Removal	1	CARDIOVERSION: 1, 2J/kg	1st: 9J	2nd: 17J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	<u>1st:</u> 0.9mg <u>2nd:</u> 1.7mg	<u>1st:</u> 0.3ml <u>2nd:</u> 0.6ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR x1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	42mg	0.8ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.2mg	2ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	<u>Preload:</u> 1mg/10ml (0.1mg/ml) <u>Vial:</u> 0.4mg/ml	0.05mg/kg IV/IO	0.4mg	<u>Preload:</u> 4ml <u>Vial:</u> 1.1ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		42ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	8.5mg	0.2ml	
EPINEPHRINE (Cardiac arrest/Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.09mg	0.9ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.09mg	0.09ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

RED: 8-9kg/18-20lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	8.5mcg	0.17ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.25mg	0.25ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 4mg <u>2nd:</u> 2mg	<u>1st:</u> 0.2ml <u>2nd:</u> 0.1ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	1.7mg	0.3ml	MR x1 in 10 min if still seizing
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	1.7mg	0.3ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	0.4mg	0.4ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max dose: 1mg	0.4mg	0.4ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	0.9mg	0.1ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	0.9mg	0.9ml	MR q5 min For IN: split dose equally in each nostril
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	8.5mEq	8.5ml	

PEDIATRIC DOSING GUIDE

PURPLE: 10-11kg/22-24lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
90-160	100-180	30-53	72-104	37-56	50-62

NS Fluid Bolus: 20ml/kg	210ml
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DEFIBRILLATION: 2, 4J/kg	1st: 21J	2nd: 42J
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Blade for Foreign Body Removal	1
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CARDIOVERSION: 1, 2J/kg	1st: 11J	2nd: 21J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	1st: 1mg 2nd: 2.1mg	1st: 0.3ml 2nd: 0.7ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR X1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	50mg	1ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.2mg	2ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	Preload: 1mg/10ml (0.1mg/ml) Vial: 0.4mg/ml	0.05mg/kg IV/IO	0.5mg	Preload: 5ml Vial: 1.3ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		53ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	10.5mg	0.2ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.1mg	1ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.1mg	0.1ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

PURPLE: 10-11kg/22-24lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	10.5mcg	0.21ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.3mg	0.3ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 5mg <u>2nd:</u> 3mg	<u>1st:</u> 0.3ml <u>2nd:</u> 0.2ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	2.1mg	0.4ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	2.1mg	0.4ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	0.5mg	0.5ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max dose: 1mg	0.5mg	0.5ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	1mg	0.1ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	1mg	1ml	MR q5 min For IN: split dose equally in each nostril
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	10mEq	10ml	

PEDIATRIC DOSING GUIDE

YELLOW: 12-14kg/27-31lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
80-120	98-140	22-37	86-106	42-63	49-62

NS Fluid Bolus: 20ml/kg	260ml	DEFIBRILLATION: 2, 4J/kg	1st: 26J	2nd: 52J
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Blade for Foreign Body Removal	2	CARDIOVERSION: 1, 2J/kg	1st: 13J	2nd: 26J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	1st: 1.3mg 2nd: 2.6mg	1st: 0.4ml 2nd: 0.9ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR x1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	65mg	1.3ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.3mg	3ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	Preload: 1mg/10ml (0.1mg/ml) Vial: 0.4mg/ml	0.05mg/kg IV/IO	0.7mg	Preload: 7ml Vial: 1.6ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		65ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	13mg	0.3ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.13mg	1.3ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.13mg	0.13ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

YELLOW: 12-14kg/27-31lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	13.5mcg	0.27ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.4mg	0.4ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 6mg <u>2nd:</u> 3mg	<u>1st:</u> 0.3ml <u>2nd:</u> 0.2ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	2.6mg	0.5ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	2.6mg	0.5ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	0.7mg	0.7ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow IV/IO Max dose: 1mg	0.7mg	0.7ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	1.3mg	0.1ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	1.3mg	1.3ml	MR q5 min For IN: split dose equally in each nostril
ONDANSETRON <i>Zofran</i>	4mg tab 4mg/2ml	2mg ODT/slow IV	2mg	1ml	Slow IV over 30 sec
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	13mEq	13ml	

PEDIATRIC DOSING GUIDE

WHITE: 15-18kg/33-40lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
65-100	80-120	20-28	89-112	46-72	58-69

NS Fluid Bolus: 20ml/kg	330ml	DEFIBRILLATION: 2, 4J/kg	1st: 33J	2nd: 66J
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Blade for Foreign Body Removal	2	CARDIOVERSION: 1, 2J/kg	1st: 17J	2nd: 33J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	1st: 1.7mg 2nd: 3.4mg	1st: 0.6ml 2nd: 1.1ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR x1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	80mg	1.6ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.3mg	3ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	Preload: 1mg/10ml (0.1mg/ml) Vial: 0.4mg/ml	0.05mg/kg IV/IO	0.8mg	Preload: 8ml Vial: 2.1ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		83ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	16.5mg	0.3ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.17mg	1.7ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.17mg	0.17ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

WHITE: 15-18kg/33-40lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	16.5mcg	0.33ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.5mg	0.5ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 8mg <u>2nd:</u> 4mg	<u>1st:</u> 0.4ml <u>2nd:</u> 0.2ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	3.3mg	0.7ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	3.3mg	0.7ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	0.8mg	0.8ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow IV/IO Max dose: 1mg	0.8mg	0.8ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	1.7mg	0.2ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	1.7mg	1.7ml	MR q5 min For IN: split dose equally in each nostril
ONDANSETRON <i>Zofran</i>	4mg tab 4mg/2ml	2mg ODT/slow IV	2mg	1ml	Slow IV over 30 sec
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	17mEq	17ml	

PEDIATRIC DOSING GUIDE

BLUE: 19-23kg/42-51lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
65-100	80-120	20-28	89-112	46-72	58-69

NS Fluid Bolus: 20ml/kg	420ml	DEFIBRILLATION: 2, 4J/kg	1st: 42J	2nd: 84J
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Blade for Foreign Body Removal	2	CARDIOVERSION: 1, 2J/kg	1st: 21J	2nd: 42J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	1st: 2.1mg 2nd: 4.2mg	1st: 0.7ml 2nd: 1.4ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR x1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	105mg	2.1ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.4mg	4ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	Preload: 1mg/10ml (0.1mg/ml) Vial: 0.4mg/ml	0.05mg/kg IV/IO	1mg	Preload: 10ml Vial: 2.6ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		105ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	21mg	0.4ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.2mg	2ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.2mg	0.2ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

BLUE: 19-23kg/42-51lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	21mcg	0.42ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.6mg	0.6ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 10mg <u>2nd:</u> 5mg	<u>1st:</u> 0.5ml <u>2nd:</u> 0.3ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	4.2mg	0.8ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	4.2mg	0.8ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	1mg	1ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow IV/IO Max dose: 1mg	1mg	1ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	2.1mg	0.2ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	2mg	2ml	MR q5 min For IN: split dose equally in each nostril
ONDANSETRON <i>Zofran</i>	4mg tab 4mg/2ml	4mg ODT/slow IV	4mg	2ml	Slow IV over 30 sec
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	21mEq	21ml	

PEDIATRIC DOSING GUIDE

ORANGE: 24-29kg/53-64lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
58-90	75-118	18-25	97-115	57-76	66-72

NS Fluid Bolus: 20ml/kg	530ml	DEFIBRILLATION: 2, 4J/kg	1st: 53J	2nd: 106J
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Blade for Foreign Body Removal:	2	CARDIOVERSION: 1, 2J/kg	1st: 26J	2nd: 53J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	<u>1st:</u> 2.7mg <u>2nd:</u> 5.4mg	<u>1st:</u> 0.9ml <u>2nd:</u> 1.8ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR x1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	130mg	2.6ml	Follow with or dilute in 20ml NS flush Give after 3rd shock
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.5mg	5ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	<u>Preload:</u> 1mg/10ml (0.1mg/ml) <u>Vial:</u> 0.4mg/ml	0.05mg/kg IV/IO	1.3mg	<u>Preload:</u> 13ml <u>Vial:</u> 3.3ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		125ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	26mg	0.5ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.26mg	2.6ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.26mg	0.26ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

ORANGE: 24-29kg/53-64lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	26.5mcg	0.53ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	0.8mg	0.8ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 13mg <u>2nd:</u> 6mg	<u>1st:</u> 0.7ml <u>2nd:</u> 0.4ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	5mg	1ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	5mg	1ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	1mg	1ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max dose: 1mg	1mg	1ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	2.6mg	0.3ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN	2mg	2ml	MR q5 min For IN: split dose equally in each nostril
ONDANSETRON <i>Zofran</i>	4mg tab 4mg/2ml	4mg ODT/slow IV	4mg	2ml	Slow IV over 30 sec
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	26mEq	26ml	

PEDIATRIC DOSING GUIDE

GREEN: 30-36kg/66-80lbs

Normal Vital Signs

HR asleep	HR awake	Respiratory Rate	Systolic BP	Diastolic BP	MAP
58-90	75-118	18-25	97-115	57-76	66-72

NS Fluid Bolus: 20ml/kg	660ml
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DEFIBRILLATION: 2, 4J/kg	1st: 66J	2nd: 132J
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Blade for Foreign Body Removal:	3
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CARDIOVERSION: 1, 2J/kg	1st: 33J	2nd: 66J
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Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
ADENOSINE	6mg/2ml (3mg/ml)	0.1mg/kg RIVP Max 1st dose: 6mg Max 2nd dose: 12mg	<u>1st:</u> 3.3mg <u>2nd:</u> 6.6mg	<u>1st:</u> 1.1ml <u>2nd:</u> 2.2ml	RIVP w/ 10ml NS flush MR x1 double the dose
ALBUTEROL	2.5mg/3ml	2.5mg/3ml HHN	2.5mg	3ml	MR x1
AMIODARONE (Pulseless arrest)	150mg/3ml (50mg/ml)	5mg/kg IV/IO Max single dose: 300mg	165mg	3.3ml	20ml NS flush MR x2 refractory rhythm
ATROPINE (Bradycardia)	1mg/10ml (0.1mg/ml)	0.02mg/kg IV/IO Min dose: 0.1mg Max single dose: 0.5mg	0.5mg	5ml	MR x1 in 3-5 min
ATROPINE (Organophosphate poisoning)	<u>Preload:</u> 1mg/10ml (0.1mg/ml) <u>Vial:</u> 0.4mg/ml	0.05mg/kg IV/IO	1.7mg	<u>Preload:</u> 17ml <u>Vial:</u> 4.1ml	MR q5-10 min until symptoms resolve
DEXTROSE	10%	5ml/kg IV/IO Max dose: 125ml		125ml	Give over 10 min
DIPHENHYDRAMINE <i>Benadryl</i>	50mg/ml	1mg/kg IM/IV/IO Max dose: 50mg	33mg	0.7ml	
EPINEPHRINE (Cardiac arrest/ Bradycardia)	1mg/10ml (0.1mg/ml)	0.01mg/kg IV/IO	0.33mg	3.3ml	MR q3-5 min
EPINEPHRINE (Allergic reaction/ Asthma)	1mg/ml	0.01mg/kg IM Total max dose: 0.6mg	0.33mg	0.33ml	MR x1 in 5 min
EPINEPHRINE (Upper airway/Stridor)	1mg/ml	5mg HHN	5mg	5ml	

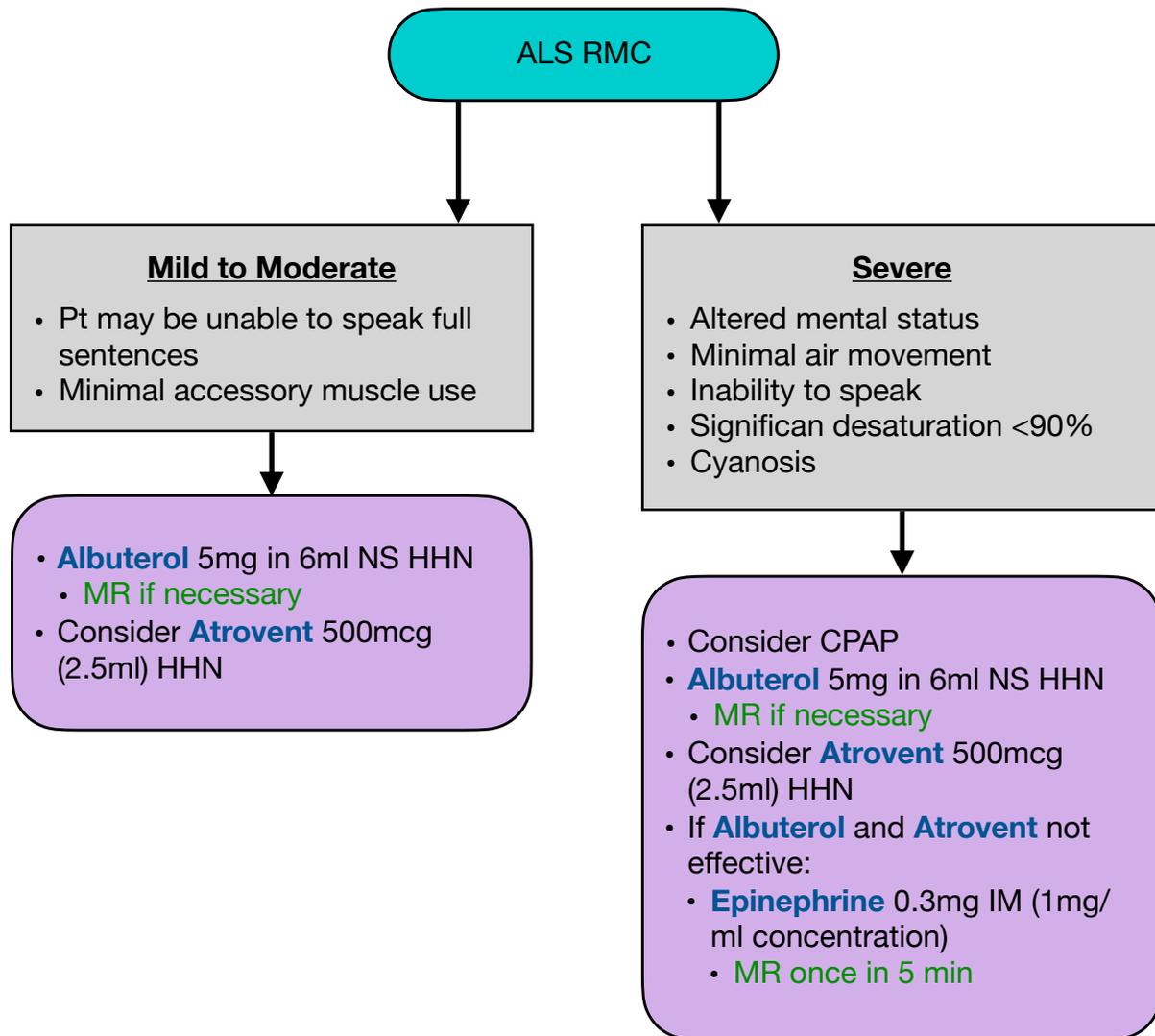
GREEN: 30-36kg/66-80lbs

Medication	Concentration	Dose	Dose in mg	Dose in ml	Details
FENTANYL (Pain)	50mcg/ml	1mcg/kg IV/IO/IM/IN Max dose: 3mcg/kg	33mcg	0.66ml	MR q5 min For IN: split dose equally in each nostril
GLUCAGON (Hypoglycemia/Beta blocker OD)	1mg/ml	0.03mg/kg IM Max dose: 1mg	1mg	1ml	MR x2 q15 min if no IV established
IPRATROPIUM <i>Atrovent</i>	500mcg/2.5ml	500mcg/2.5ml HHN	500mcg	2.5ml	
LIDOCAINE 2% (IO insertion)	20mg/ml	0.5mg/kg slow IO Max dose: 40mg	<u>1st:</u> 17mg <u>2nd:</u> 8mg	<u>1st:</u> 0.8ml <u>2nd:</u> 0.4ml	MR x1 half initial dose
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IM</u>	6.6mg	1.3ml	MR x1 in 10 min
MIDAZOLAM <i>Versed</i> (Seizure)	5mg/ml	0.2mg/kg <u>IN</u> Max dose 5mg	5mg	1ml	Split dose equally in each nostril
MIDAZOLAM <i>Versed</i> (Seizure)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max per dose: 1mg Total max dose: 5mg	1mg	1ml	MR x2 q15 min
MIDAZOLAM <i>Versed</i> (Cardioversion)	2mg/2ml (1mg/ml)	0.05mg/kg slow <u>IV/IO</u> Max dose: 1mg	1mg	1ml	
MORPHINE (Pain/burns)	10mg/ml	0.1mg/kg IV/IO/IM	3.3mg	0.3ml	MR x2 in 15 min (IV/IO) MR in 30min (IM)
NALOXONE <i>Narcan</i>	2mg/2ml (1mg/ml)	0.1mg/kg IV/IO/IM/IN Max dose: 2mg	2mg	2ml	MR q5 min For IN: split dose equally in each nostril
ONDANSETRON <i>Zofran</i>	4mg tab 4mg/2ml	4mg ODT/slow IV	4mg	2ml	Slow IV over 30 sec
SODIUM BICARBONATE	1mEq/ml	1mEq/kg IV/IO	33mEq	33ml	

BRONCHOSPASM/ASTHMA/COPD

Indications

- Acute or progressive shortness of breath, chest discomfort, wheezing, cyanosis



SPECIAL CONSIDERATIONS

- Do not repeat **Albuterol/Atrovent** if significant tachycardia or chest pain
- **Epinephrine** may cause anxiety, tremor palpitation, tachycardia, HTN and headache, and may precipitate AMI, hypertensive crisis and intracranial hemorrhage
- Consider use of patient actuated nebulizer with prolonged scene times and/or transport times over 10 minutes.
- Suspected carbon monoxide in cases of exposure to fire or smoke in confined areas; pulse oximetry in these settings is not accurate measure of respiratory status

Administrative Policy for EMS Distribution of Naloxone Kits

- Naloxone administered to a patient for a narcotic toxidrome and,
- Polypharmacy overdose ruled out to the extent possible (collateral toxicants with associated risk) and,
- Patient now conscious and has capacity to make decisions
- No symptoms of induced abstinence syndrome/withdrawal
- No recurrence of decreasing level of consciousness during the EMS encounter
- Patient is now refusing ambulance transport
- An AMA protocol and documentation is followed then,
- Intranasal naloxone left with patient or with household member with directions for use

I. Purpose

To oversee the “leave behind” Narcan program which allows emergency medical responders to distribute “leave behind” Naloxone (Narcan) kits on the scene of an overdose or perceived overdose.

Procedure

- A. EMS logistics staff will receive naloxone kits intended for laypersons use, as they are available from external suppliers.
- B. Naloxone kits will be distributed to EMS providers in a manner similar to current supply chain procedures.
- C. EMS providers will distribute “leave behind” Narcan kits at the scene of an overdose, or upon their discretion, will give a naloxone kit to any person encountered on an EMS call that is at risk of experiencing an opiate overdose (e.g. a current opiate overdose patient who refuses transport) or any person in position to assist a person at risk of opiate overdose.
- D. Shall not give naloxone to patients or bystanders from the regular EMS patient care supply.
- E. Resupply provider’s naloxone kits, as stock is available, via usual supply chain procedures. It may be the case that no resupply is available; layperson naloxone kits are not a required in-service medication.