

Northwest Region EMS Protocols



Clallam, Mason, Kitsap & Jefferson Counties

MPD Approved March 2, 2020
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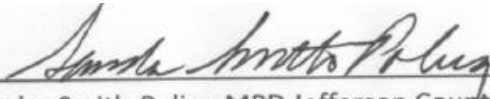
March 2020 (Washington state DOH approved March 2, 2020)

The following protocols and procedures have been approved for use by pre-hospital care providers in Clallam, Mason, Kitsap and Jefferson Counties.

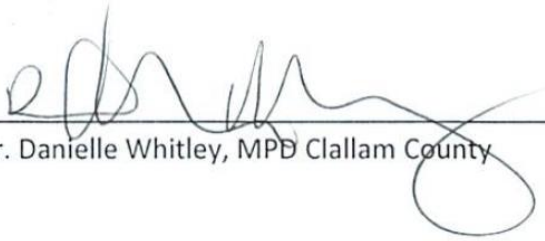
These protocols will be reviewed and revised, as necessary to reflect the changes in standards.



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Northwest Region EMS and Trauma Care Council would like to extend a special thank you to the EMS professionals from the five different EMS councils who dedicated their time to the Northwest Regional EMS protocols. These protocol members worked with the Regional MPD's to ensure that patient care within the Northwest Region is of the highest standard. It is with their commitment to excellence and personal expertise in the field of EMS that we were able to produce a Regional Protocol.



Keith Bogues, Chairman NW Region EMS



René Ralston, Executive Director NW Region EMS



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Regional Guidelines

PREHOSPITAL PROVIDER SCOPE OF PRACTICE

Level of Certification Washington DOH	Medical Control & Skills Capabilities	Medication Administration
Emergency Medical Responder	MPD protocols, patient assessment, CPR, AED, BVM, Bandaging, splinting, trauma, triage, medical, and pediatrics.	O ₂ , IN Naloxone, Aspirin, Oral Glucose, Pre-loaded Epinephrine IM
Emergency Medical Technician	Above plus supraglottic airway with endorsement, IV therapy with endorsement NIPPV, OB/GYN. ECG/12-Lead can read only.	Above plus IM/IN Naloxone, Aspirin, Epinephrine IM, Activated Charcoal, Oral Glucose, assist with patient's own Diastat, nitroglycerin and metered dose inhaler prescribed, end-tidal capnography. With specialized training Albuterol SVN, Zofran ODT.
Advanced Emergency Medical Technician	Above plus IV Therapy skills, Supraglottic Airway.	Above plus naloxone, dextrose 50/25/10, albuterol EP for cardiac arrest, Zofran IV/IM with specialized training
Paramedic	Above plus, capnography, advanced airway control, ACLS w/ manual defibrillation, and advanced patient assessment, trauma and medical skills.	Above plus MPD protocol

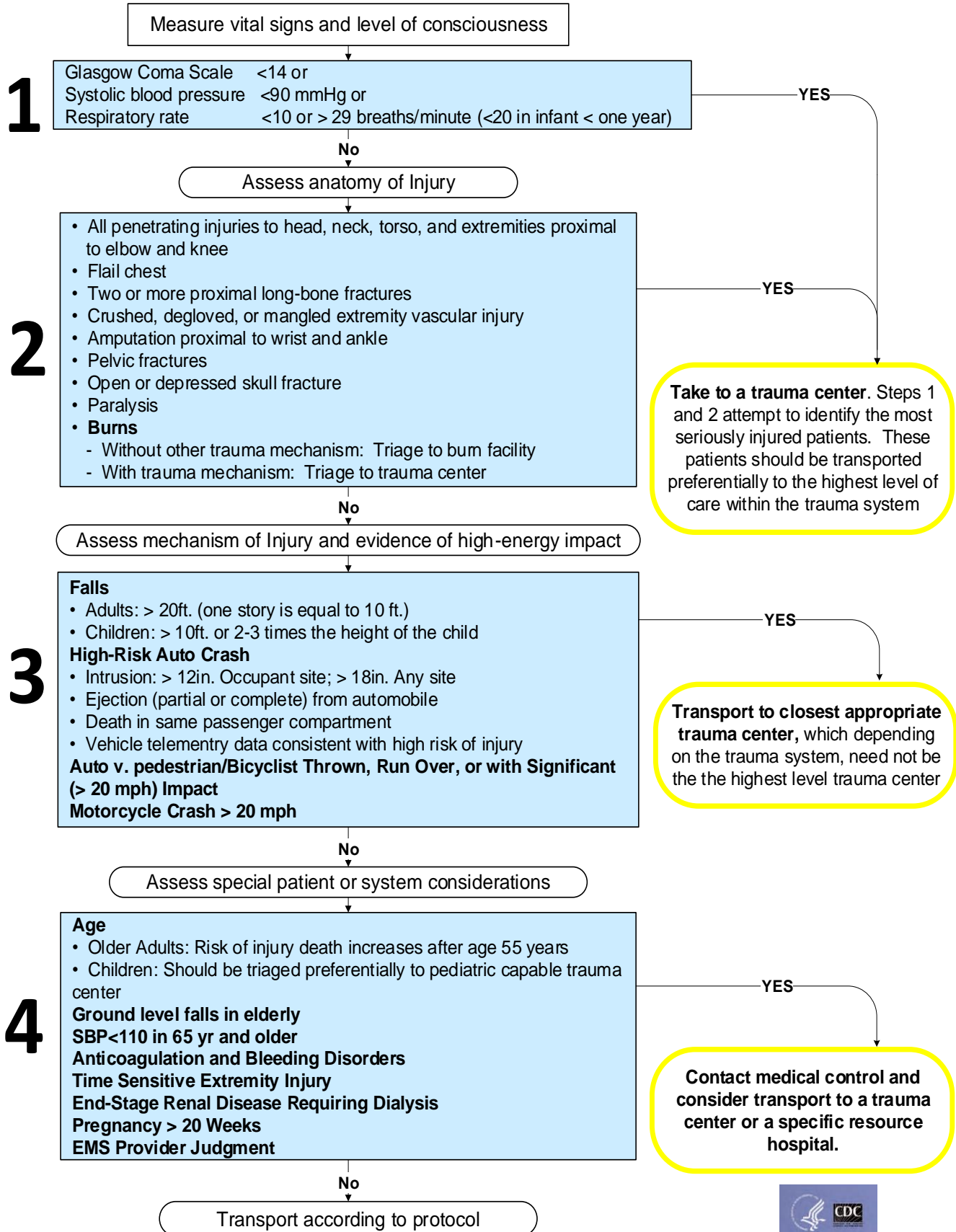
NORTHWEST REGION PATIENT CARE PROCEDURES

These procedures have been developed by the Northwest Regional EMS & Trauma council in conjunction with local councils. The Patient Care Procedures define how the EMS system operates within the Northwest Region of Washington State, by identifying the level of medical care personnel who participate in the system, their roles in the system, and participation of the hospital facilities in the system. They also address the issue of inter-hospital transfer, transfer agreements for identification, and transfer of critical care patients.

The Prehospital Trauma Triage Procedure and the Regional Patient Care Procedures outline an EMS system structure which effectively reduces morbidity and mortality. A full copy of the Northwest Regional Patient Care Procedures may be accessed on our website at www.nwrems.org.



CDC National Trauma Triage



**see supplements for
County specific guidelines**

**insert County Operating Procedures
here and number as follows:**

Clallam County Pg. 10-A

Jefferson County Pg. 10-B

Mason County Pg. 10-C

Kitsap County Pg. 10-D

West Olympic Peninsula Pg. 10-E



PREHOSPITAL PROVIDER CONDUCT

1. Northwest Region EMS Providers must maintain the highest standard of professional conduct.
2. Competent medical care must be provided with compassion and dignity for all persons regardless of nationality, race, creed, religion, sex or status.
3. Providers must refuse to participate in unethical activities and/or activities which may impair professional judgment and the ability to act competently.
4. Matters of disagreement between prehospital providers regarding patient care must be handled professionally without alarming anyone on the scene. Medical Control contact will be made for immediate direction. Providers should not threaten, degrade, insult or verbally abuse each other.
5. Patient Confidentiality will be maintained at all times in compliance with Health Insurance Portability and Accountability Act (HIPAA) of 1996. All applicable federal and state laws.

INFECTION CONTROL STANDARDS

1. Infection Control Standards assume that all contact with blood, other bodily fluids and potentially infectious materials is infectious.
2. The standards of use of Universal Precautions / Body Substance Isolation, which includes safe work practices, correct use of engineering controls and personal protective equipment is mandated by WISHA, and must be adhered to.
3. EMS Providers must protect themselves at all times from “reasonably anticipated potential for exposure”. The following is a list of mandated items: Gloves, Masks, Face Shields, Safety Glasses, High Efficiency Particulate Air (HEPA) Filters, Resuscitation Equipment, and Protective Clothing.

PATIENT REFUSAL OF MEDICAL EVALUATION

1. Consent

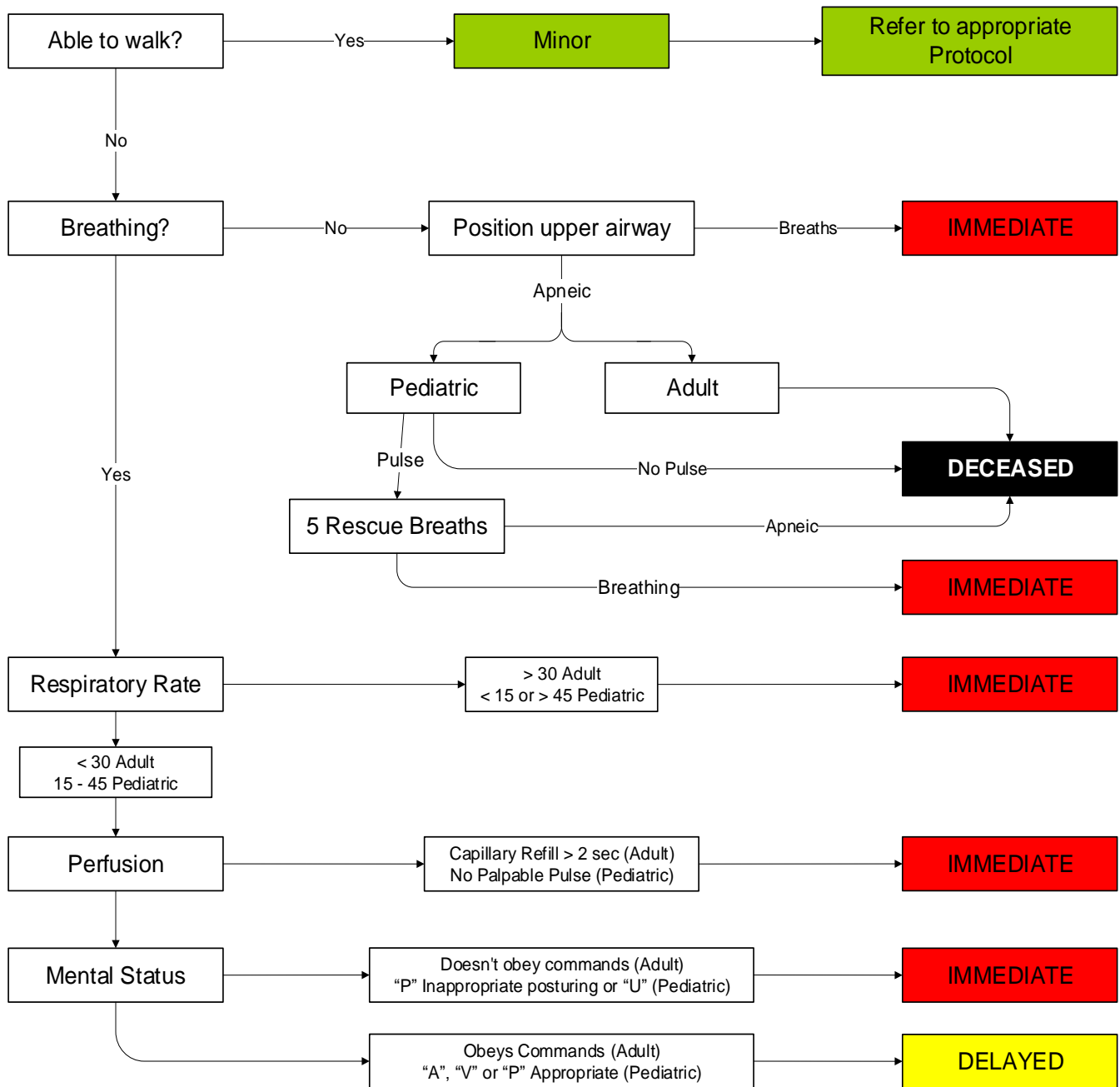
- a. The patient has responsibility to consent to or refuse treatment. If the patient is unable to do so, a responsible relative or guardian has this right.
- b. If waiting to obtain lawful consent from the authorized person would present a serious risk of death, serious impairment of health, or would prolong severe pain or suffering to the patient, treatment may be undertaken to avoid these risks without consent. In no event should legal consent procedures be allowed to delay immediately required treatment.
- c. The patient must be eighteen years of age or emancipated to legally refuse treatment.
- d. Patients 13 years and older may provide consent for mental health issues, drug and alcohol abuse, issues regarding pregnancy and sexually transmitted diseases.
- e. Law enforcement may provide consent for patients in custody, mental health or drug/alcohol hold or children in protective custody.

2. Mental competence

- a. A person is mentally competent if:
 1. Capable of understanding the nature and consequence of the proposed treatment.
 2. Sufficient emotional control, judgment, and discretion to manage their own affairs are present.
- b. A person is not mentally competent if he/she has impaired cerebral perfusion, presents in shock, is postictal, or under the influence of drugs or alcohol.
- c. Medical Control contact with the Base physician is necessary for all patients refusing transport in those counties requiring it.
- d. Nurses may speak for the Medical Control physician if the physician is unable to come to the telephone. The nurse must give the prehospital care provider the name of the Base physician who is directing the nurse



Adult/Pediatric START/JumpSTART Triage



AVPU Infant / Child		
Response	Infant	Child
A - Alert	Curious / Recognizes parents	Alert / Aware of surroundings
V - Responds to Voice	Irritable / Cries	Opens eyes
P - Responds to Pain	Cries in response to pain	Withdrawals from pain
U - Unresponsive	No Response	Opens eyes

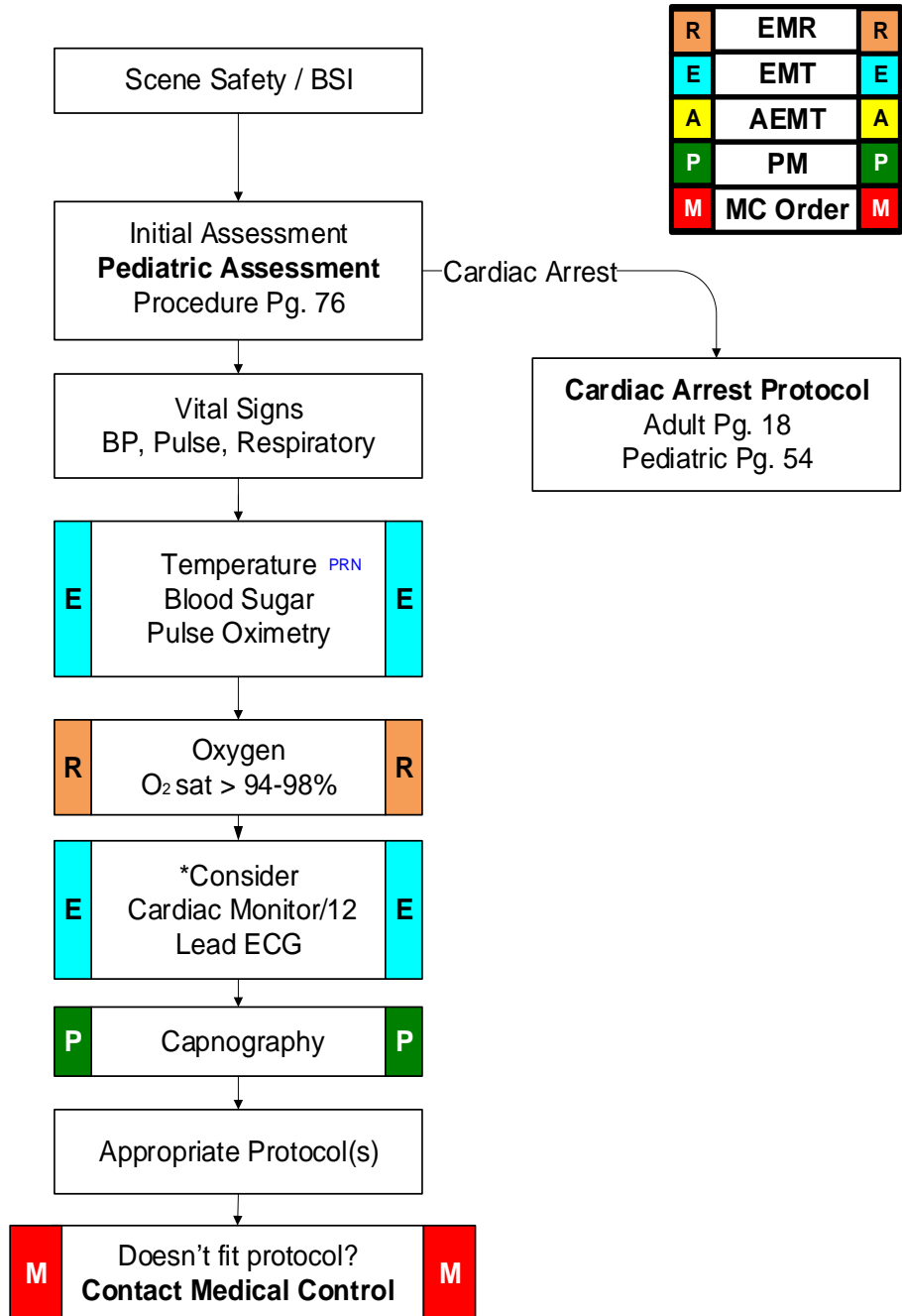


Universal Patient Care Protocol Adult / Child



Consider ALS Evaluation and/or Transport if:

- Suspected Coronary chest pain
- Shortness of breath not relieved by initial interventions
- Abdominal pain
- Altered mental status
- Abnormal vital signs



Notes:

- A pediatric patient is defined by a length based tape. If the patient does not fit on the tape, they are considered adult.
- Exam: Minimal exam if not noted on the specific protocol is vital signs, mental status, and location of injury or complaint.
- Any patient contact which does not result in an EMS transport shall be documented.
- *EMT can acquire 12-lead ECG and read/report text printout but cannot interpret.



Suspected Abuse

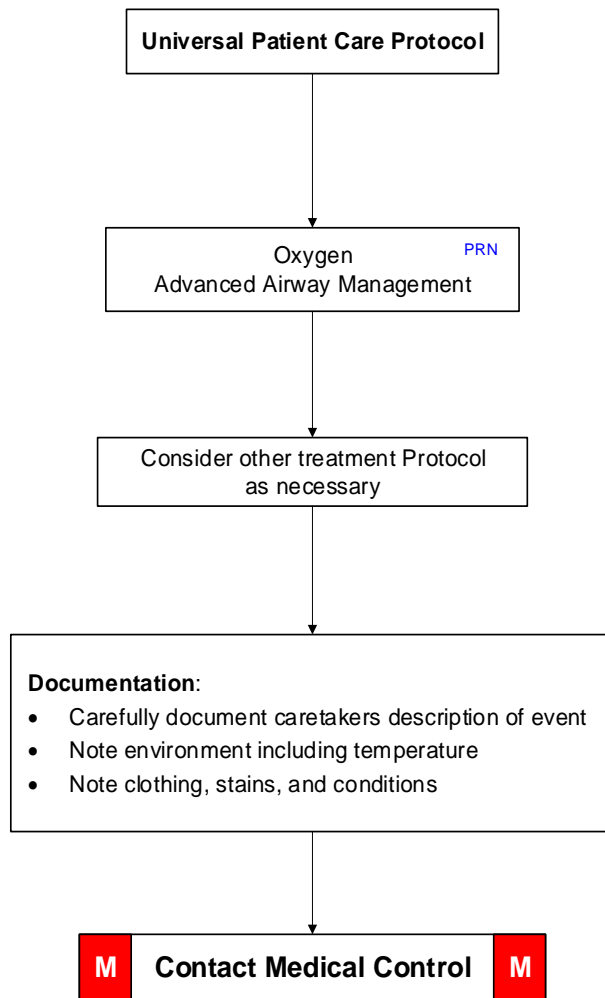


Transport all patients

<p>Physical findings:</p> <ul style="list-style-type: none"> • Unexplained bruises • Numerous/multiple bruises • Burns: <ul style="list-style-type: none"> ◦ Cigarette, Immersion, Rope, Infected • Torn, stained, bloody underclothes • Bleeding, irritation or pain of the genitals • Poor hygiene/malnourished • Child with repeated injuries/multiple calls to the same address • Flat/bald spots on head (infants) • Unexplained wet clothing/body 	<p>Behavioral:</p> <ul style="list-style-type: none"> • History of minor incident inconsistent with major injury • MOI inconsistent with developmental age • Inappropriate fear of parent • Inconsistent explanation for injury • Nervous disorders (rash, hives, stomachaches) • Age-inappropriate behaviors (bedwetting) • Lack of adult supervision • Delay in seeking medical care • Caregiver who refuses treatment or transport <p style="text-align: center;">Contact LE/CPS/APS should caretaker not allow transport to hospital</p>
---	---

END HARM
(1-800-562-5624)

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



<p>Sexual abuse:</p> <ul style="list-style-type: none"> • May be present without apparent signs of physical abuse • Discourage patient from going to the bathroom • Don't allow patient to change clothes or wash • Bring clothing to hospital • EMS are mandatory reporters
--



High Threat

Inclusion Criteria:

- Patient care in the presence of an active threat, where greater than normal conditions exist that are likely to cause damage or danger to the provider or patient, including:
 - Technical Rescue Incident
 - Water Rescue/Marine Operations
 - Hazardous Materials Incident
 - Active Shooter

Exclusion Criteria:

- Patients not meeting inclusion criteria.

Ensure provider safety

EMS personnel operating in the hot or warm zone should follow the direction of competent technical personnel in regards to safe movement through the environment, i.e. law enforcement, hazardous materials, or technical rescue personnel

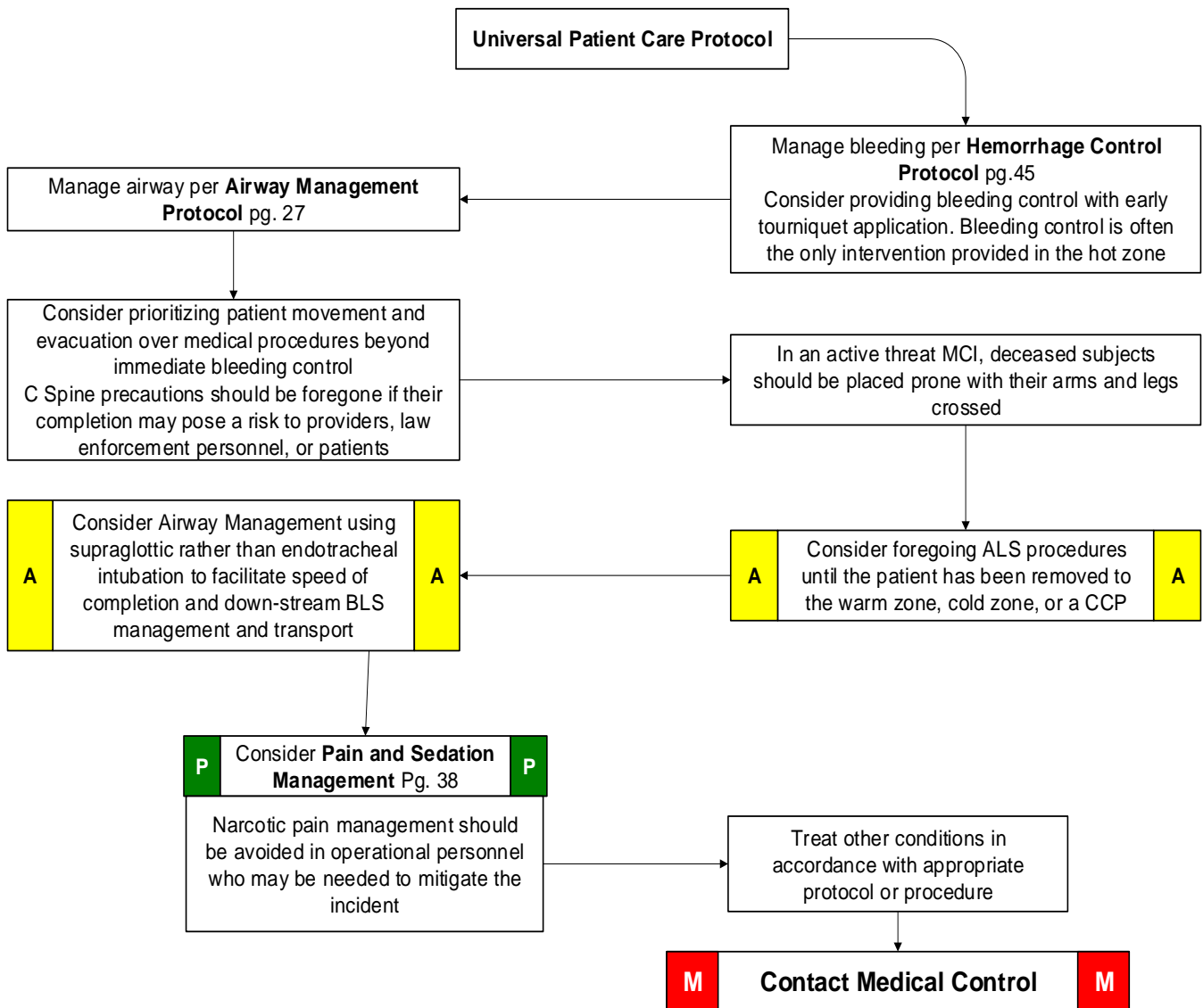
Providers should defer in depth medical interventions if engaged in ongoing direct threat, e.g. active shooter, unstable building, improvised explosive device(s), or hazardous materials

In an active threat MCI, START Triage should be deferred until a later phase of care and prioritization for extraction or extrication should be based on resources available and the situation presented

Encourage patients to provide self-first aid or instruct aid from uninjured bystanders

In an active threat MCI, initial providers should create a Casualty Collection Point (CCP) in conjunction with competent technical personnel

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



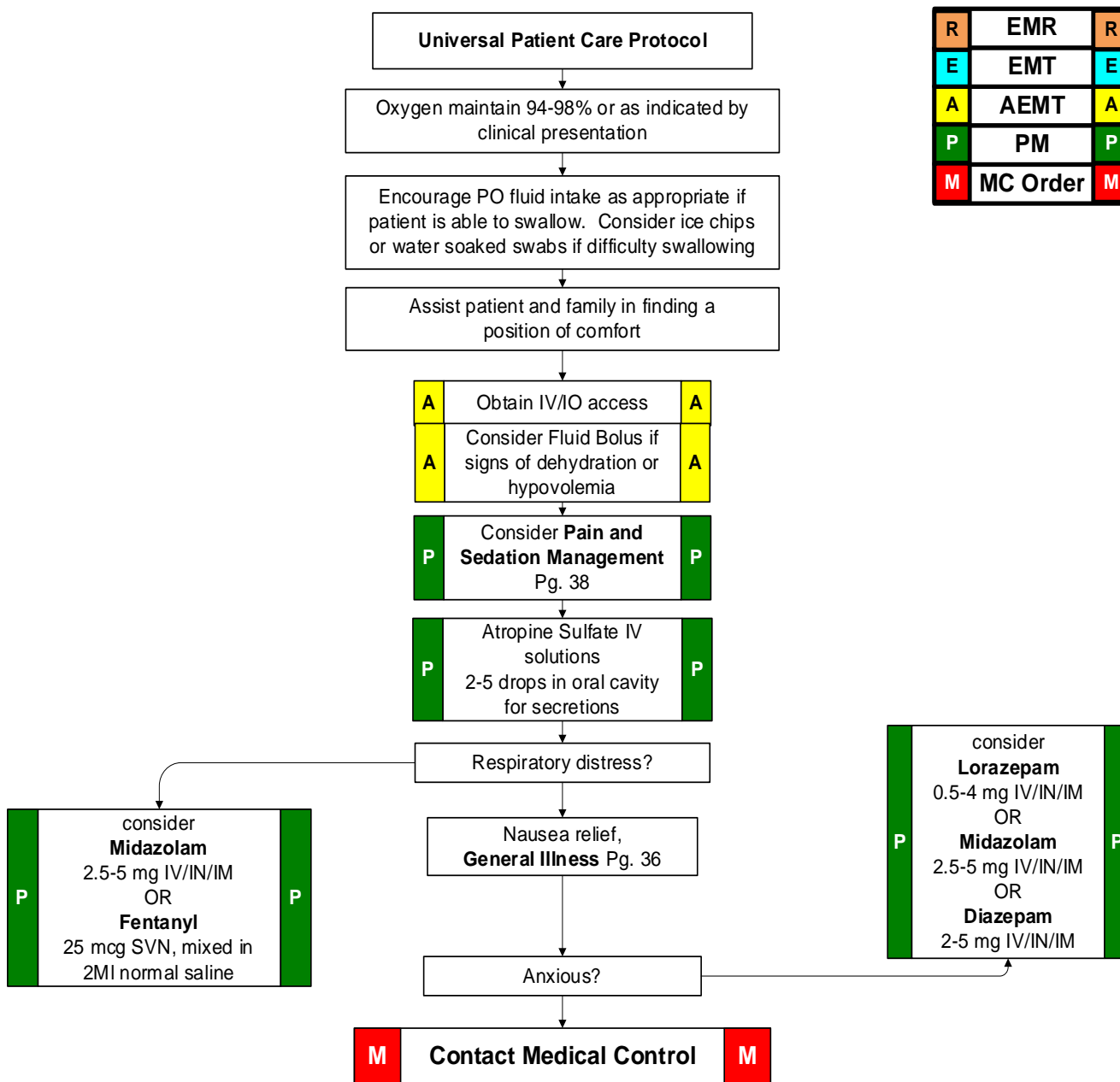
End of Life/Palliative Care

Inclusion Criteria:

- Patient diagnosed with a terminal illness or condition, AND
- Suffering from symptoms related to such terminal condition, AND
 - Currently enrolled in hospice or palliative care, OR
 - Having advance care directives indicating "comfort measures only" or similar, OR
 - For who transport and/or condition correcting treatment has been refused by competent patient or family members.

Exclusion Criteria:

- Complaints unrelated to the underlying terminal illness or condition AND/OR
- Patients not meeting inclusion criteria.



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Notes:

- Social interactions with family may affect end-of-life care
- Generally, patients receiving palliative or end-of-life care for their underlying terminal illness or condition should not be transported. Careful consideration must be given prior to transport in collaboration with the patient, hospice or palliative care provider, guardian, power of attorney, or other accepted healthcare proxy. ALS Providers are authorized to medicate these patients in accordance with this protocol and to leave them in their home or palliative care setting.
- Base physician shall be consulted prior to the palliative management of pediatric patients



Code Sepsis



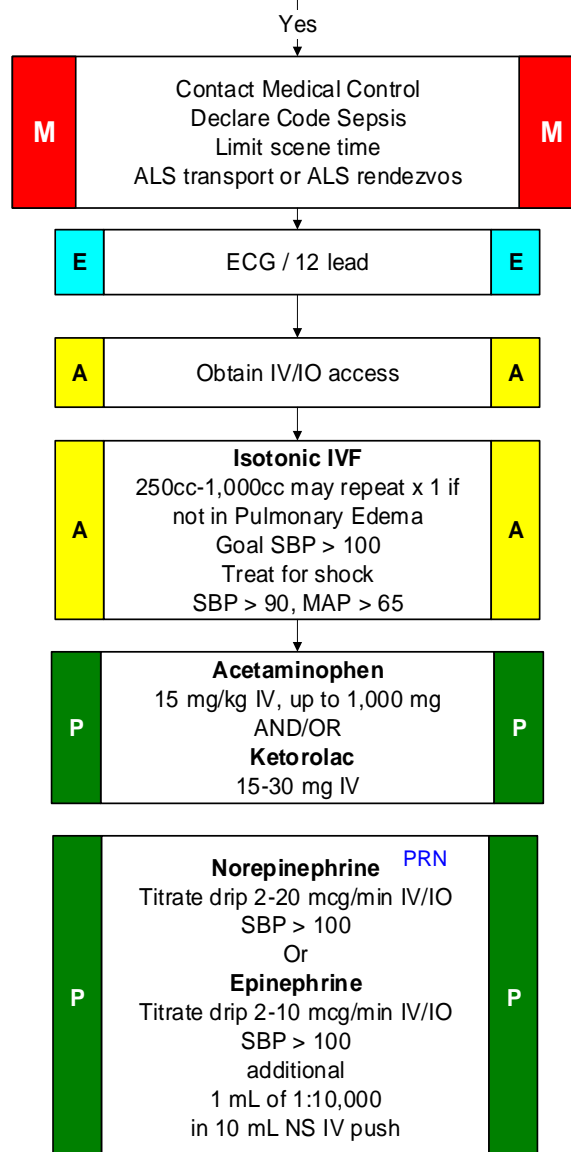
SUSPECTED/KNOWN Infection?

EMS TRIAGE	3	2	1	0	1	2	3
Respiratory Rate		< 8		9-20		21 - 29	≥30
Heart Rate		≤ 40	41-59	60 - 89		90 - 119	≥120
Temperature (F)		<96.8		96.8-100.4		>100.4	
Age				≤ 54	55-64	65-74	≥ 75
Pre-existing Factors				none	2	3	≥ 4
GCS	≤ 6	7 - 11	12 - 14	15			
SBP		≤ 90		≥ 91			
EtCO2	<25	25-32	32-37	>37			
Sub-TOTAL							

Score ≥ 9 = CODE SEPSIS

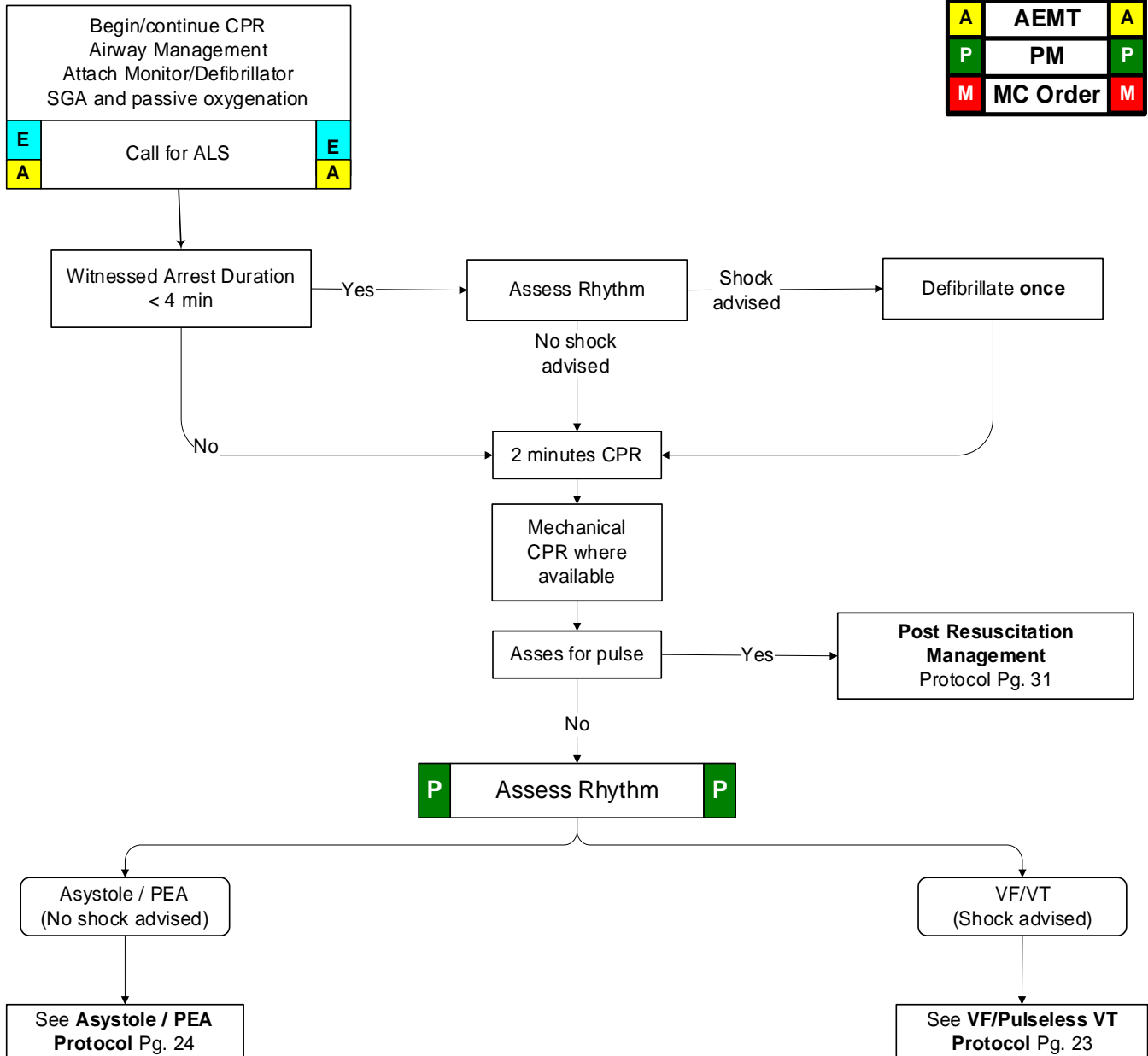
R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

- Pre-existing factors :**
- Cancer with recent treatment (chemo, radiation)
 - Diabetes Mellitus
 - Renal Failure
 - Liver Failure
 - Hypertension (HTN)
 - Cardiac Disease (CHF and vascular disease)
 - Known Infection
 - Implanted Ports
 - Feeding Tube
 - Urinary Tube (Foley, suprapubic cath, or urostomy)
 - Colostomy
 - Surgical Sites
 - Implanted Devices
 - Pressure Ulcers
 - Antibiotic therapy within 30 days
 - Surgery within 30 days
 - HIV



Cardiac Arrest

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



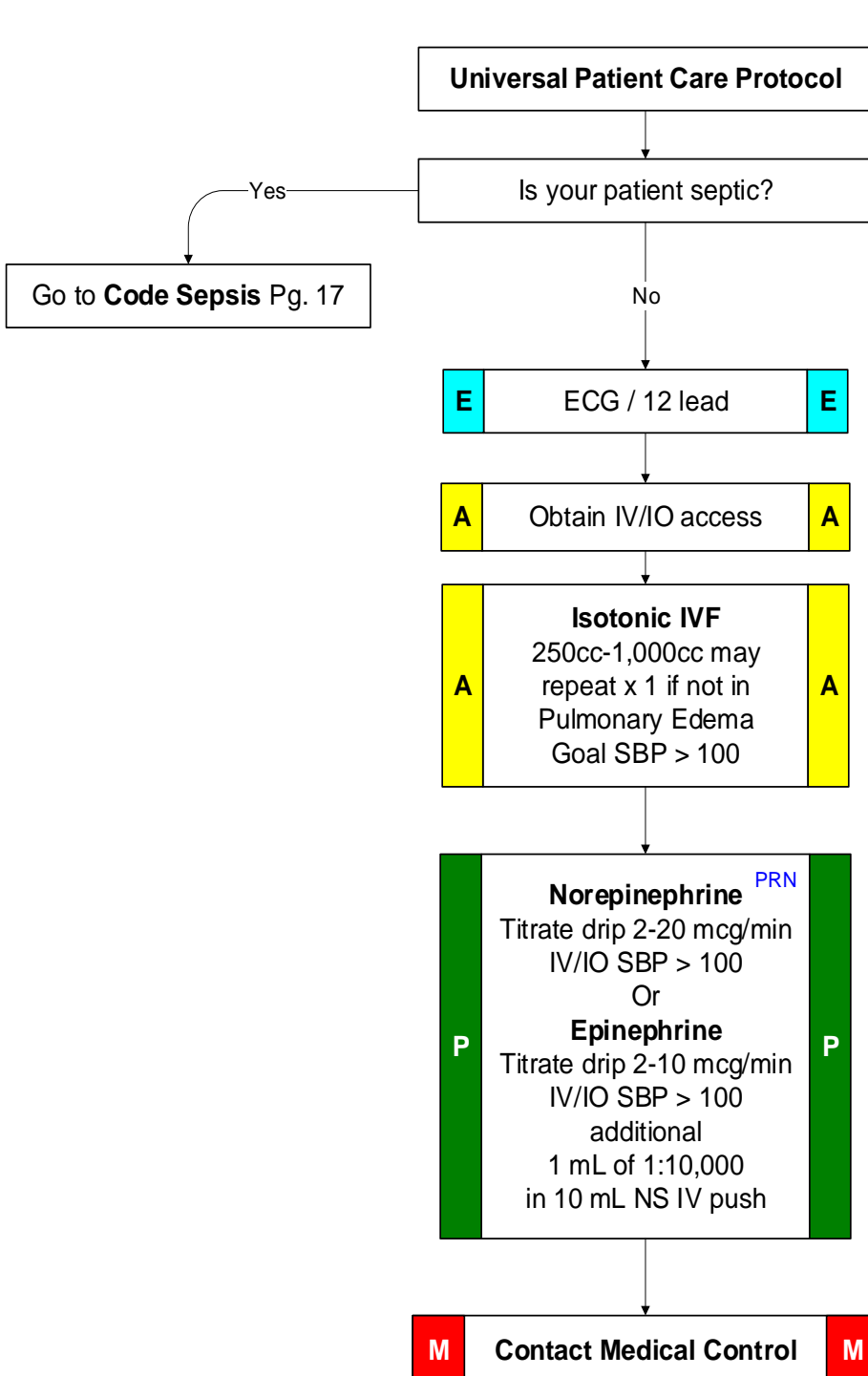
Notes:

- All shocks Monophasic 360 J or the Biphasic device specific equivalent. If Biphasic equivalent unknown deliver shock at 200 J.
- Consider **discontinuing CPR** pursuant to **Procedure** page 121
- For spontaneous resuscitation refer to **Post Resuscitation Management protocol** page 31
- **High Performance CPR** page 119



Non-Traumatic Shock

History: <ul style="list-style-type: none"> • Cardiac ischemia (MI, CHF) • Medications 	Signs/Symptoms: <ul style="list-style-type: none"> • Hypotension • Rales & pulmonary edema on exam • Altered mental status • Weakness, dizziness • Weak, rapid pulse • Pale, cool, clammy skin 	Differential: <ul style="list-style-type: none"> • Dysrhythmias • Vasovagal • Allergic reaction • Anaphylaxis • Sepsis • Neurogenic
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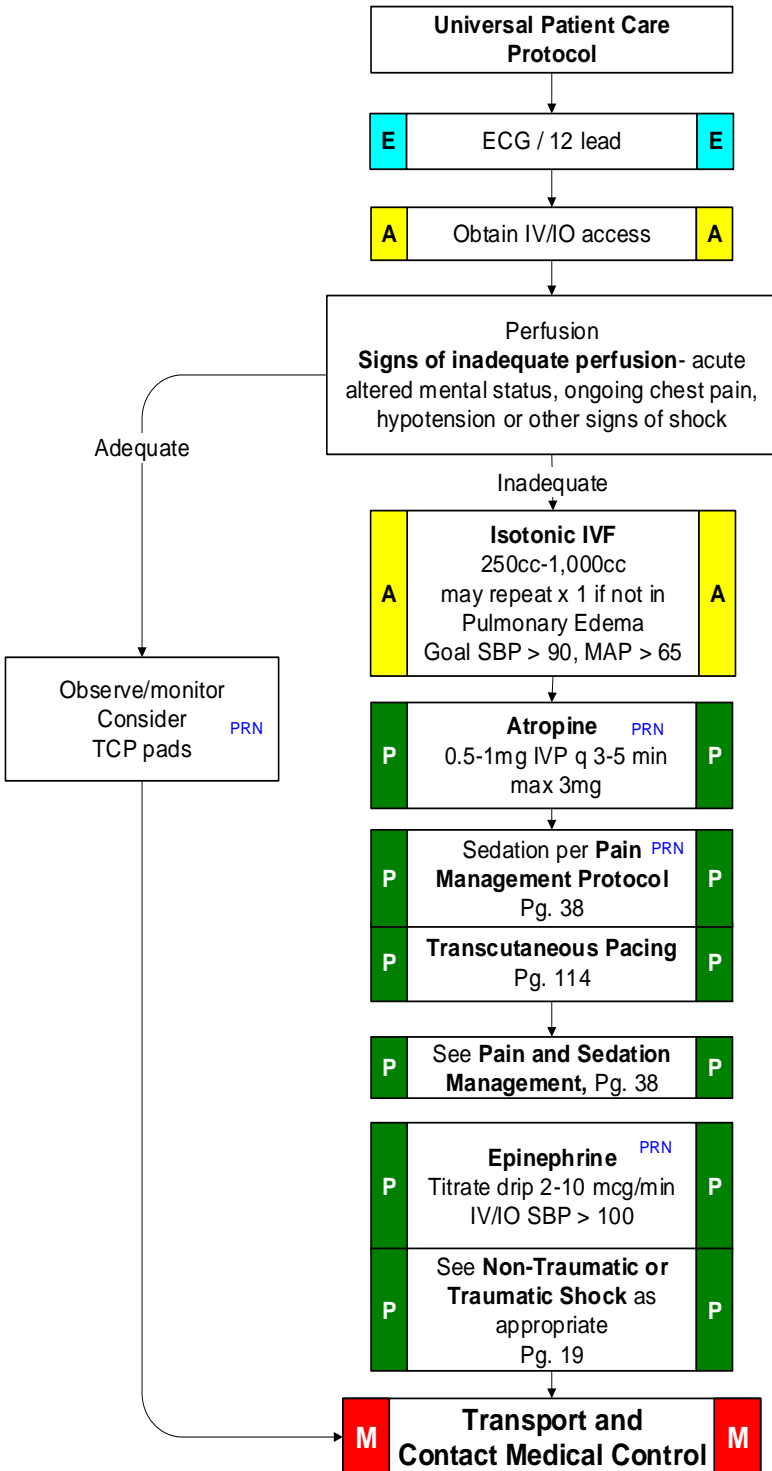


R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Bradycardia

History: <ul style="list-style-type: none"> • Past medical history • Medications <ul style="list-style-type: none"> Beta-Blockers Calcium channel blockers Clonidine Digitalis • Pacemaker 	Potential causes: <ul style="list-style-type: none"> • Acute myocardial infarction • Sinus bradycardia • Athletes / non pathologic • Stroke • Sick sinus Syndrome • Heartblock 	Signs/Symptoms: <ul style="list-style-type: none"> • HR < 60/min and symptomatic • Chest pain • Respiratory distress • Hypotension or Shock • Altered mental status • Syncope
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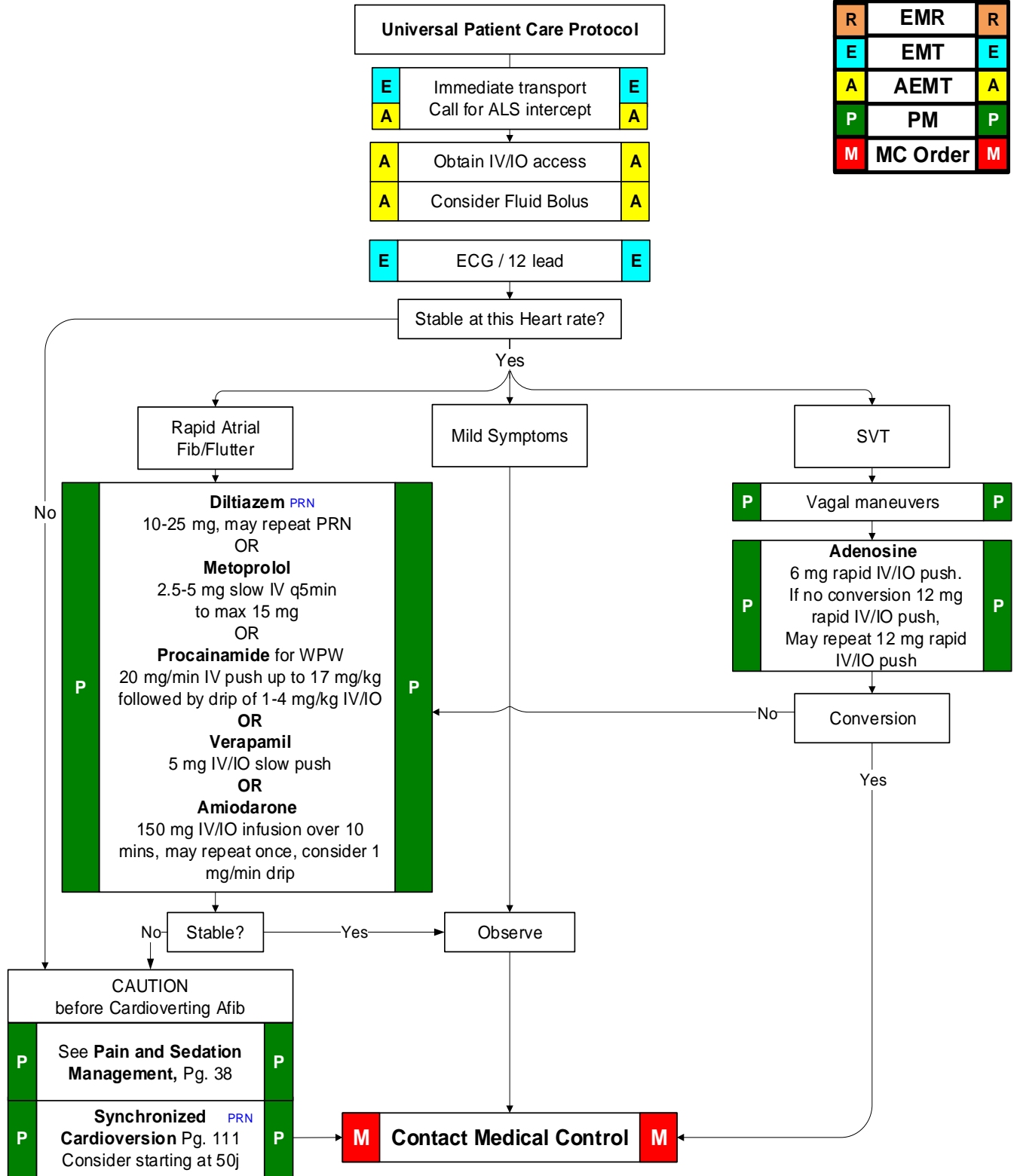
R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Reminders	
- Hypovolemia	- Toxins
- Hypoxia	- Tamponade, cardiac
- Hydrogen ion (acidosis)	- Tension pneumothorax
- Hypo-/Hyperkalemia	- Thrombosis (coronary or pulmonary)
- Hypoglycemia	- Trauma (hypovolemia, increased ICP)
- Hypothermia	
- Heart Meds	



Narrow Complex Tachycardia

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

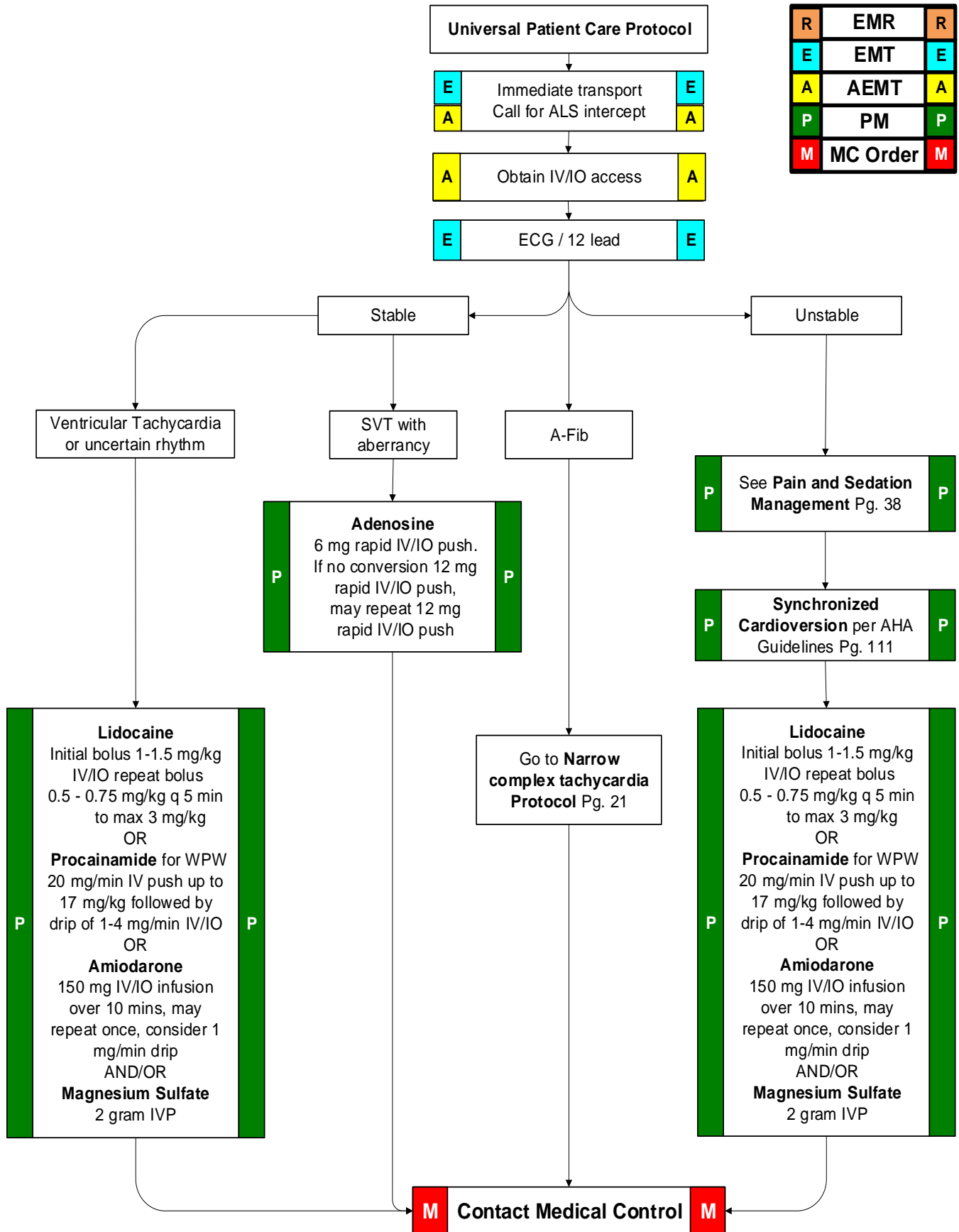


Notes:

- Use β -blockers with caution in pulmonary disease or CHF
- If patient already on a β -blocker, give **Metoprolol**
- WPW (Wolff Parkinson White): pre-existing syndrome which can lead to paroxysmal tachydysrhythmias. Caution must be used when treating WPW with rapid atrial fibrillation.

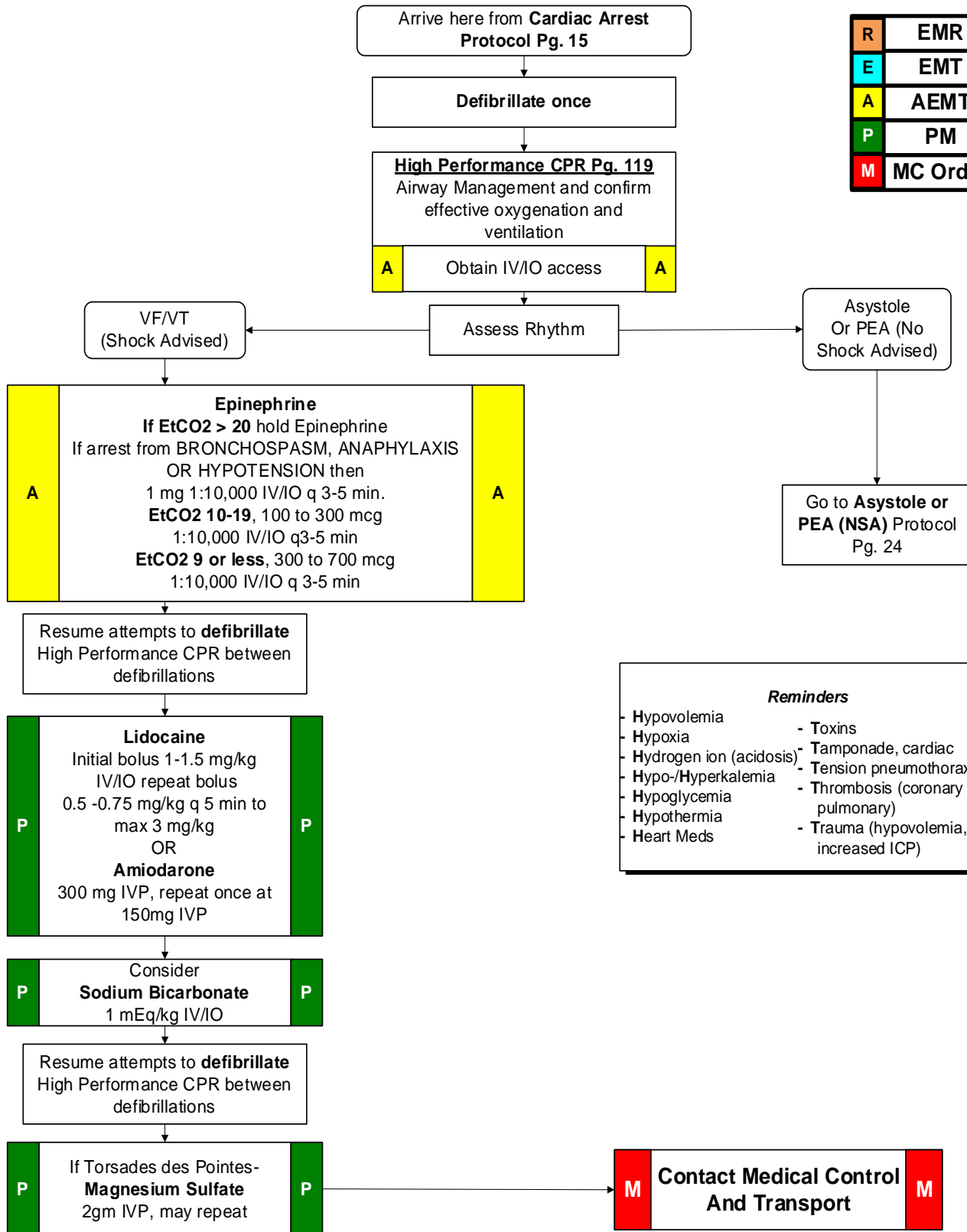


Wide Complex Tachycardia



V-Fib/Pulseless V-Tach (shock advised)

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



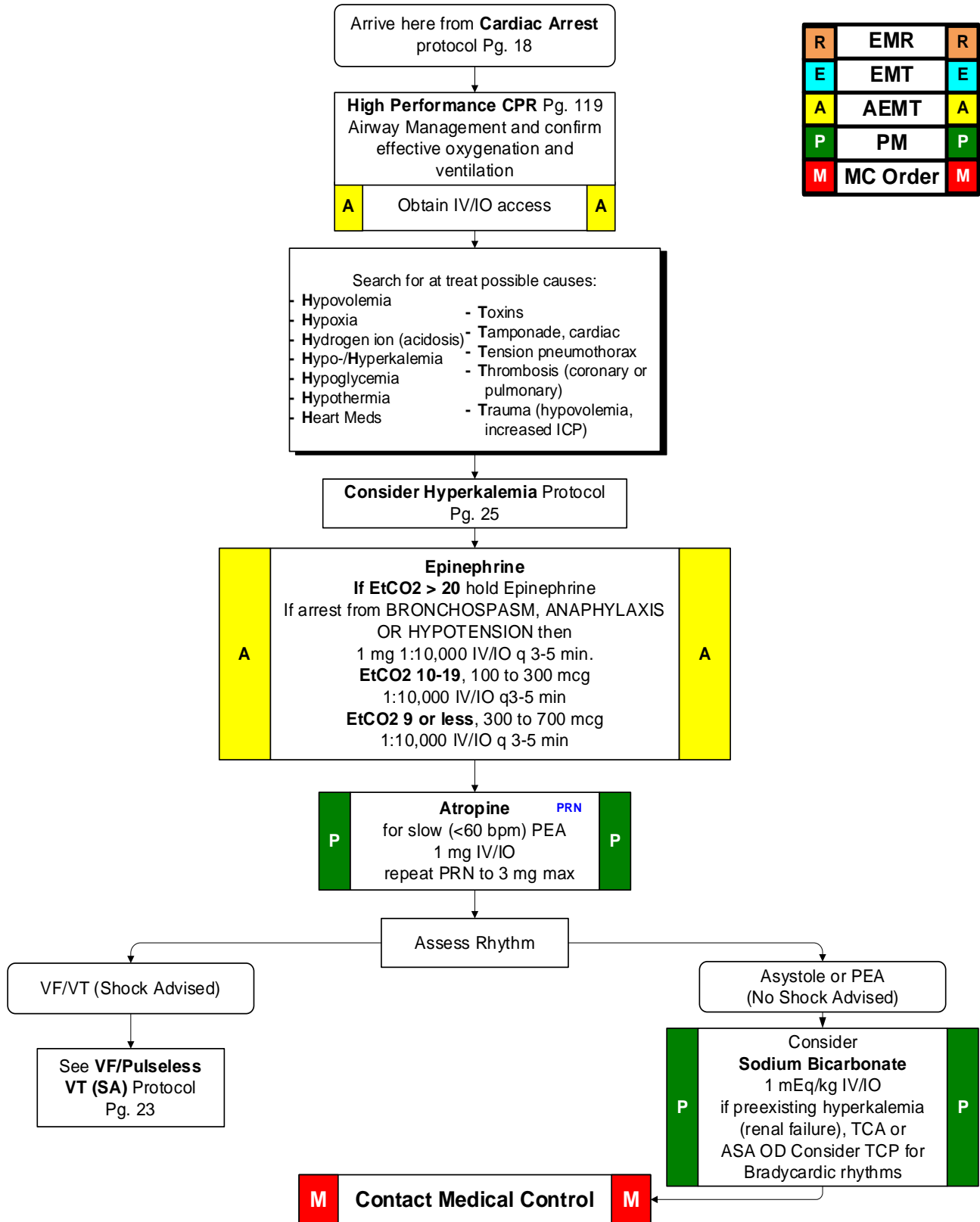
Notes:

- Guidelines for **Discontinuation of Resuscitation** Pg. 121



Asystole / PEA (no shock advised)

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- Guidelines for **Discontinuation of Resuscitation** Pg. 121



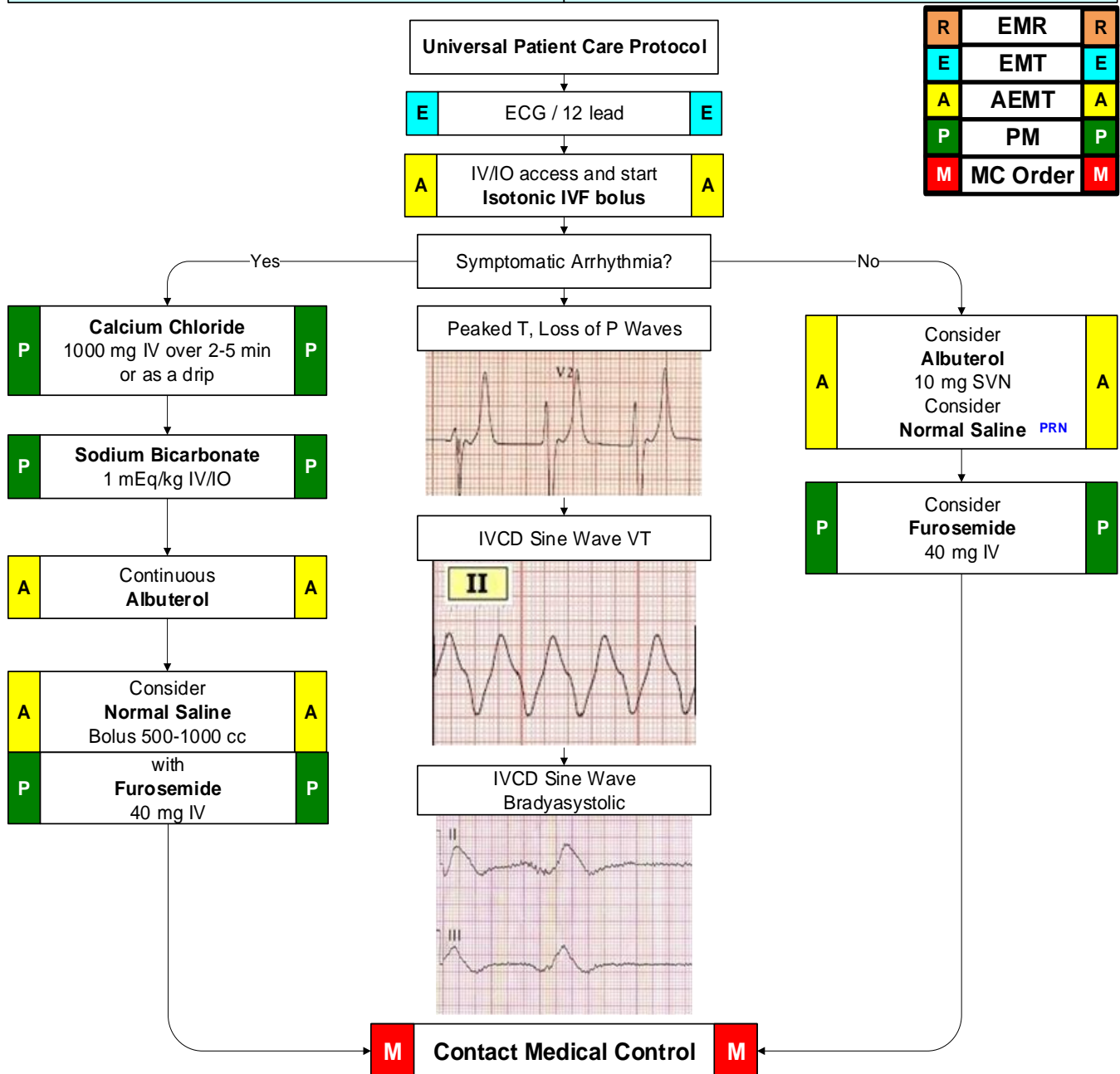
Hyperkalemia

Consider in patients with History of:

- Chronic dialysis patient (typically due for dialysis or late)
- Suspected Rhabdomyolysis or crush injury
- Extensive Burn Injury
- ACE or Potassium sparing diuretics (recent)
- Extensive Hemolysis
- Tumor Lysis Syndrome
- Severe Acidosis
- Extensive physical activity
- Depolarizing paralytic (Succ)
- Consider in Excited Delirium

With EKG Changes of:

- Peaked T-Waves (without suspected MI)
- Loss of P-Waves (with peaked T-Waves)
- Wide QRS (IVCD Pattern)
- Sine wave pattern VT or VF
- Bradycardia or Bradysystolic Rhythm Asystole



Notes:

- Guidelines for **Discontinuation of Resuscitation** Pg. 121
- Line must be flushed after administration of calcium chloride to avoid precipitation of subsequent medications.



Chest Pain / Acute Coronary Syndrome

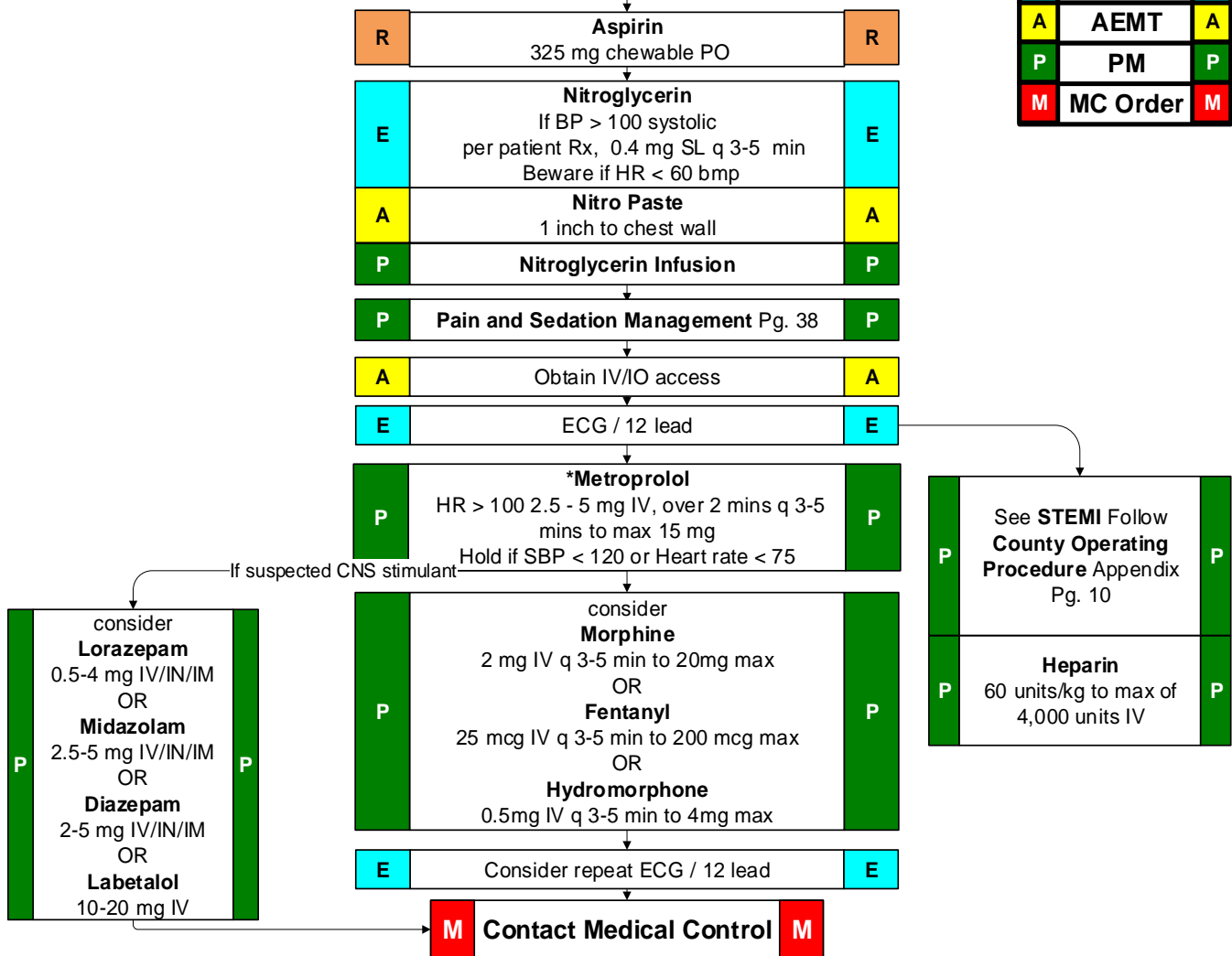


ALS evaluation and/or transport if:

Cardiac Risk Factors: <ul style="list-style-type: none"> • Previous MI / Known Cardiac disease • Hypotention • Diabetes • Smoking tobacco use • Family History • High Cholesterol • Hyperlipidemia • Major stress • Takatsobu cardiomyopathy 	History: <ul style="list-style-type: none"> • Viagra, Cialis, Levitra (Male or Female) • Onset • Palliation / Provocation • Quality (crampy, constant, sharp, dull, etc.) • Region / Radiation / Referred • Severity (1-10) • Time (duration / repetition) 	Signs/Symptoms: <ul style="list-style-type: none"> • CP (pain, pressure, aching, tightness) • Radiation of pain • Pale, diaphoresis • Shortness of breath • Nausea, vomiting, dizziness • Abnormal vital signs 	Differential: <ul style="list-style-type: none"> • Aortic dissection or aneurysm • Trauma vs. Medical • Pericarditis • Pulmonary embolism • Asthma / COPD • Pneumothorax • GE reflux or Hiatal hernia • Esophageal spasm • Chest wall injury or pain • Pleural pain
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Universal Patient Care Protocol

Suspect Acute Coronary Syndrome

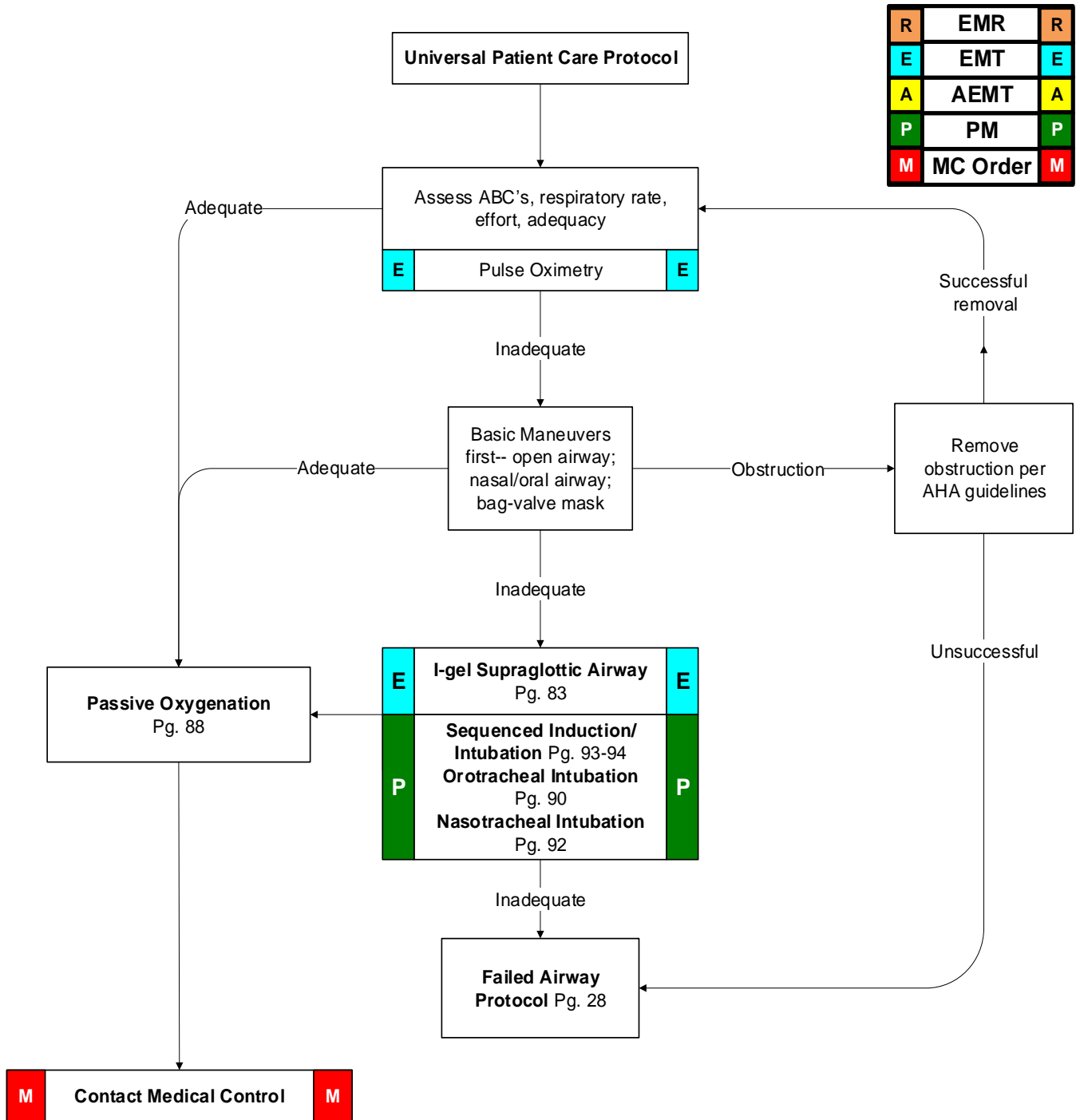


Notes:

- **Avoid Nitroglycerin in any patient (man or woman) who has used sexual performance enhancement drugs (ie Viagra, Levitra, etc.) in the past 24 hours due to possible severe hypotension.**
- If positive ECG changes, establish a second IV while en route to the hospital.
- Monitor for hypotension after administration of nitroglycerin and morphine.
- *Metoprolol - contraindicated with CNS stimulant, consider ½ doses for elderly, asthma & COPD



Airway, Adult



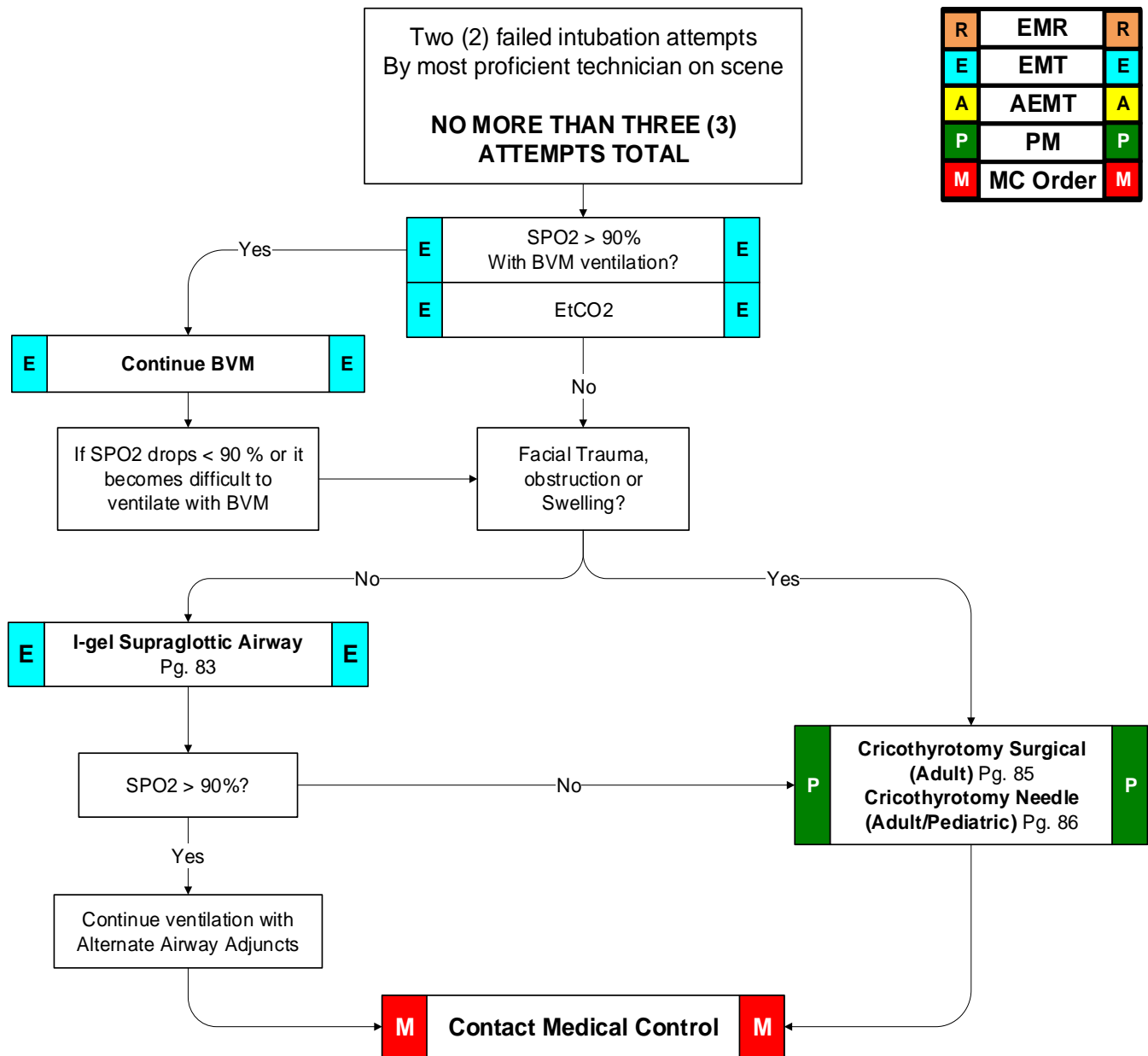
Notes:

- **Capnometry or capnography is mandatory with all methods of intubation. Document results.**
- For this protocol, adult is defined any person who does not fit the length based tape
- **EMT's must have multi-lumen airway training to use Supraglottic Airway Adjuncts.**
- Maintain C-spine immobilization for patients with suspected spinal injury
- Paramedics should consider Supraglottic Airway Adjuncts.
- Reconfirm ETT placement each time patient is moved
- Continuous pulse oximetry should be utilized in all patients with compromised respiratory function



Airway, Adult Failed

R	EMR	R
E	E	E
A	A	A
P	P	P
M	MC Order	M



Notes:

- **Difficult Airway Assessment** Pg. 87
- If first intubation attempt fails, make an adjustment and then try again:
 - Different laryngoscope blade
 - Different ETT size
 - **Eschmann Catheter** Pg. 91
 - **Video Assisted Laryngoscopy** Pg. 97 if available and appropriate
 - Change cricoid pressure
 - Apply BURP maneuver (push trachea Back [posterior], Up, and to patient's Right)
 - Change head positioning
- Continuous Pulse Oximetry and ETCO2 should be utilized in all patients with inadequate respiratory function
- **Notify Medical Control AS EARLY AS POSSIBLE about the patients difficult/failed airway.**

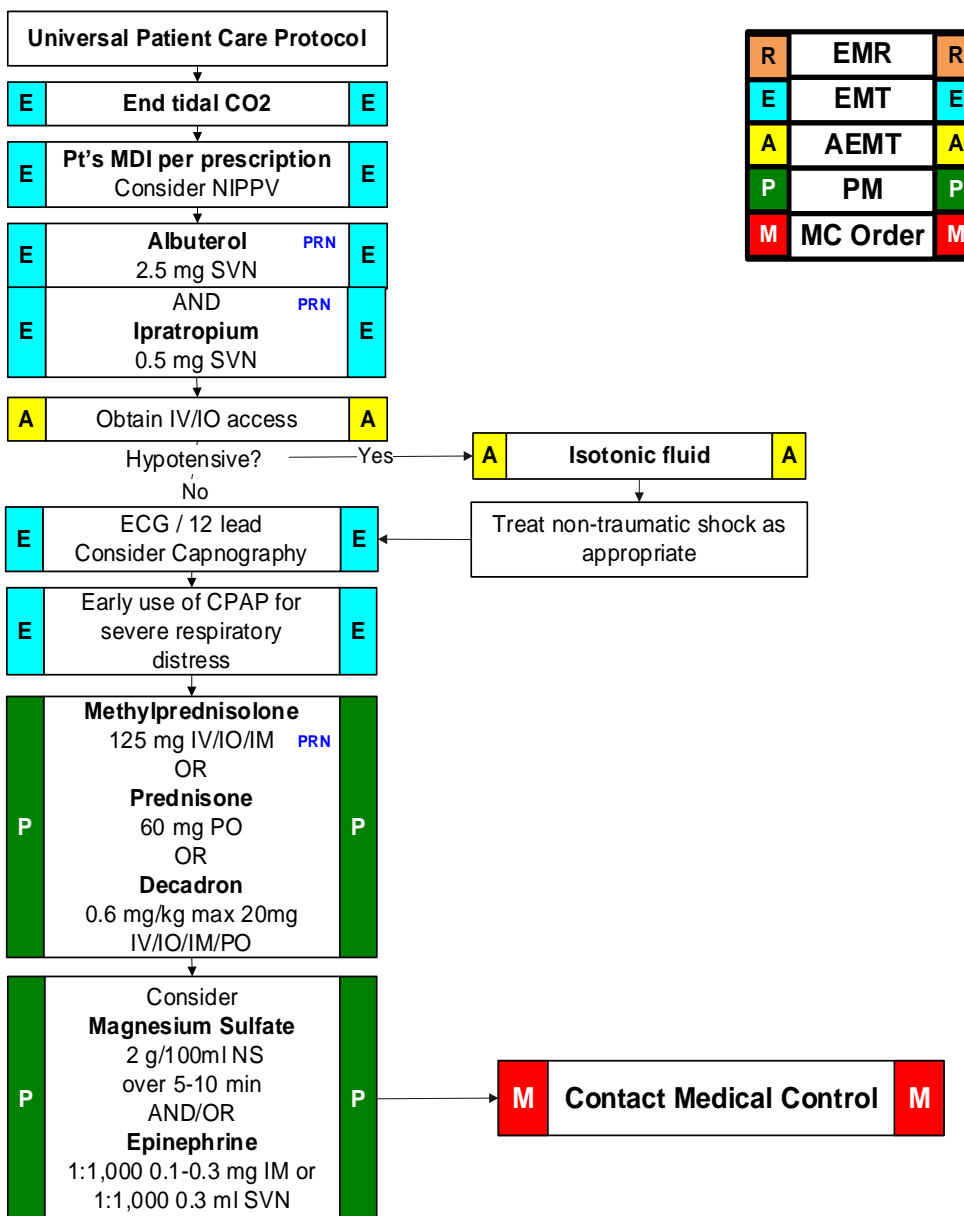


Reactive Airway Disease



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Asthma COPD- emphysema, chronic bronchitis Congestive heart failure Home treatment (O₂, nebulizer) Medications (theophylline, steroids, inhalers) Toxic exposure Smoking No improvement with initial treatment 	Signs and Symptoms: <ul style="list-style-type: none"> Shortness of breath Pursed-lip breathing Decreased ability to speak Increased respiratory rate and effort Wheezing, rhonchi, rales Use of accessory muscles Fever, cough Tachycardia Suspected PE 	Differential: <ul style="list-style-type: none"> Asthma Anaphylaxis Aspiration COPD (Emphysema, Bronchitis) Pleural effusion Pneumonia Pulmonary Embolus Pneumothorax Cardiac (MI or CHF) Pericardial Tamponade Hyperventilation Inhaled Toxin (Carbon monoxide, etc.)
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Notes:

- Barotrauma is often caused by the over-ventilation of Reactive airway patients. Allow for a prolonged expiratory time when ventilating such patients.

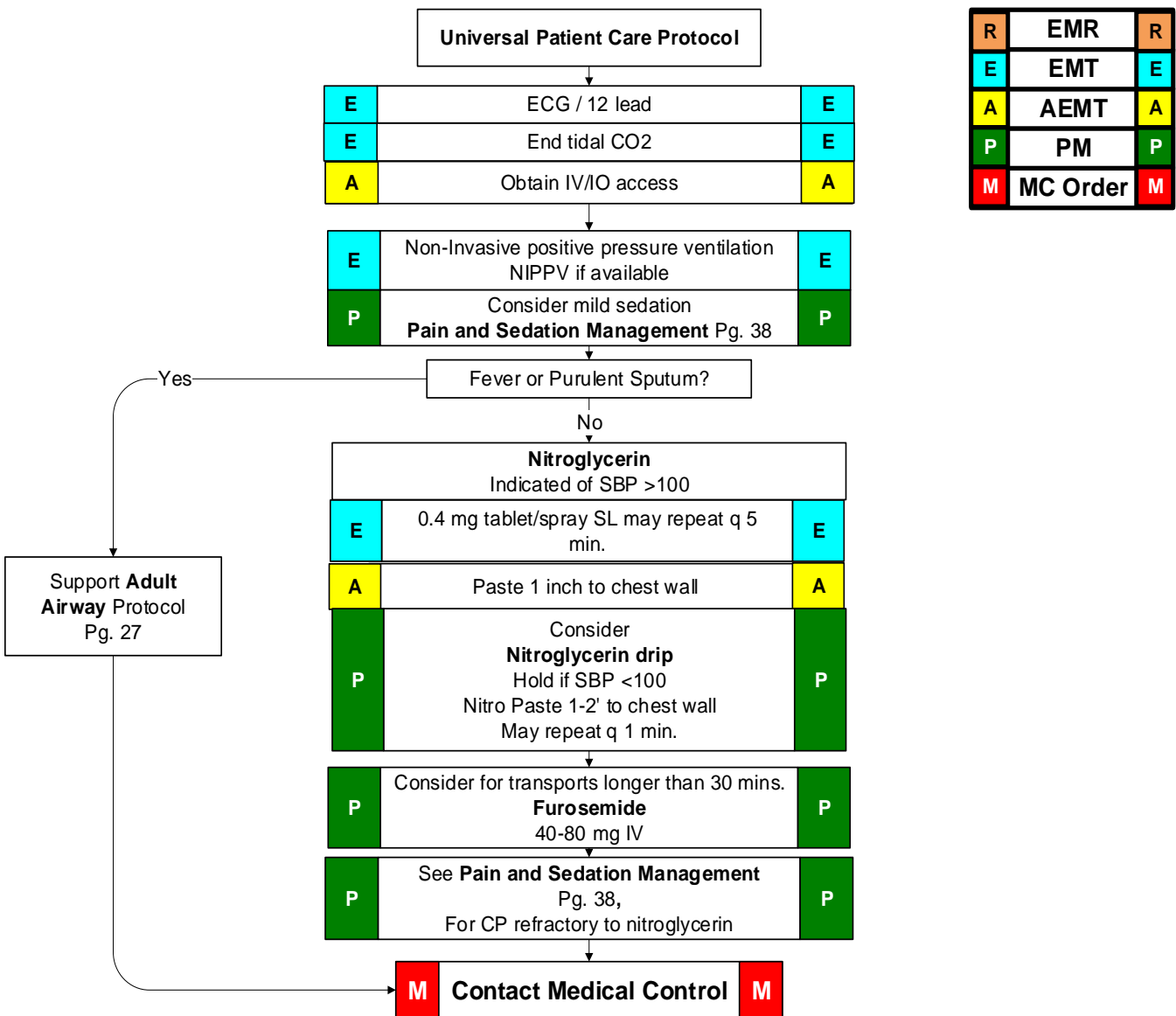


Pulmonary Edema



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Congestive heart failure • Past medical history • Medications (digoxin, lasix, HCTZ) • Viagra, Levitra, Cialis • Cardiac history- past myocardial infarction 	Signs/Symptoms: <ul style="list-style-type: none"> • Respiratory distress, rales • Apprehension, orthopnea • Jugular vein distention • Pink, frothy sputum • Peripheral edema, diaphoresis • Hypotension, shock • Chest pain 	Differential: <ul style="list-style-type: none"> • Myocardial infarction • Congestive heart failure • Asthma • Anaphylaxis • Aspiration • COPD • Pleural effusion • Pneumonia • Pulmonary Embolus • Pericardial tamponade
Mild-Moderate- able to speak sentences, crackles base only, O ₂ sat ≥ 92% Severe- respiratory distress, crackles throughout, O ₂ sat < 92% Near Death- Decreased LOC, cyanosis, dropping sats, ineffective respiratory drive		



Notes:

- **Avoid Nitroglycerin in any patient (man or woman) who has used sexual performance enhancement drugs (ie Viagra, Levitra, etc.) in the past 24 hours due to possible severe hypotension.**
- If patient has taken nitroglycerin without relief, consider potency of the medication.
- **Consider myocardial infarction in all these patients.**
- Allow the patient to be in their position of comfort to maximize their breathing effort.



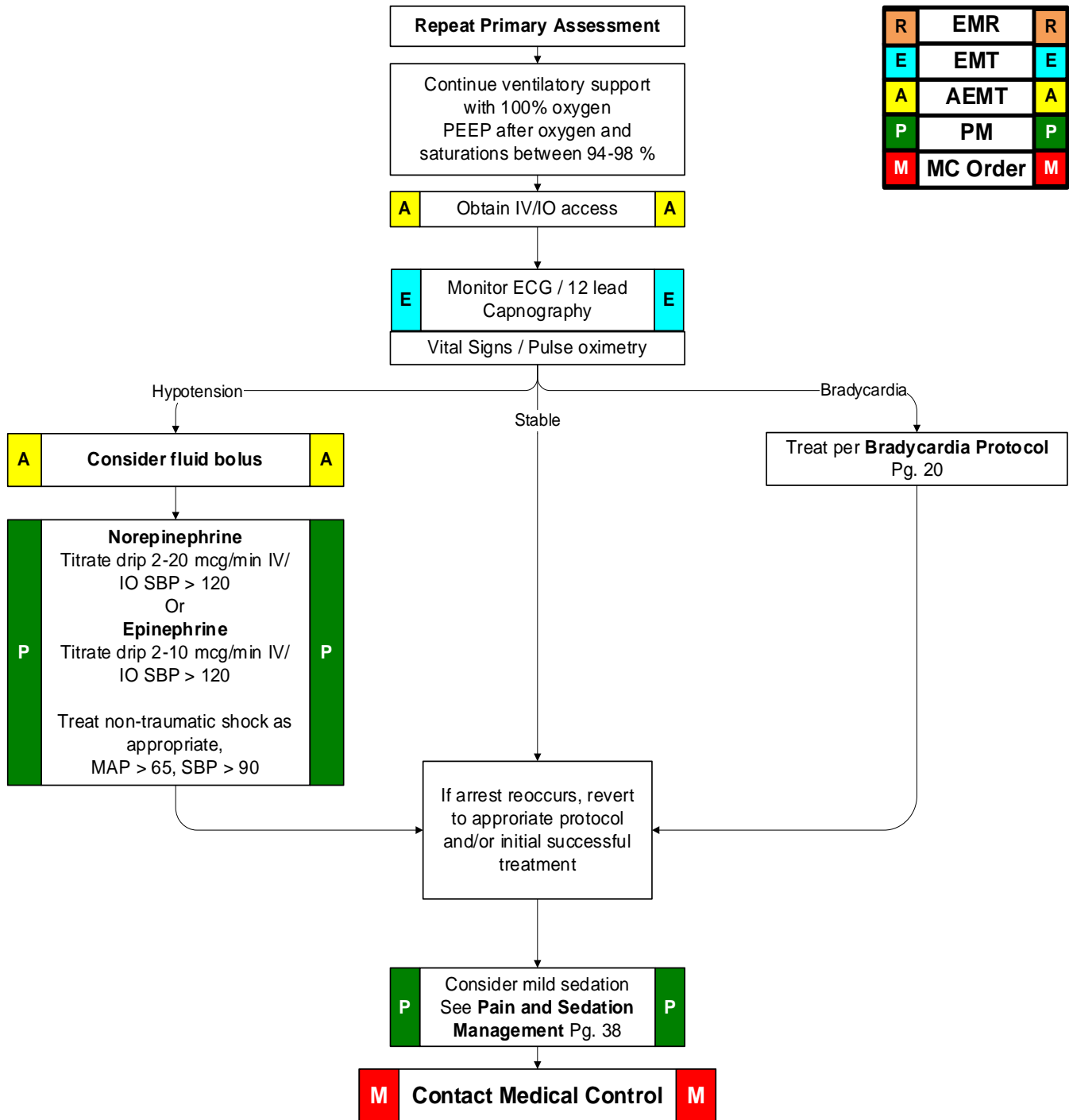
Post Resuscitation Management



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Respiratory arrest Cardiac arrest 	Signs/Symptoms: <ul style="list-style-type: none"> Return of Spontaneous Circulation refer to Cardiac Triage Tool, Pg. 10 	Differential: <ul style="list-style-type: none"> Continue to address specific differentials associated with the original dysrhythmia
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- Sedate as needed
- Continue antiarrhythmic infusions from previous resuscitation protocol [PRN](#)

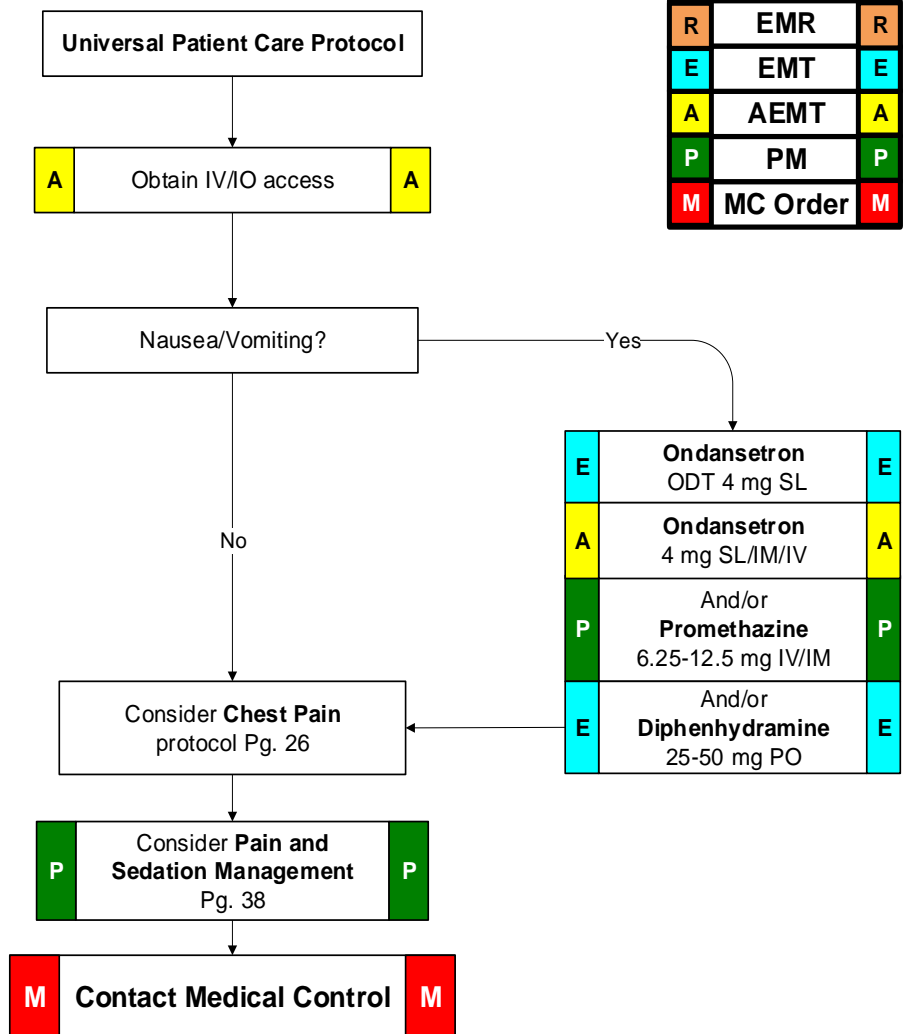


Abdominal Pain



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Age • Past medical / surgical history • Medications • Onset • Palliation / Provocation • Quality (crampy, constant, sharp, dull, etc.) • Region / Radiation / Referred • Severity (1-10) • Time (duration / repetition) • Fever • Last meal eaten • Last bowel movement / emesis • Menstrual history (pregnancy) 	Signs/Symptoms: <ul style="list-style-type: none"> • Pain (location / migration) • Tenderness • Nausea • Vomiting • Diarrhea • Dysuria • Constipation • Vaginal bleeding • Pregnancy • Pulsating mass • Chest pain • Shortness of breath • Abnormal vital signs 	Differential: <ul style="list-style-type: none"> • AAA • Ectopic pregnancy • Bowel obstruction • Cardiac • Pregnancy (ectopic?) • GI bleed • Appendicitis • Cholecystitis • Pancreatitis • Kidney stones
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Notes:

- Document the mental status and vital signs prior to administration of **Promethazine (Phenergan)** and **Droperidol**.
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Appendicitis presents with vague, peri-umbilical pain which migrates to the RLQ over time.



Allergic Reaction

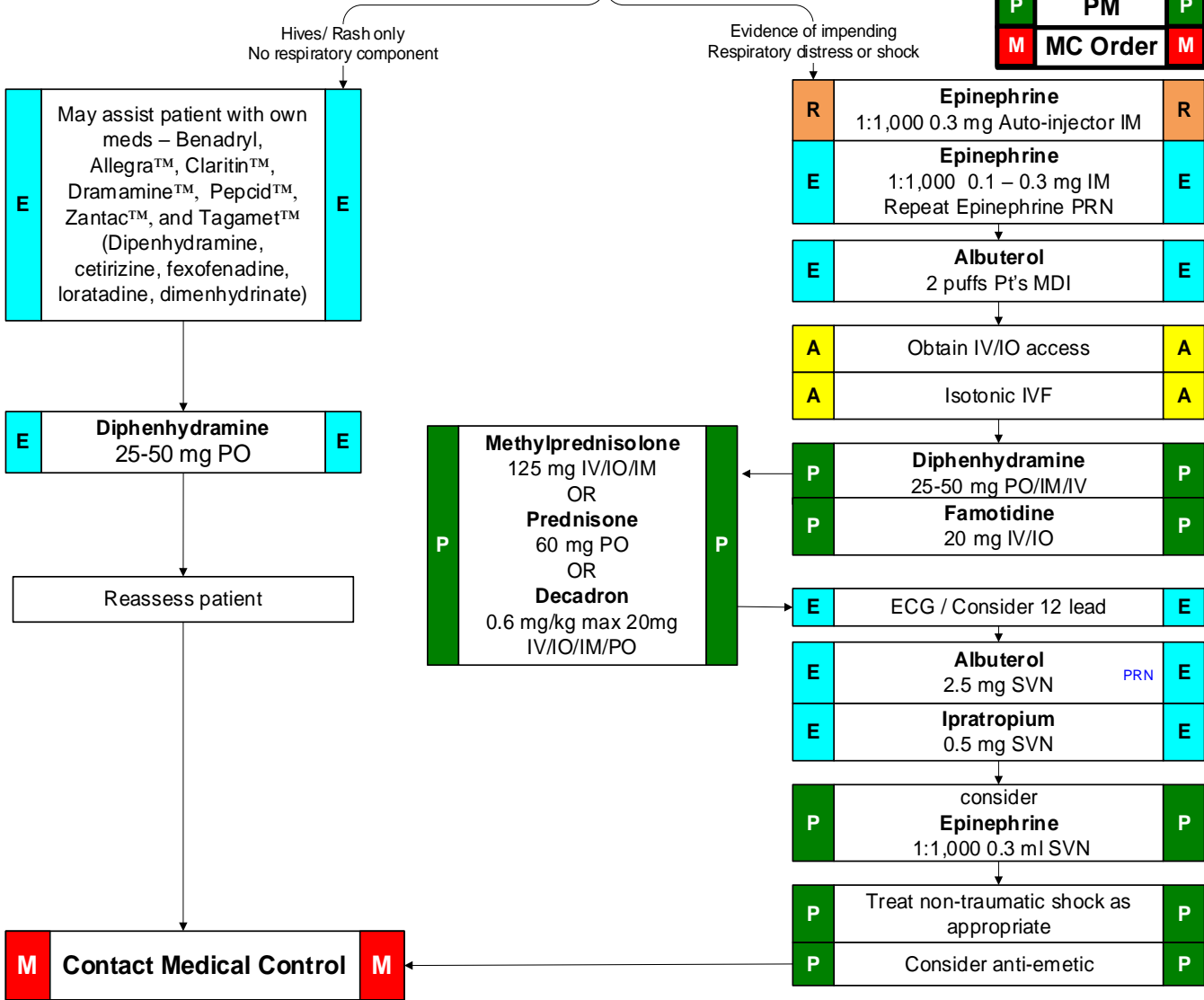


ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Onset and Location Insect bite/sting New clothing, soap, detergent 	Signs/Symptoms: <ul style="list-style-type: none"> Anxiety Nausea / Vomiting Altered Mental Status Pale Diaphoresis Hypotension Rash Hives Angioedema Shortness of breath
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Universal Patient Care Protocol

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- Signs of shock include SBP < 90
- The shorter the onset from contact to symptoms, the more severe the reaction
- A single dose of **epinephrine** may not reverse the effects of anaphylaxis. Administer additional doses as needed
- EMT may assist with patients own MDI
- Be watchful for possible secondary allergic response, after apparent resolution of initial S/S and patient should continue to be monitored by responsible adult for 30-60 minutes.



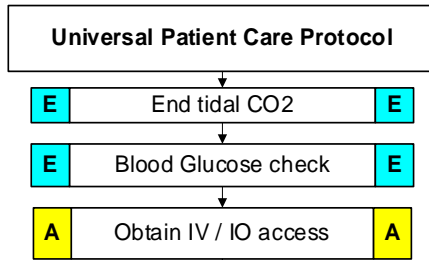
Diabetic Emergency



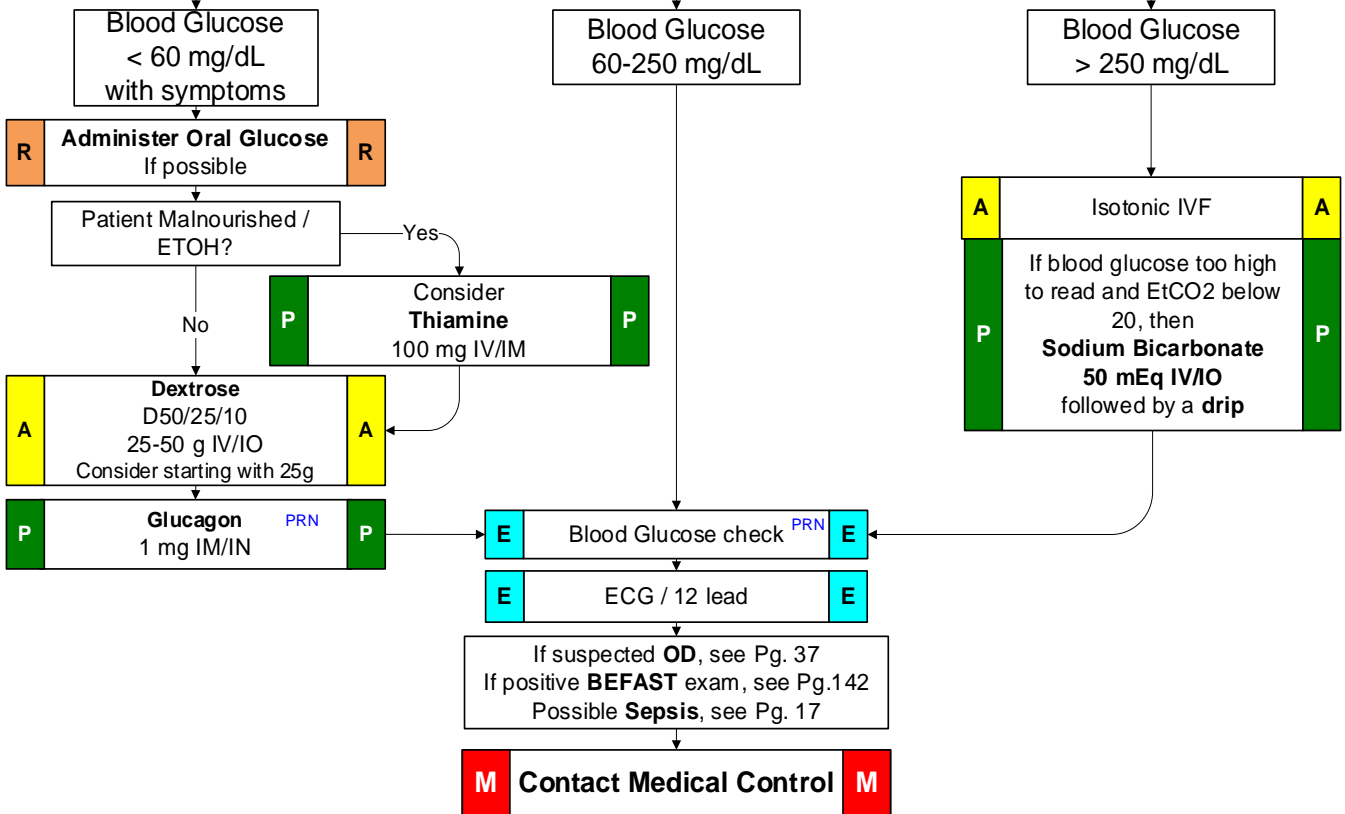
ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Known diabetic, medic alert tag Drugs, drug paraphernalia Report of illicit drug use or toxic ingestion Past medical history Medications History of trauma GI History Syncope 	Signs/Symptoms: <ul style="list-style-type: none"> Decreased mental status Change in baseline mental status Bizarre behavior Hypoglycemia (cool, diaphoretic skin) Hyperglycemia (warm, dry skin; fruity breath; Kussmal resps; signs of dehydration) Diabetic Syncope Abnormal vital signs persist Shortness of breath 	Differential: <ul style="list-style-type: none"> Hypovolemia Hypoxia Hydrogen ions (acidosis) Hypo-/Hyperkalemia Hypoglycemia Hypothermia Toxins Tamponade, cardiac Tension pneumothorax Thrombosis, coronary or pulmonary Trauma
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R
R
 If glucose check unavailable, for suspected hypoglycemia, give oral glucose



R	EMR	R
E	E	E
A	A	A
P	PM	P
M	MC Order	M



Notes:

- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.
- Repeat blood glucose for any change in mental status after treatment has begun.

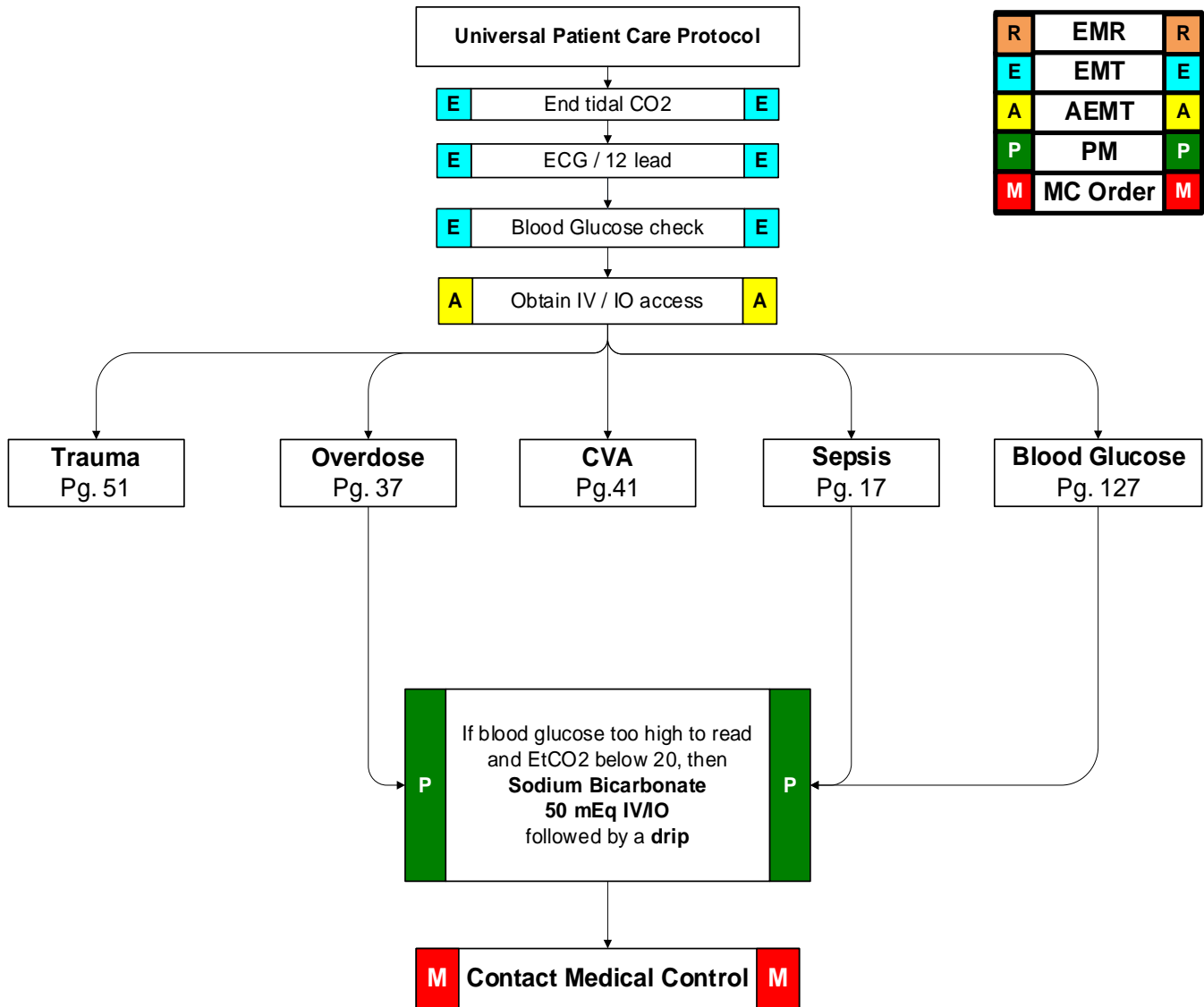


Altered Mental Status



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Known diabetic, medic alert tag Drugs, drug paraphernalia Report of illicit drug use or toxic ingestion Past medical history Medications History of trauma GI History Syncope 	Signs/Symptoms: <ul style="list-style-type: none"> Decreased mental status Change in baseline mental status Bizarre behavior Hypoglycemia (cool, diaphoretic skin) Hyperglycemia (warm, dry skin; fruity breath; Kussmaul resps; signs of dehydration) Diabetic Syncope Abnormal Vital signs persists Shortness of breath 	Differential: <ul style="list-style-type: none"> A- Alcohol/ Acidosis E- Endocrine/ Epilepsy/ Electrolytes/ Encephalopathy I- Insuline O- Opiates/ Overdose/ Oxygen U – Uremia T- Trauma I- Infection P- Poisoning/ Psychosis/ Pharmacology S- Stroke/ Seizure/ Syncope
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Notes:

- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Consider Restraints if necessary for patient's and/or personnel's protection per the **Restraint** procedure. Pg. 137
- Repeat blood glucose for any change in mental status after treatment has begun.



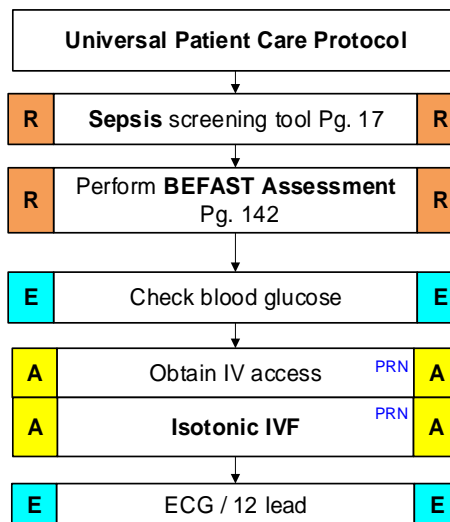
General Illness

Fever / Nausea / Vomiting / Unknown

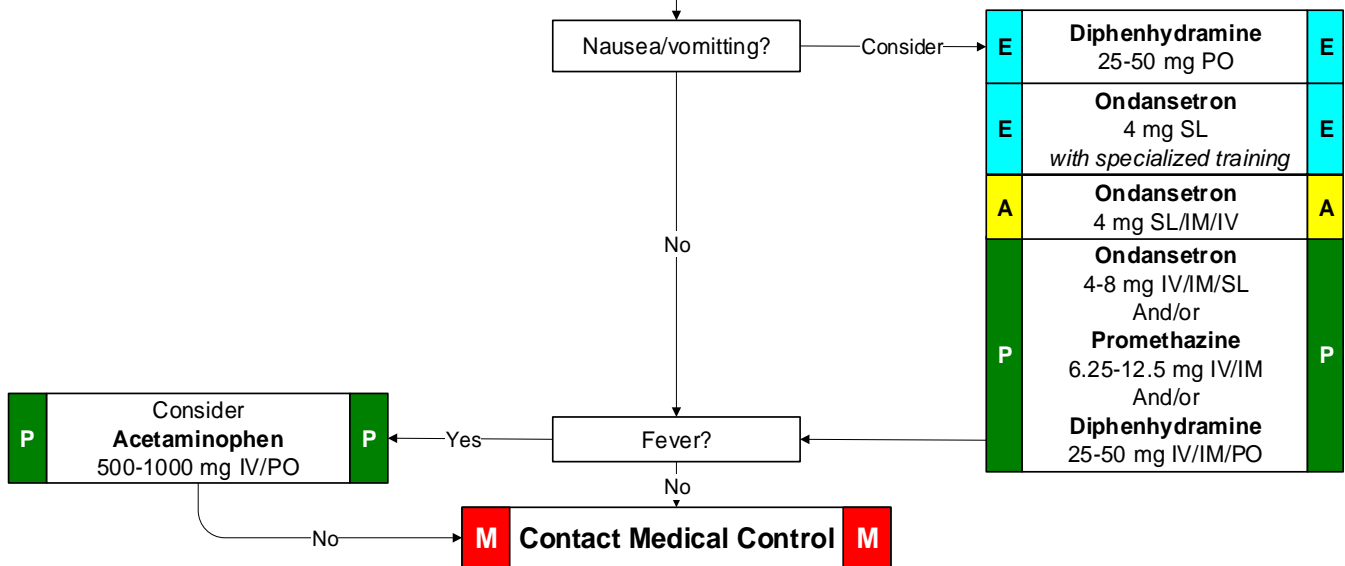


ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Age • Duration • Past medical history • Last oral intake • Medications • Immunocompromised • Bloody emesis/diarrhea • Menstrual history • Past surgical history • Environmental exposure/travel history 	Signs/Symptoms: <ul style="list-style-type: none"> • Warm • Sweaty • Flushed • Pain • Radiation • Abdominal distension • Chills/Rigors • Constipation • Diarrhea • Persistent Abnormal Vital signs • ALOC • Shortness of Breath 	Differential: <ul style="list-style-type: none"> • Infections / Sepsis • Cancer / Tumors / Lymphomas • GI or Renal disorders • Heat Stroke • Medication or drug reaction • Vasculitis • Hyperthyroid • CNS disease/trauma • Myocardial infarction • Diabetic ketoacidosis • Gynecologic disease (ovarian cyst, PID) • Electrolyte abnormalities • Pregnancy • Psychologic
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- Individuals' normal body temperatures differ, with 98.6°F (37°C) being average. Generally a temperature over 100.4° F (38°C) is considered a fever.

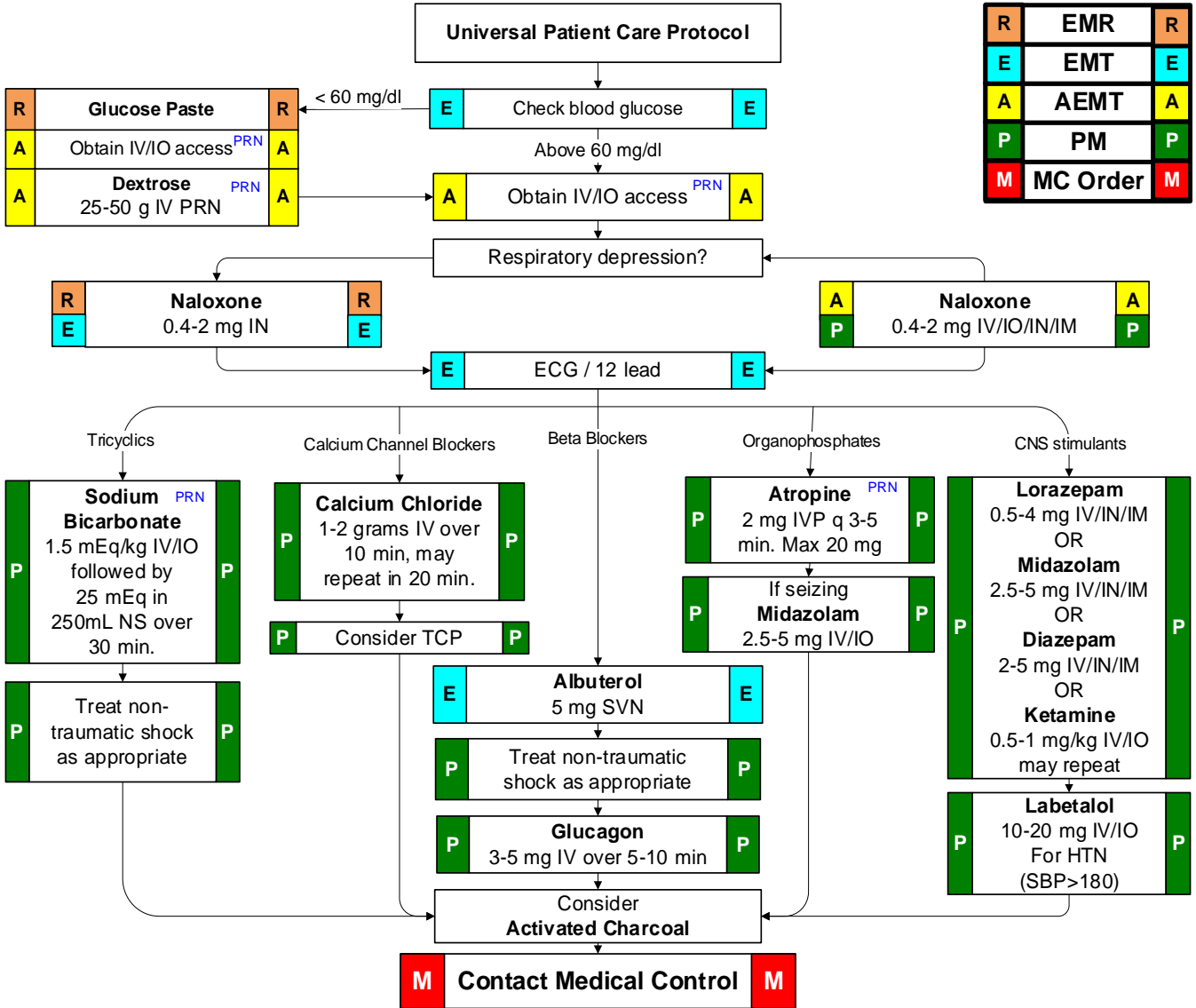


Overdose/Poisoning



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Ingestion or suspected ingestion of a potentially toxic substance Substance ingested, route, quantity Time of ingestion Reason (suicidal, accidental, criminal) Available medications in home Past medical history, medications Home remedies given to patient prior to aid arrival 	Signs/Symptoms: <ul style="list-style-type: none"> Mental status changes Hypotension / hypertension Decreased respiratory rate Tachycardia, dysrhythmias Seizures 	Differential: <ul style="list-style-type: none"> Tricyclic antidepressants (TCAs) Acetaminophen (Tylenol) Depressants Stimulants Anticholinergic Cardiac medications Solvents, Alcohols, Cleaning agents Insecticides (organophosphates)
Poison Control 800-222-1222		



- Notes:**
- Do not rely on patient history of ingestion, especially in suicide attempts.
 - Bring bottles, contents, emesis to ED.
 - Treat medication overdoses if symptomatic including ECG changes SPB <100, ALOC, HR >100
 - Document case number from Poison Control on the PCR.
 - Activated charcoal is ineffective for ingestions beyond 1 hour.
 - Recommendations from Poison Control Center, verify with Medical Control

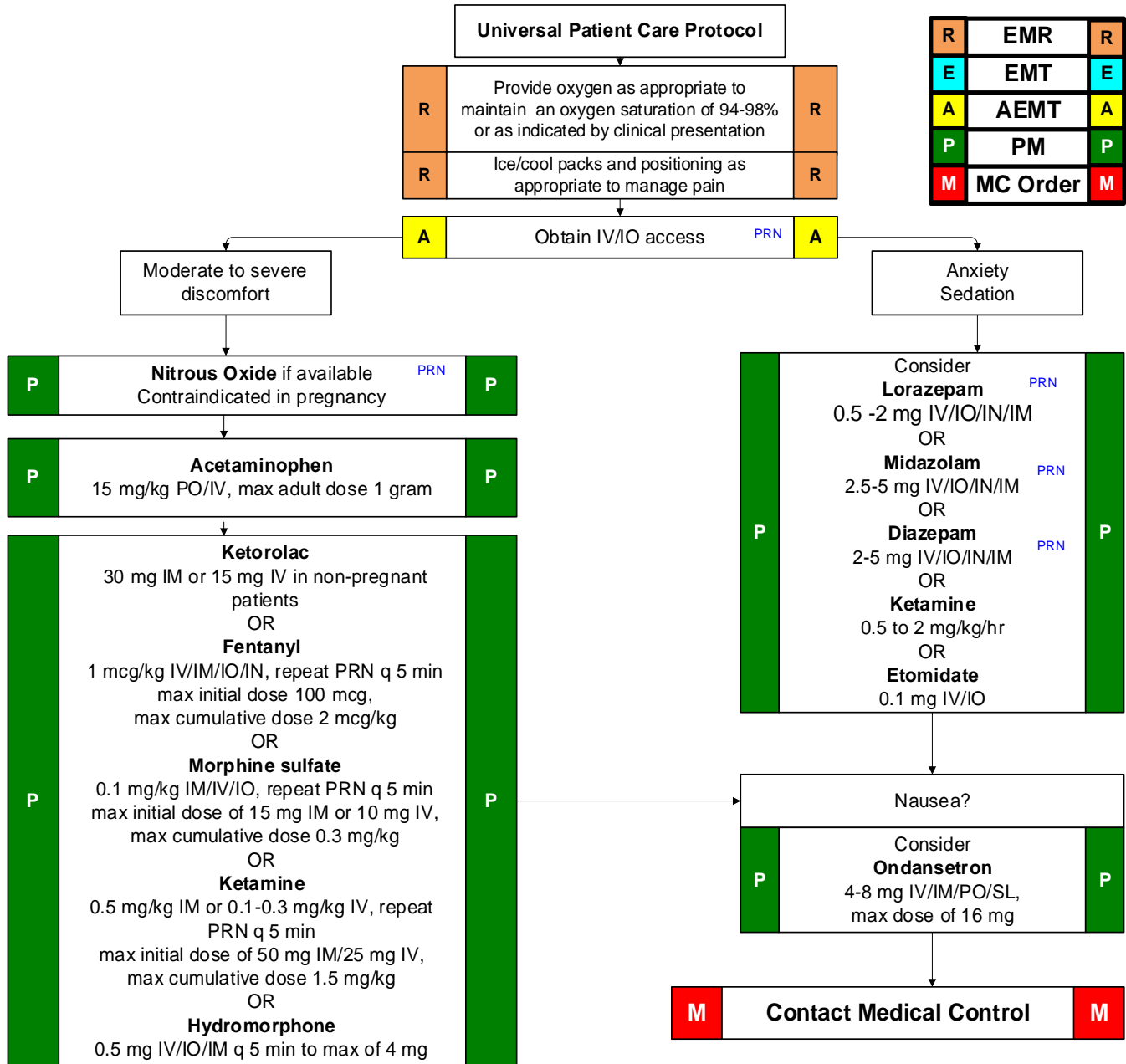


Pain and Sedation Management



ALS transport if patients given a sedating medication.

Inclusion Criteria: <ul style="list-style-type: none"> Patients who are experiencing pain 	Exclusion Criteria: <ul style="list-style-type: none"> Pregnancy with active labor Patients with care plans that prohibit use of parenteral analgesics by EMS (Relative) Patients with chronic pain who aren't part of a hospice/palliative care plan AND who are not experiencing an acute injury or illness resulting in pain (Relative)
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Notes:

- Consider reduced medication doses when given concomitantly with benzodiazepenes
- The goal of pain management should be to sustain patient comfort while maintaining the alertness and the ability to communicate with the care provider/team
- For elderly, consider Ketamine infusion over 10 min.



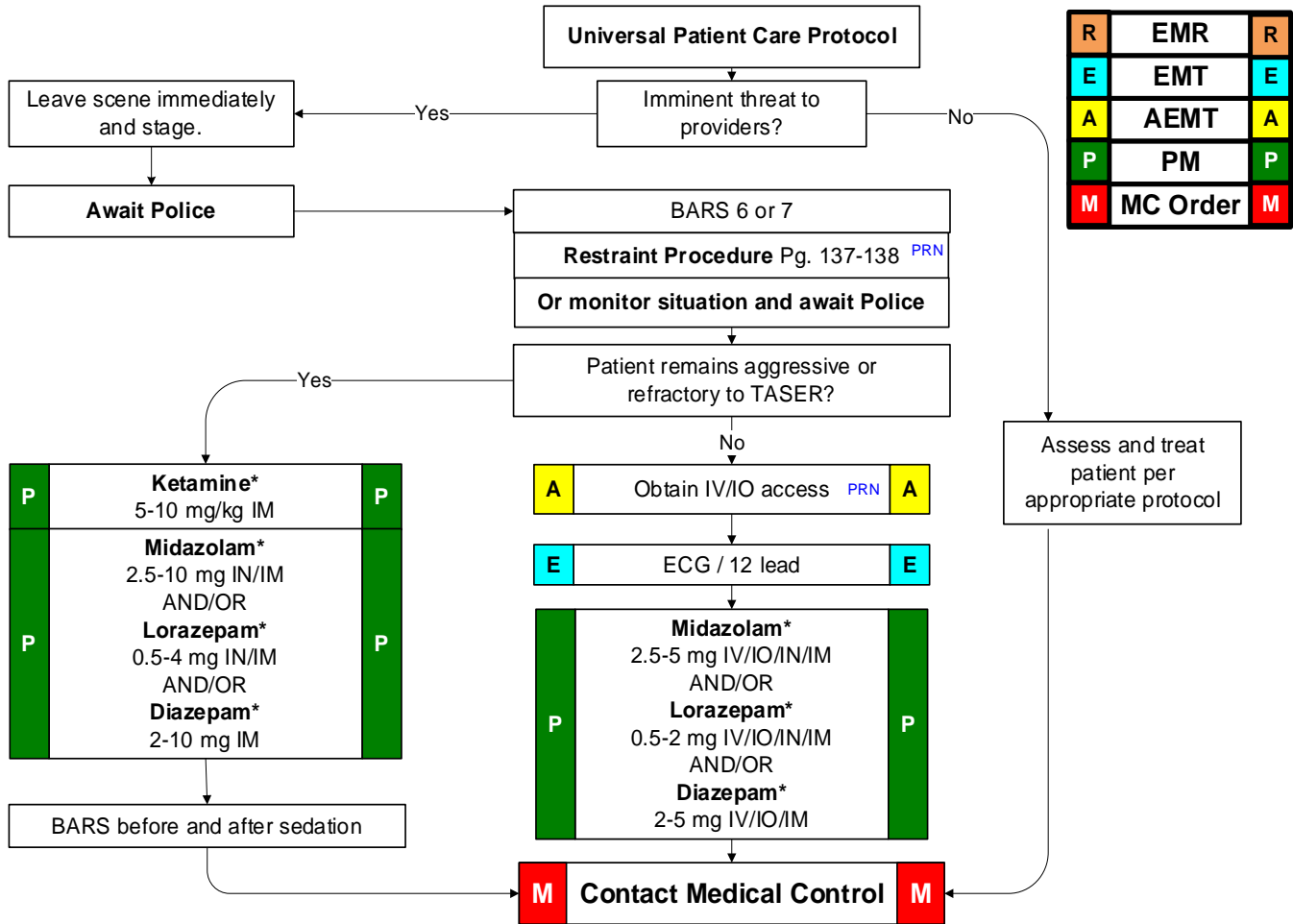
Psychological/Emotional/Excited Delirium



ALS transport if patients given a sedating medication.

History: <ul style="list-style-type: none"> Situational crisis Psychiatric illness Medications Injury to self or threats to others Medic alert tag Substance abuse / overdose Diabetes 	Signs/Symptoms: <ul style="list-style-type: none"> Anxiety, agitation, confusion Affect change, hallucinations Delusional thoughts, bizarre behavior Combative violent Expression of suicidal / homicidal thoughts 	Differential: <ul style="list-style-type: none"> Alcohol Intoxication Toxin / Substance abuse Medication effect / overdose Withdrawal syndromes Sepsis / Meningitis See Altered Mental Status differential
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Score – Descriptor	
BARS Scoring	1 – Difficult or unable to arouse 2 – Asleep but responds normally to verbal or physical contact 3 – Drowsy, appears sedated 4 – Quiet and awake (normal level of activity) 5 – Signs of overt verbal or physical activity, but calms with instructions 6 – Extremely or continuously active, not requiring restraint 7 – Violent, requires restraint



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Notes:

- Be sure to consider all possible medical/trauma causes for behavior.
- Do not overlook the possibility of associated domestic violence or child abuse.
- *Doses may be repeated for the immediate safety of the provider or the patient.

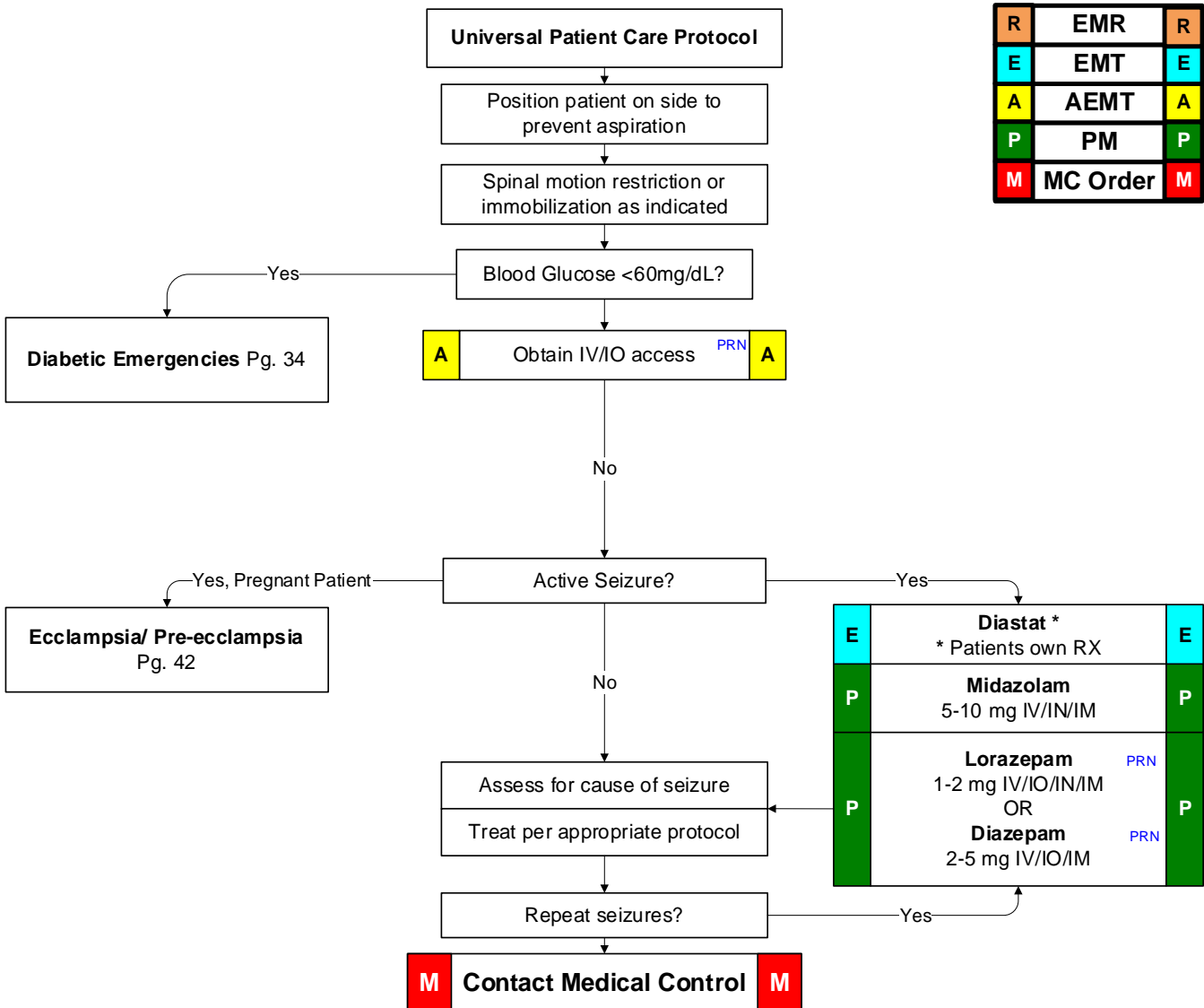


Seizure



ALS transport if patients given a sedating medication and / or:

History: <ul style="list-style-type: none"> • Prior history of seizures • Seizure medications • Reported seizure activity • History of recent head trauma • Congenital abnormality • Pregnancy (see Pregnancy Induced Hypertension - Eclampsia) • Medical alert tag • If given sedation medication by EMS 	Signs/Symptoms: <ul style="list-style-type: none"> • Observed seizure activity • Altered mental status • Tonic / clonic activity • Status epilepticus • Incontinence • Mouth trauma • First time Seizure 	Differential: <ul style="list-style-type: none"> • Hypovolemia • Hypoxia • Hydrogen ions (acidosis) • Hypo-/Hyperkalemia • Hypoglycemia • Hypothermia • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis, coronary or pulmonary • Trauma
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Notes:

- Be prepared to assist ventilations especially if a benzodiazepine is used.
- If evidence or suspicion of trauma, spine should be immobilized.
- Consider nasopharyngeal airway and elevate head of bed to 30 degrees.
- * Clallam County Versed IM or IN for seizures.

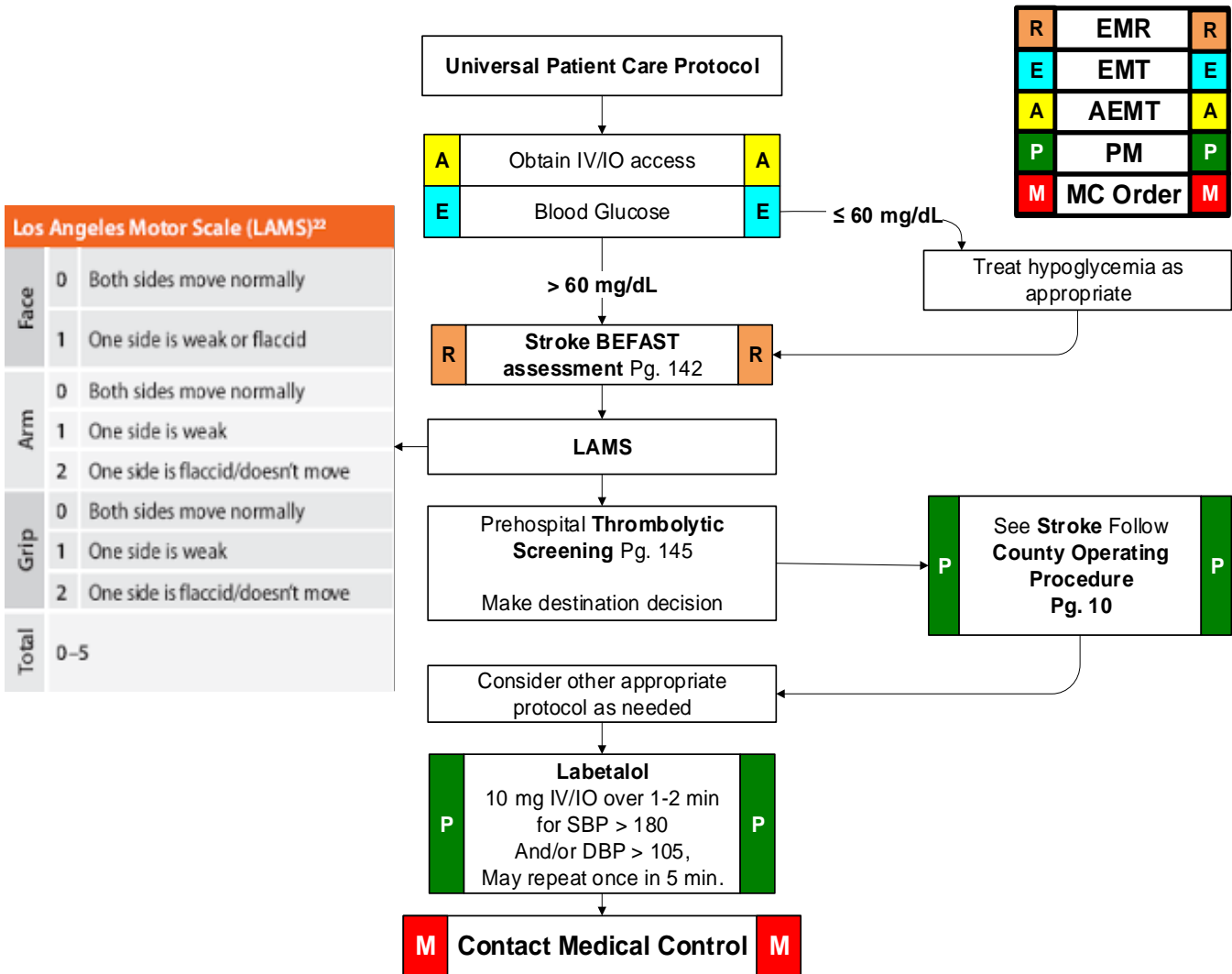


Stroke



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Previous CVA, TIA's • Previous cardiac / vascular surgery • Associated diseases: diabetes, hypertension, CAD • Atrial fibrillation • Medications (blood thinners) • History of trauma 	Signs/Symptoms: <ul style="list-style-type: none"> • Altered mental status • Weakness / Paralysis • Blindness or other sensory loss • Aphasia / Dysarthria • Syncope • Vertigo / Dizziness • Vomiting • Headache • Seizures • Respiratory pattern change • Questionable airway • Abnormal vital signs 	Differential: <ul style="list-style-type: none"> • Hypovolemia • Hypoxia • Hydrogen ions (acidosis) • Hypo-/Hyperkalemia • Hypoglycemia • Hypothermia • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis, coronary or pulmonary • Trauma
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Notes:

- Onset of symptoms is defined as the last witnessed time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptom free)
- The differential listed on the Altered Mental Status Protocol should also be considered.
- Be alert for airway problems (swallowing difficulty, vomiting).
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- Elevate head of bed to 30 degrees.

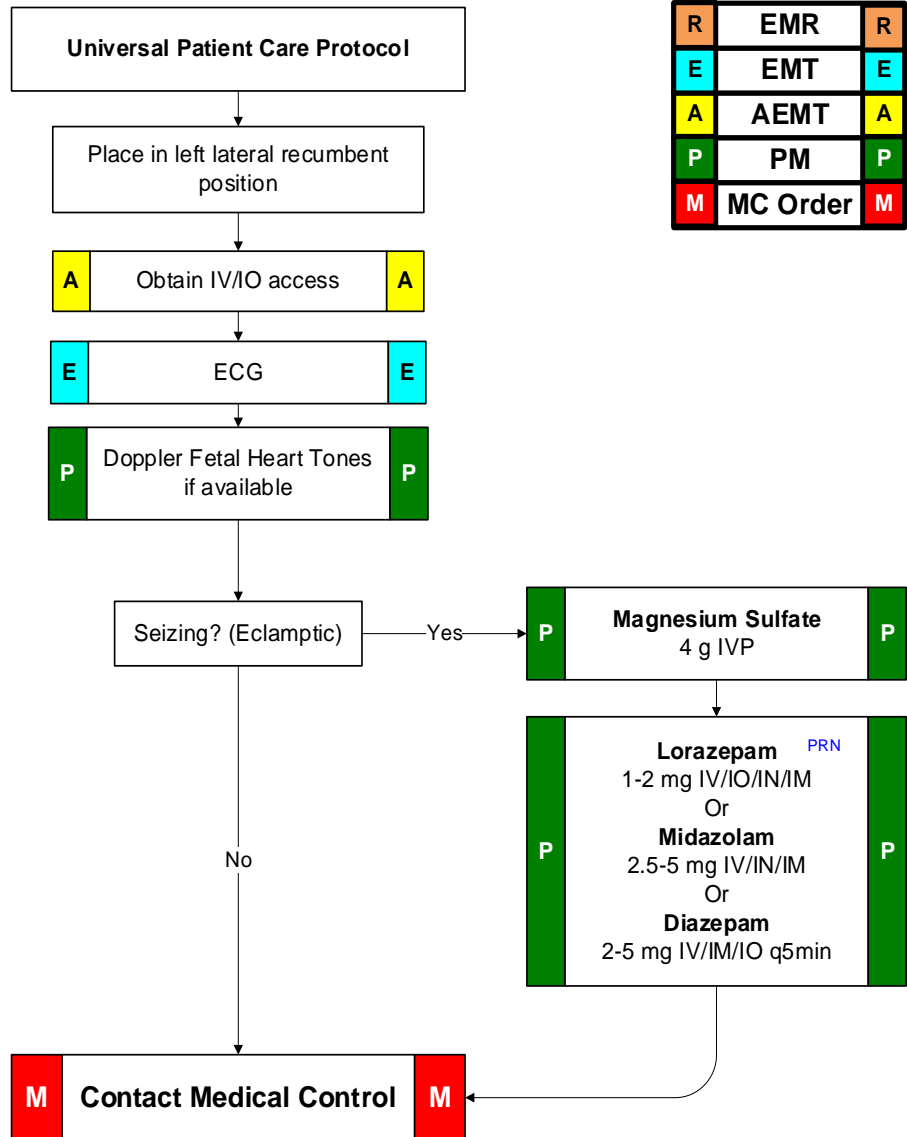


Ecclampsia/Pre-ecclampsia



ALS evaluation and/or transport if available gently and quietly:

History: <ul style="list-style-type: none"> • Past medical history • Prenatal care • Medications/drugs • Familial incidence • Primigravida • Renal disease 	Signs/Symptoms: <ul style="list-style-type: none"> • Seizure • Hypertension • Tachycardia • Edema • Headache • Visual disturbance • Abdominal pain • Amnesia and/or other change in mental status 	Differential: <ul style="list-style-type: none"> • Hypertension • Multiple fetuses • Gestational diabetes • Microthrombi • Improper placental implantation
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Notes:

- Ecclampsia can present up to two months postpartum
- Severe headache, vision changes, or RUQ pain may indicate preeclampsia.
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Maintain patient in a left lateral position to minimize risk of supine hypotensive syndrome.

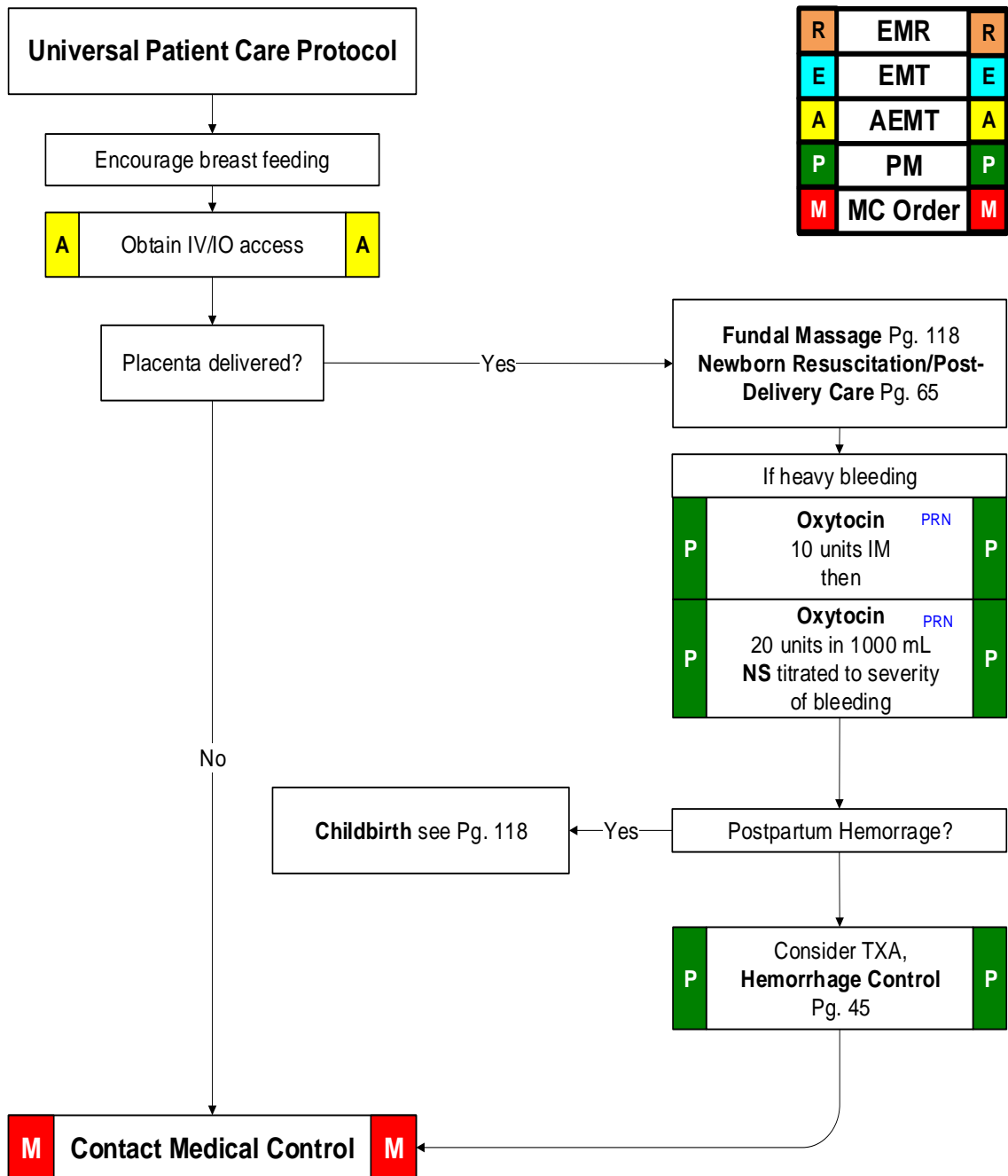


Postpartum



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Prenatal care? • Due date and gestational age • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Medications (maternal) • Maternal risk factors • Substance abuse 	Signs/Symptoms: <ul style="list-style-type: none"> • Excess vaginal bleeding • Signs of shock 	Differential: <ul style="list-style-type: none"> • Secretions • Infection • Hypovolemia • Hypoglycemia
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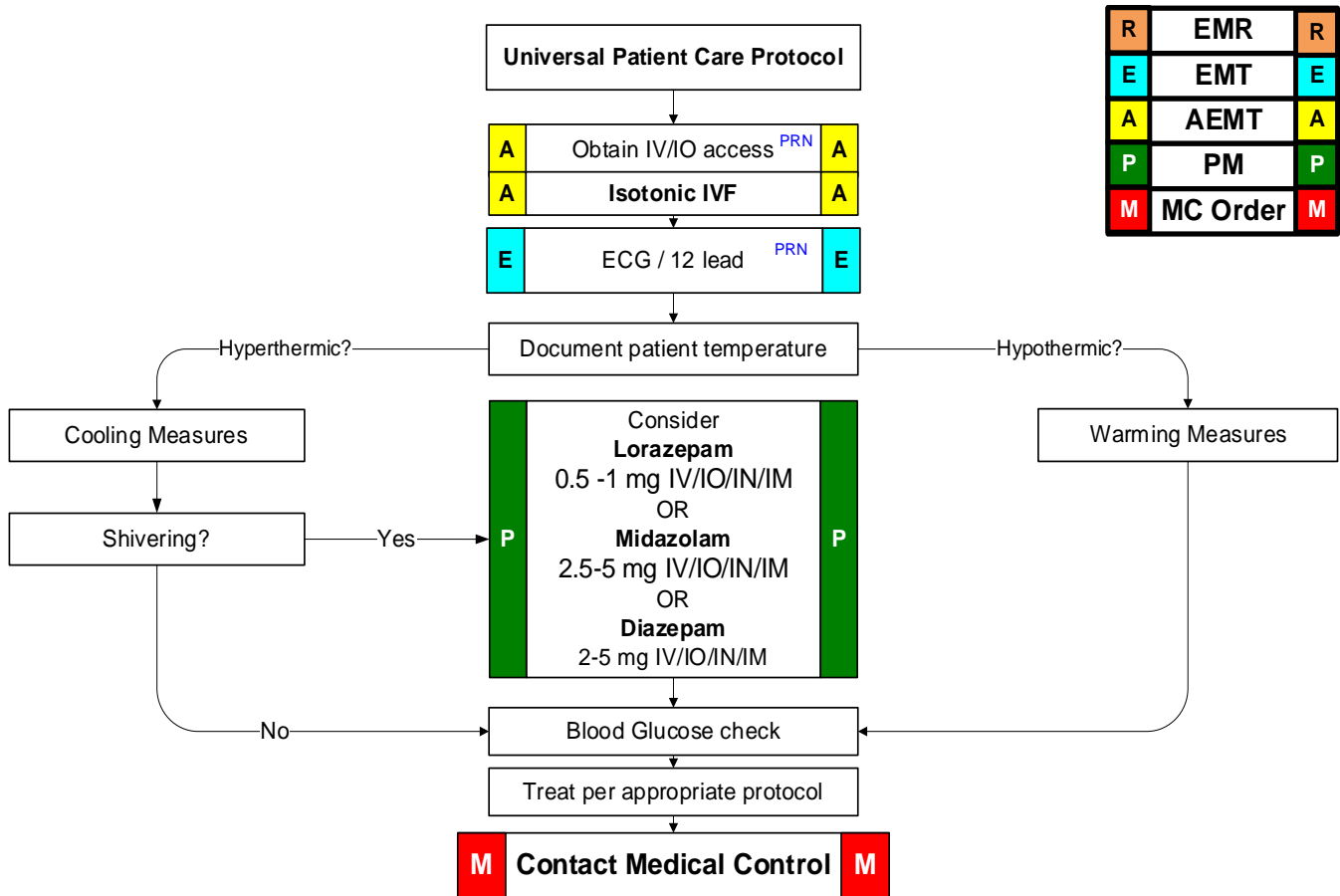


Environmental Emergencies



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Age • Exposure to increased/decreased temperatures and/or humidity • Past medical history/medications • Extreme exertion • Time and length of exposure • Poor PO intake 	Signs/Symptoms: <ul style="list-style-type: none"> • Altered mental status or unconsciousness • Hot, dry or sweaty skin • Hypotension or shock • Seizure • Nausea • Fatigue and / or muscle cramping 	Differential: <ul style="list-style-type: none"> • Fever (Infection) / Sepsis • Dehydration • Medications • Hyperthyroidism (Storm) • Delirium tremens (DT's) • Heat exhaustion • Heat stroke • Hypoglycemia • Poisoning/overdose
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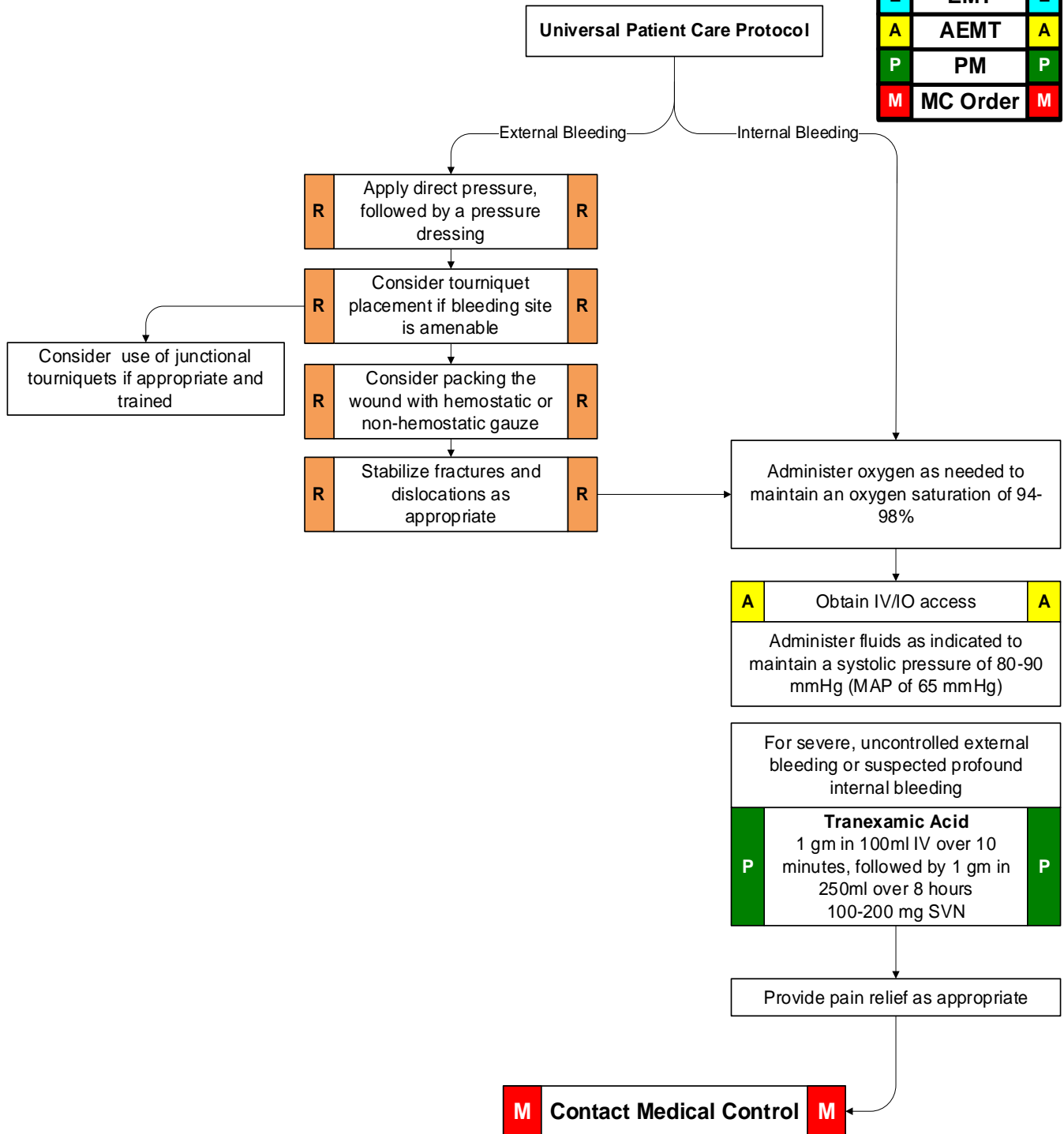
Notes:

- **ATTEMPT REWARMING BEFORE CEASING RESUSCITATION EFFORTS.**
- Extremes of age are more prone to temperature emergencies (i.e. young and old).
- Core temperature is the most reliable measure- for pts with ALOC and pts < 2 years old this should be the method of measurement.
- Heat emergencies can be precipitated by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, Amphetamines, and Salicylates may elevate body temperatures.
- Shivering stops below 32° C (90° F).
- Sweating generally disappears as body temperature rises above 104° F (40° C).
- With temperature less than 31° C (88° F) ventricular fibrillation is common cause of death. Handling patients gently may prevent this (rarely responds to defibrillation).
- Hypothermia may produce severe bradycardia.



Hemorrhage Control

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- TXA may also be administered via nebulizer for hemoptysis, or applied to cotton for epistaxis



Burns



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Type of exposure (heat, gas, chemical) Inhalation injury Other trauma Loss of consciousness 	Signs and Symptoms: <ul style="list-style-type: none"> Burns, pain, swelling Dizziness Loss of consciousness Shock / Hypotension Airway compromise / distress Singed facial or nasal hair Hoarseness / wheezing 	Differential: <ul style="list-style-type: none"> Chemical Thermal Electrical Radiation
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Universal Patient Care Protocol

Oxygen ^{PRN}
Advanced Airway Management

Stop the burning process:
Remove jewelry and clothing that may be burned, covered in chemicals or restricting.

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Thermal / Electrical

Chemical

Cover burn with a dry clean sheet or dressing
Keep warm

Brush off any excess chemical or powder

Flush area with water or Normal Saline (except materials that react with H₂O) Keep warm

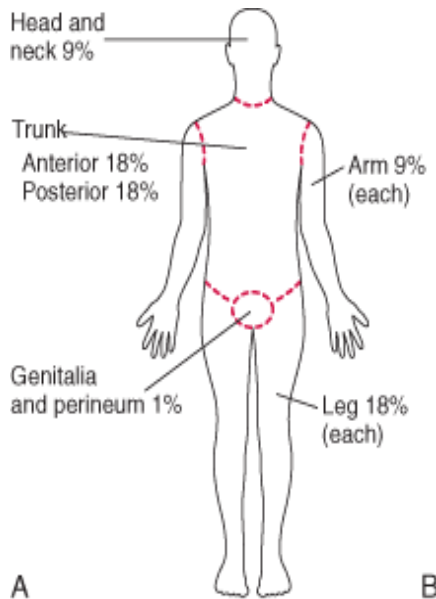
Eye involvement?
Saline flush in the affected eye

Use Rule of 9's
>10% then
TBSA 2nd/3rd degree burns

A	Obtain IV/ IO access ^{PRN} TBSA x weight in kg/8 Volume of Isotonic IVF in 1 st hour	A
---	--	---

Needs a Burn Unit

1. Partial and/or Full Thickness (2nd and/or 3rd degree burn >10% TBSA
2. 2nd and/or 3rd burns to face, hands, or genitals
3. Circumferential burns or burns at groin, axilla, or over major joints.



Pain and Sedation Management Protocol Pg. 38

If burn < 10 % body surface area
Cool down the wound with Normal Saline

Cover burn with a dry clean sheet or dressing

Outlying areas may use burn gel for comfort in burns < 10% BSA

M	Contact Medical Control	M
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Notes:

- Brooke Burn formula for IVF requirement for 1st hour

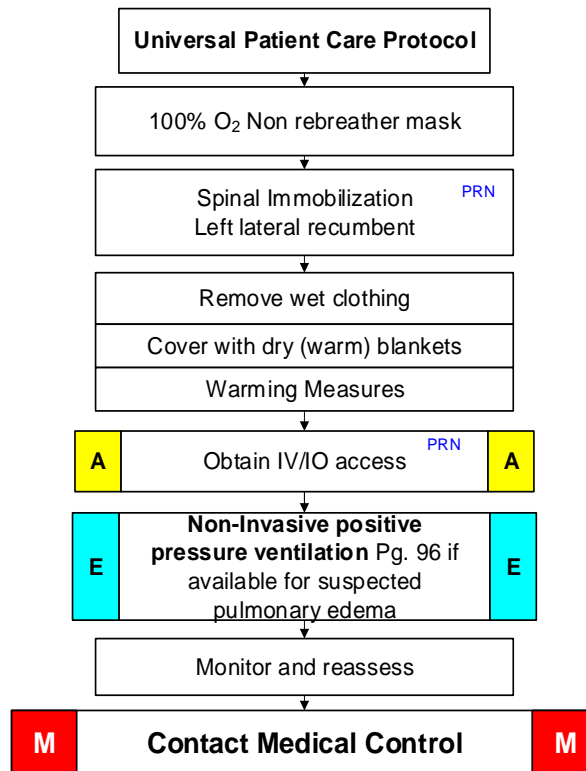


SCUBA



Transport ALL near drowning Patients/ALS if:

History: <ul style="list-style-type: none"> Aspiration of fluid Possible history of trauma Duration of immersion Temperature of water Depth of dive Know history of dive (tank pressure / gas content) Recent air travel Salt vs. Fresh water Repetitive dives Free diving is same as SCUBA 	Signs and Symptoms: <ul style="list-style-type: none"> Unresponsive Changes in mental status Coughing Joint pain or tooth pain Ear pain/hearing loss Stroke like symptoms Itching Rash 	Differential: <ul style="list-style-type: none"> Trauma Pre-existing medical problem Pressure injury (diving) <ul style="list-style-type: none"> Barotrauma Decompression sickness Near Drowning
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Notes:

- Exam: Check Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro for Trauma
- Transport dive computer with patient
- For dive deaths, gear is evidence
- What type of gas used? Any seizures in the history? Mixed gas?
- Scene safety!** Drowning is a leading cause of death in would-be rescuers.
- With cold water there is no time limit- resuscitate all.
- All near drowning victims should be transported- conditions may deteriorate during the next several hours
- Activate Trauma system. Consider Airlift Transport. Contact early
- For Air Embolism symptoms patient should be placed on high flow oxygen, and lie patient down on left side with head and feet neutral.

Diver's Alert network (DAN) (877) 595-0625

Hyperbaric Chambers capable of taking patients with the Bends or Carbon Monoxide poisoning on an emergency basis:

Harborview Medical Center
Phone (206) 731-3000

US Naval Undersea Warfare Center (Active duty/dependants)
Phone 24 hours (360) 396-2111 Daytime (360) 396-2522

*Call for availability

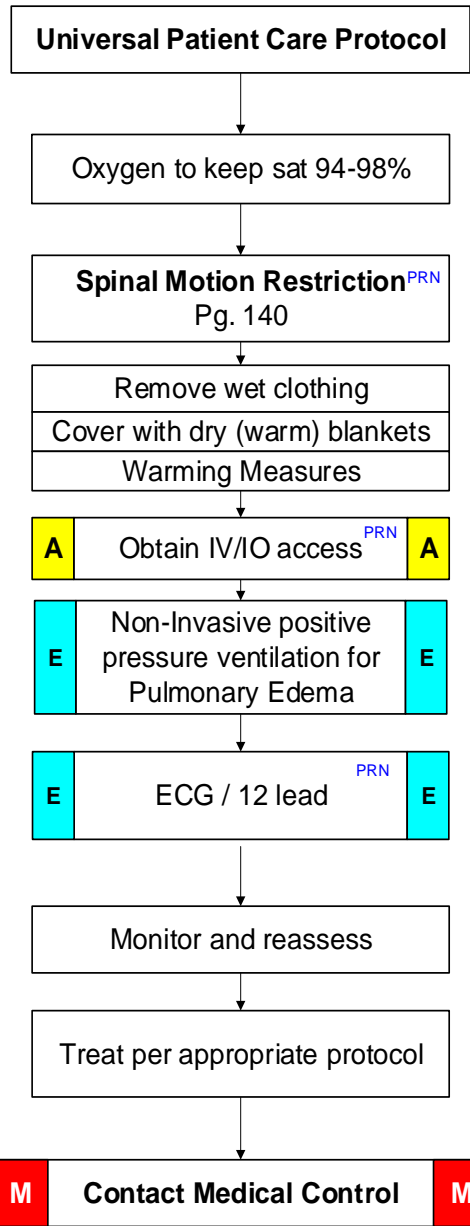


Drowning / Near Drowning



Transport ALL near drowning Patients/ALS if:

History: <ul style="list-style-type: none"> Aspiration of fluid Submersion in water- regardless of depth Possible history of trauma Duration of immersion Temperature of water Salt vs. Fresh water 	Signs and Symptoms: <ul style="list-style-type: none"> Unresponsive Changes in mental status Coughing Respiratory compromise 	Differential: <ul style="list-style-type: none"> Trauma Pre-existing medical problem Pressure injury (diving) <ul style="list-style-type: none"> Barotrauma Decompression sickness
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

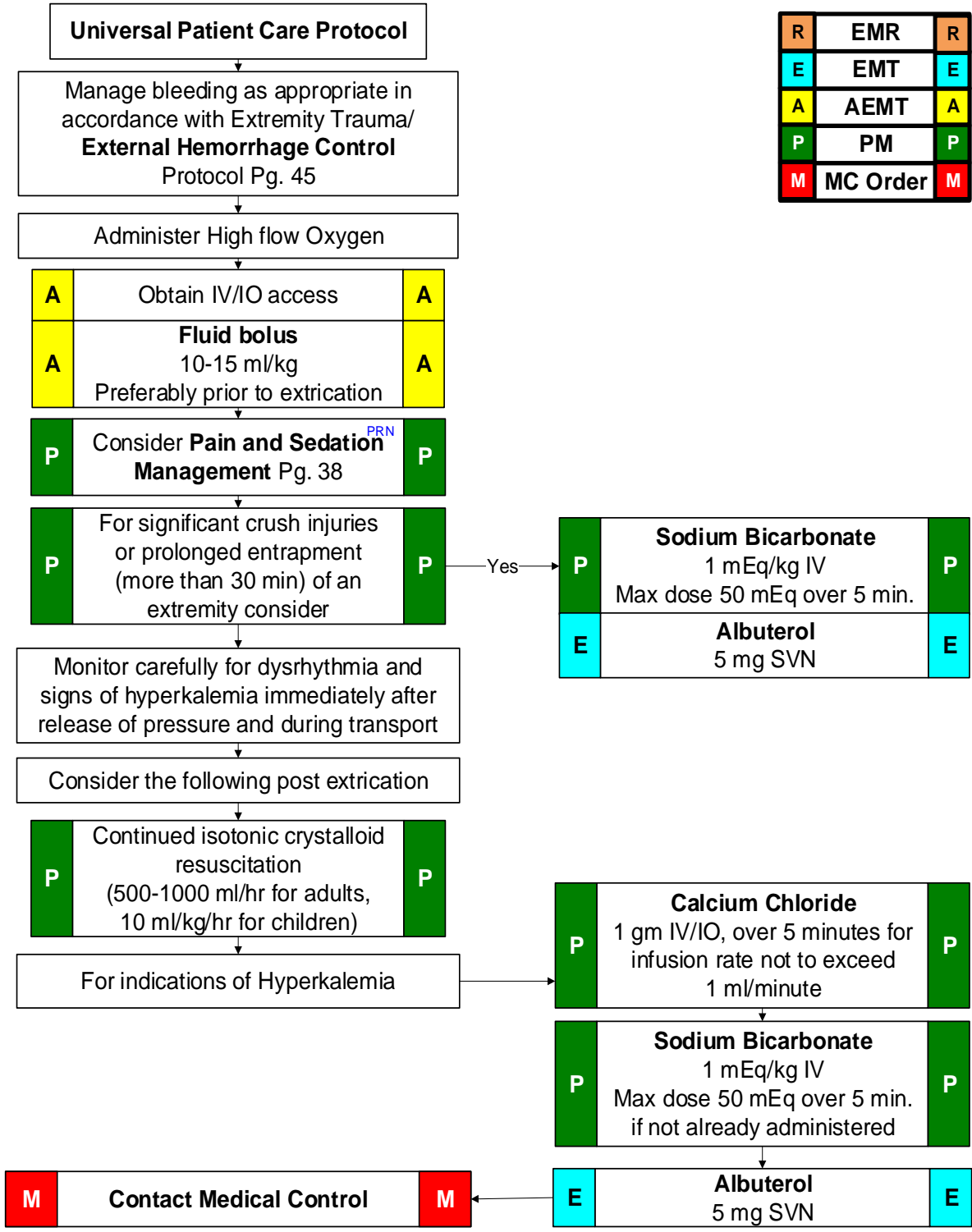
Notes:

- Exam : Check Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro for Trauma
- With cold water there is no time limit- resuscitate all.
- Scene safety!** Drowning is a leading cause of death in would-be rescuers.



Crush Injury

History: <ul style="list-style-type: none"> Determine the duration of crush Examine extent of tissue involvement 	Inclusion Criteria: <ul style="list-style-type: none"> Traumatic crush mechanism of Injury 	Exclusion Criteria: <ul style="list-style-type: none"> Non-crush injuries
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Notes:

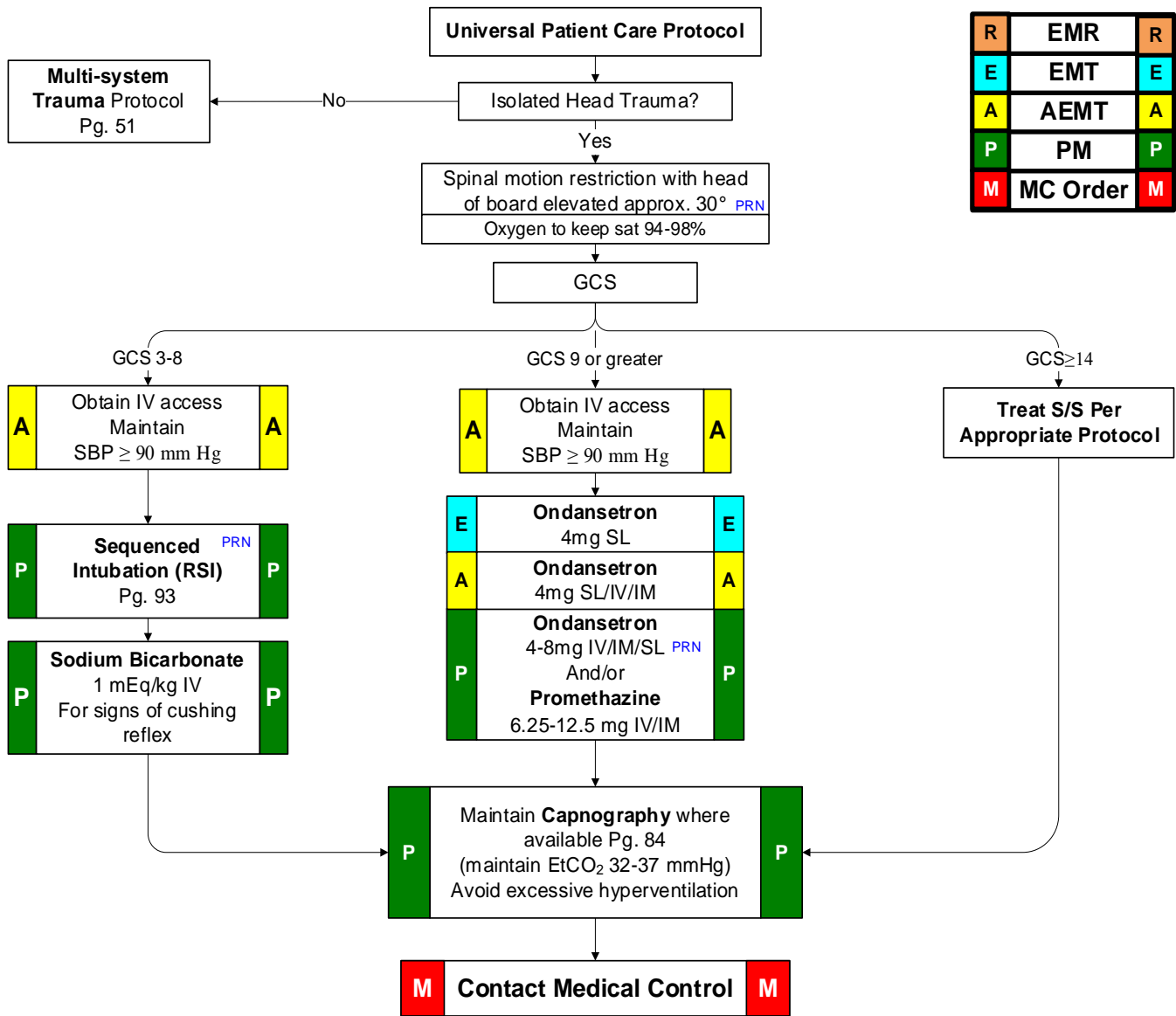
- Crush patients should be considered high priority for transport or transfer in accordance with the Washington State Trauma Triage tool.

Head Injury



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Onset Mechanism (blunt / penetrating) Loss of consciousness Bleeding Medical History (ETOH...) Medications (Coumadin...) Extremes of age Step IV trauma 	Signs and Symptoms: <ul style="list-style-type: none"> Pain, swelling, bleeding, oto/rhinorrhea Altered Level of Consciousness GCS <13 Respiratory distress/failure Vomiting Significant mechanism of injury Signs of Herniation: <ul style="list-style-type: none"> GCS <8 Fixed or asymmetric pupils Neurologic Posturing Cushings Triad Intermittent apnea Neurologic deterioration (decrease in GCS ≥ 2) 	Differential: <ul style="list-style-type: none"> Seizure Stroke Alcohol Epilepsy Endocrine Insulin Overdose Uremia Trauma Infection / sepsis Psychosis
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Notes:

- Step IV Trauma for elderly with and without anticoagulation

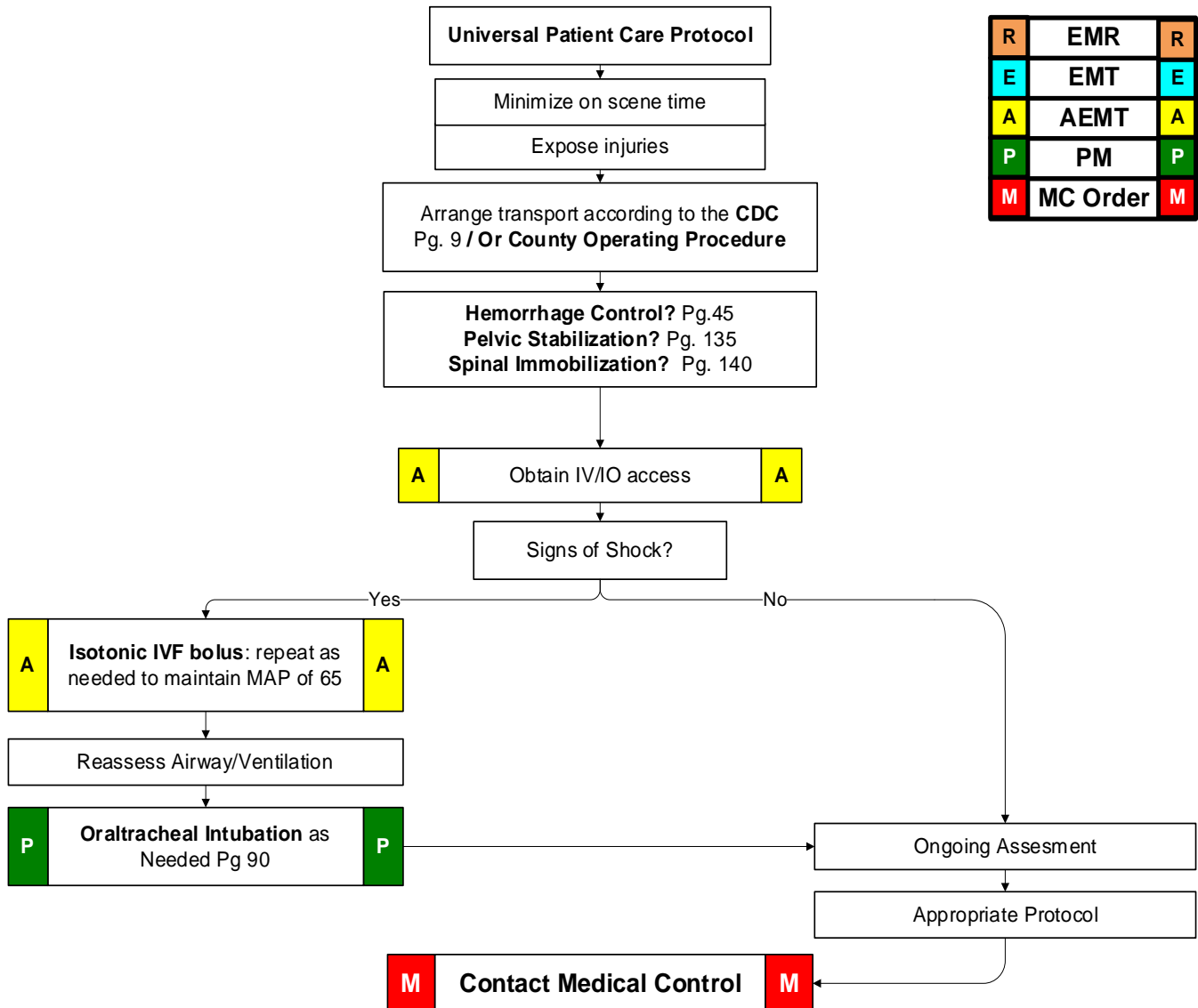


Multi-system Trauma



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Time and Mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of MVA • Restraints / protective equipment • Symptoms preceding incident 	Signs and Symptoms: <ul style="list-style-type: none"> • Altered mental status or unconscious GCS<13 • Hypotension or shock 	Differential: <ul style="list-style-type: none"> • Chest Tension pneumothorax • Flail Chest • Pericardial Tamponade • Open chest wound • Hemothorax • Intra-abdominal bleeding • Pelvis/femur fracture • Spine fracture / Cord injury • Extremity fracture / Dislocation • HEENT (Airway Obstruction) • Hypothermia
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Notes:

- Exam : Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro
- Mechanism is often a good indicator of serious injury
- If domestic violence or abuse is suspected it must be reported to Law Enforcement, receiving facility, airlift.



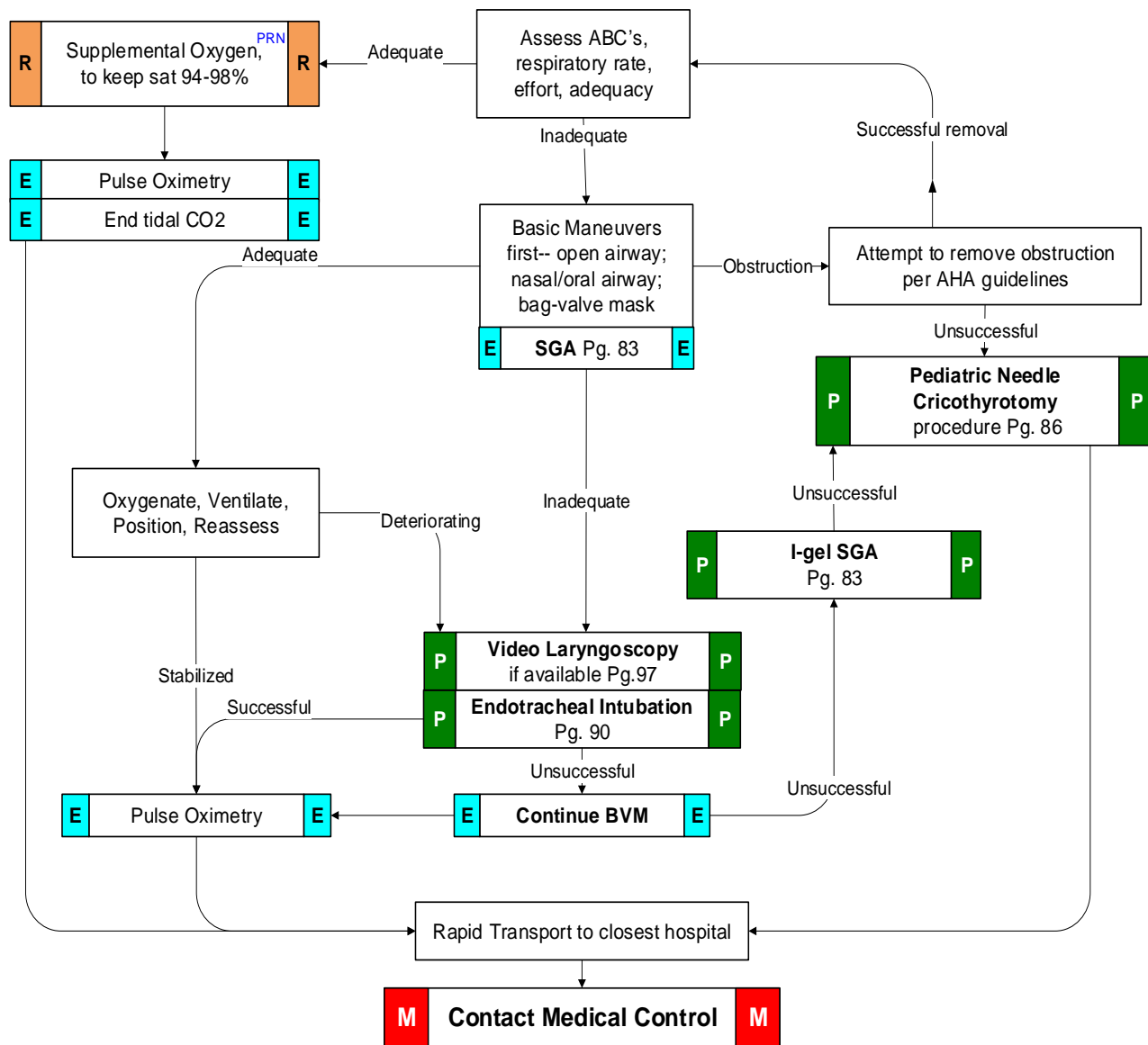
Pediatric Airway



ALS evaluation and/or transport if available:

History:	Differential:
<ul style="list-style-type: none"> Know difficult Airway Neck or head trauma Trisomy 21 Congenital malformations 	<ul style="list-style-type: none"> Physical Examination <ul style="list-style-type: none"> Small jaw or limited jaw opening Limited cervical spine movement swollen tongue, oropharynx, or neck, midface hypoplasia

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- For this Guideline, child is defined as less than 8 years old.
- Limit intubation attempts to 3 per patient
- Maintain C-spine immobilization for patients with suspected spinal injury
- Reconfirm ETT placement each time patient is moved
- All** choking victims need to be transported to the hospital. Children who have possibly aspirated anything may not be transported POV, but can be transported BLS if stable.

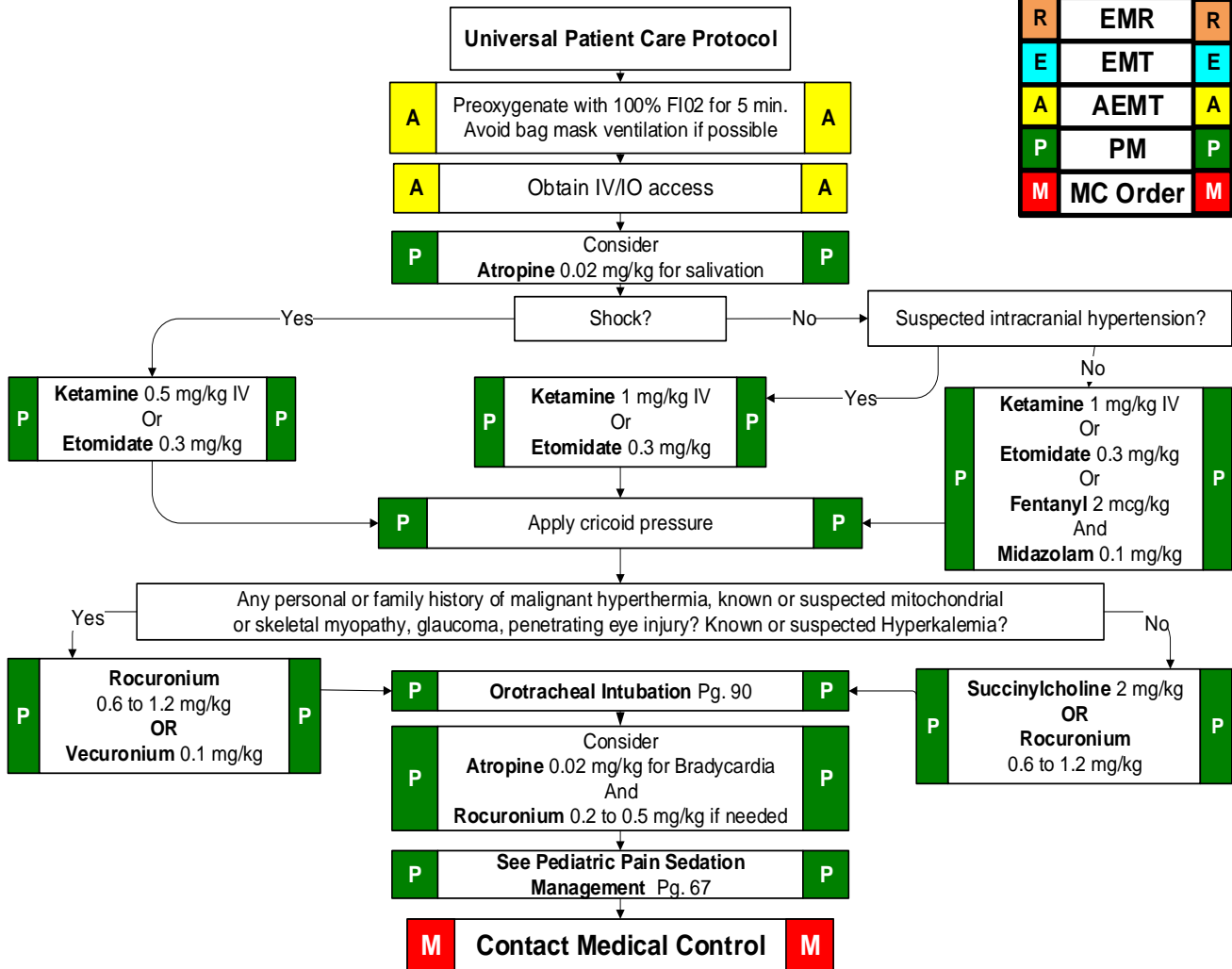


Pediatric Sequenced Intubation



ALS evaluation and/or transport if available:

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Atropine	0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.30 mg	0.38 mg	0.48 mg	0.60 mg
Ketamine 0.5mg/kg	2 mg	3 mg	4 mg	5 mg	6 mg	7.5 mg	9.5 mg	12 mg	15 mg
Ketamine 1mg/kg	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Etomidate	1.2 mg	1.8 mg	2.4 mg	3 mg	3.6 mg	4.5 mg	5.7 mg	7.2 mg	9 mg
Fentanyl	8 mcg	12 mcg	16 mcg	20 mcg	24 mcg	30 mcg	38 mcg	48 mcg	60 mcg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Succinylcholine	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Vecuronium	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Rocuronium	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg

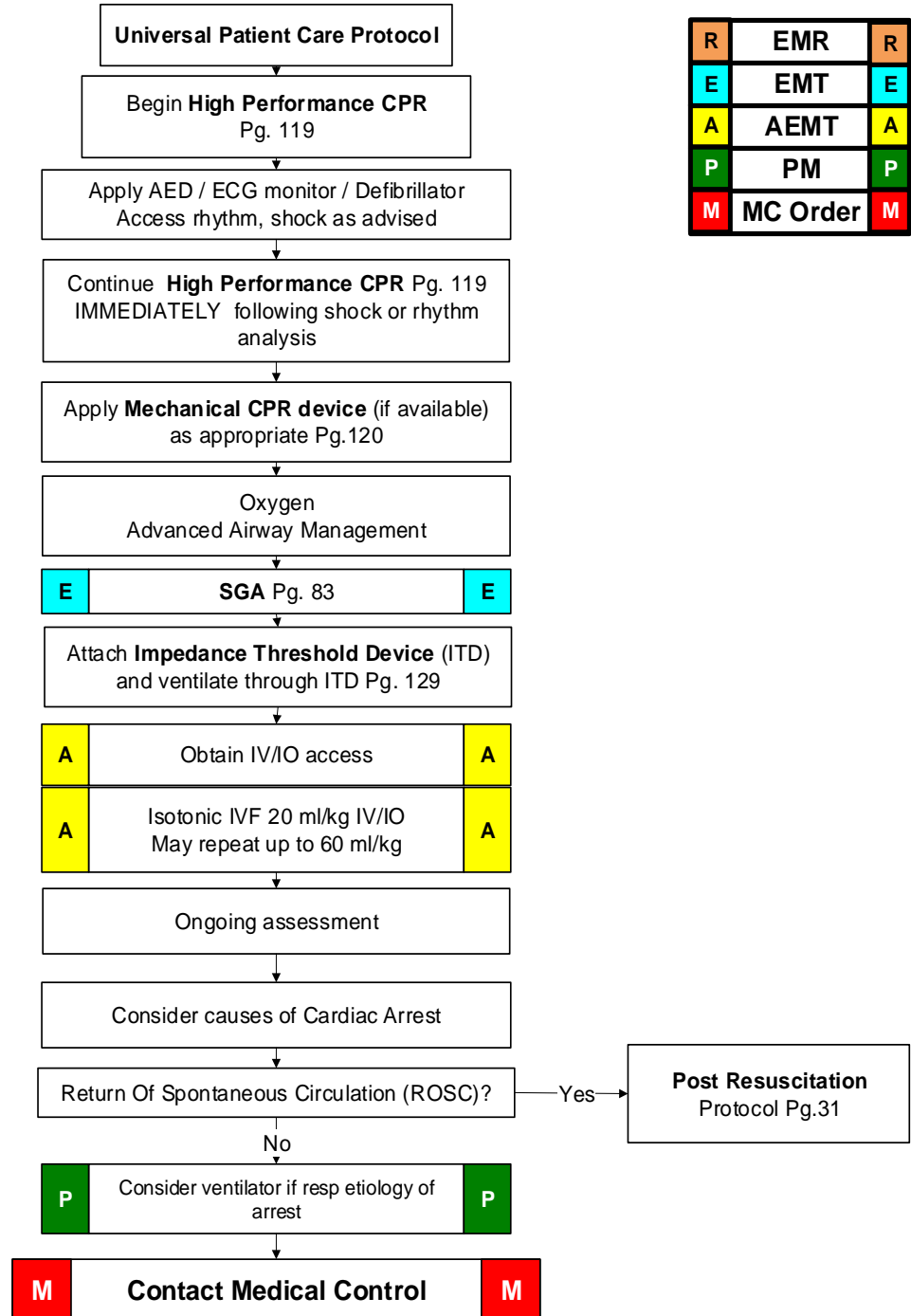


Pediatric Cardiac Arrest



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Medical history • Possibility of foreign body • Respiratory distress or arrest • Possible toxic or poison exposure • Congenital disease • Medication (maternal or infant) 	Differential: <ul style="list-style-type: none"> • Respiratory effort • Foreign body obstructions • Hypovolemia (dehydration) • Hypoxia • Hydrogen ion (acidosis) • Hypo-/hyperkalemia • Hypoglycemia • Hypothermia 	<ul style="list-style-type: none"> • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis (coronary or pulmonary) • Trauma (hypovolemia, increased ICP)
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

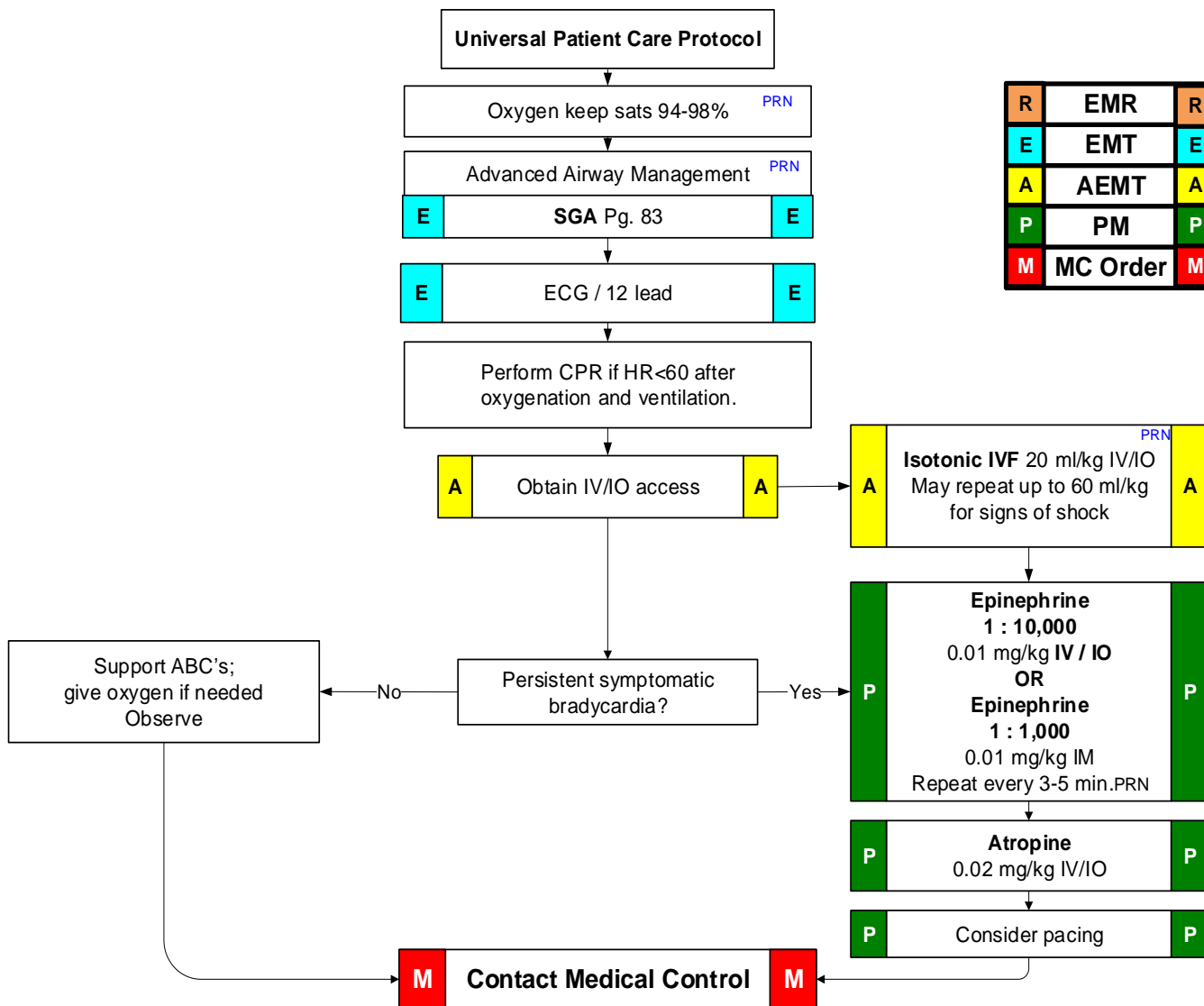


Pediatric Bradycardia



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Medical history • Possibility of foreign body • Respiratory distress or arrest • Possible toxic or poison exposure • Congenital disease • Medication (maternal or infant) 	Differential: <ul style="list-style-type: none"> • Respiratory failure • Foreign body obstructions • Hypovolemia (dehydration) • Hypoxia • Hydrogen ion (acidosis) • Hypo-/hyperkalemia • Hypoglycemia • Hypothermia • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis (coronary or pulmonary) • Trauma (hypovolemia, increased ICP)
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine 1 : 1,000 0.1 mg/kg ET	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Atropine	0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.3 mg	0.38 mg	0.48 mg	0.6 mg

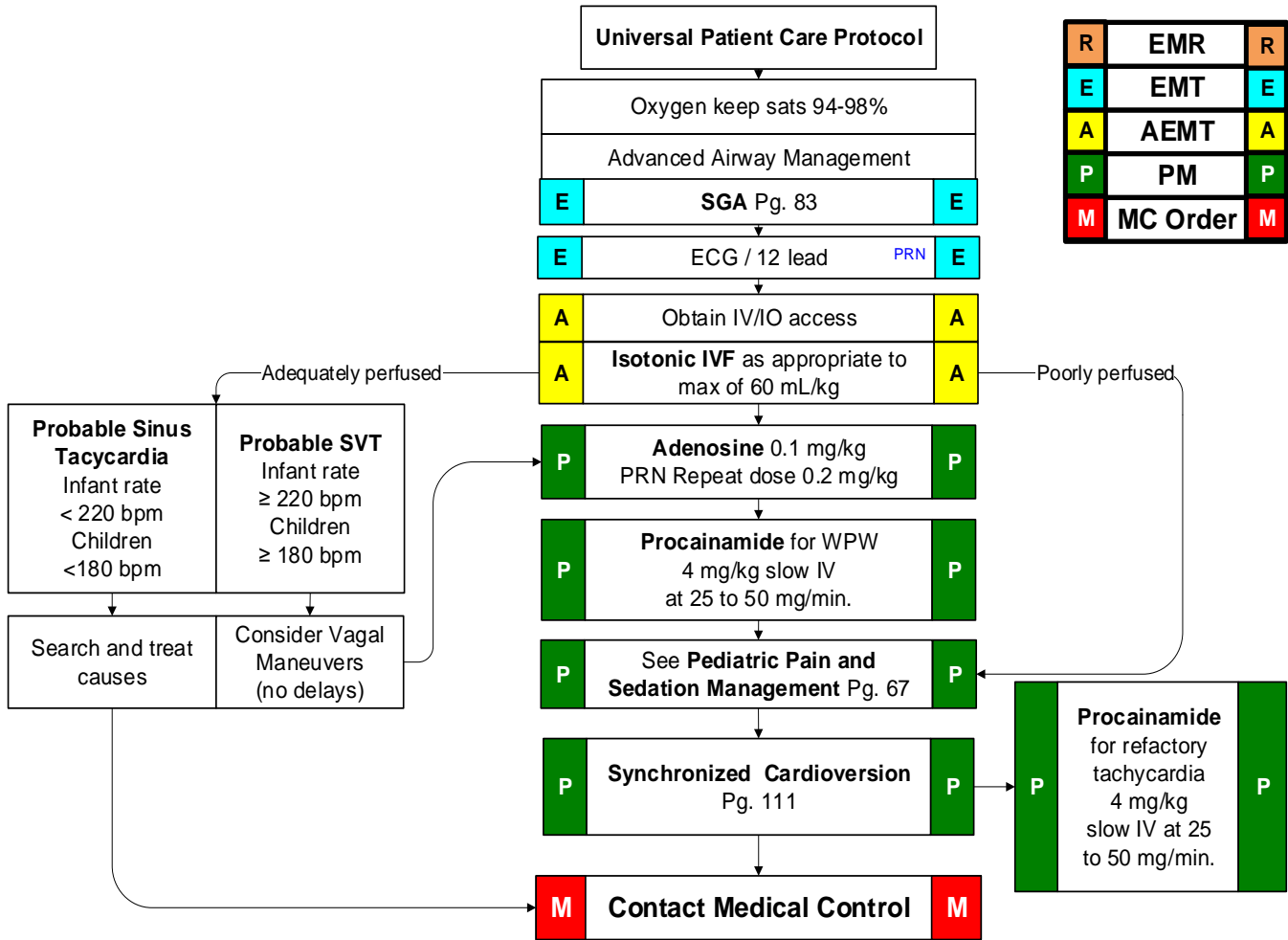


Pediatric Narrow Complex Tachycardia



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Medications or toxins • Congenital heart disease • Respiratory distress • Syncope • Volume loss (diarrhea / vomiting) 	Differential: Sinus Tachycardia vs. SVT <ul style="list-style-type: none"> • Heart disease (congenital) • Electrolyte imbalance • Hypotension • Fever / infection / sepsis • Medication / toxin / drugs • Pulmonary Embolism • Tension pneumothorax
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Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Adenosine 0.1 mg/kg – 1 st dose	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Adenosine 0.2 mg/kg – 2 nd dose	0.8 mg	1.2 mg	1.6 mg	2 mg	2.4 mg	3 mg	3.8 mg	4.8 mg	6 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Procainamide	16 mg	24 mg	32 mg	40 mg	48 mg	60 mg	76 mg	90 mg	120 mg

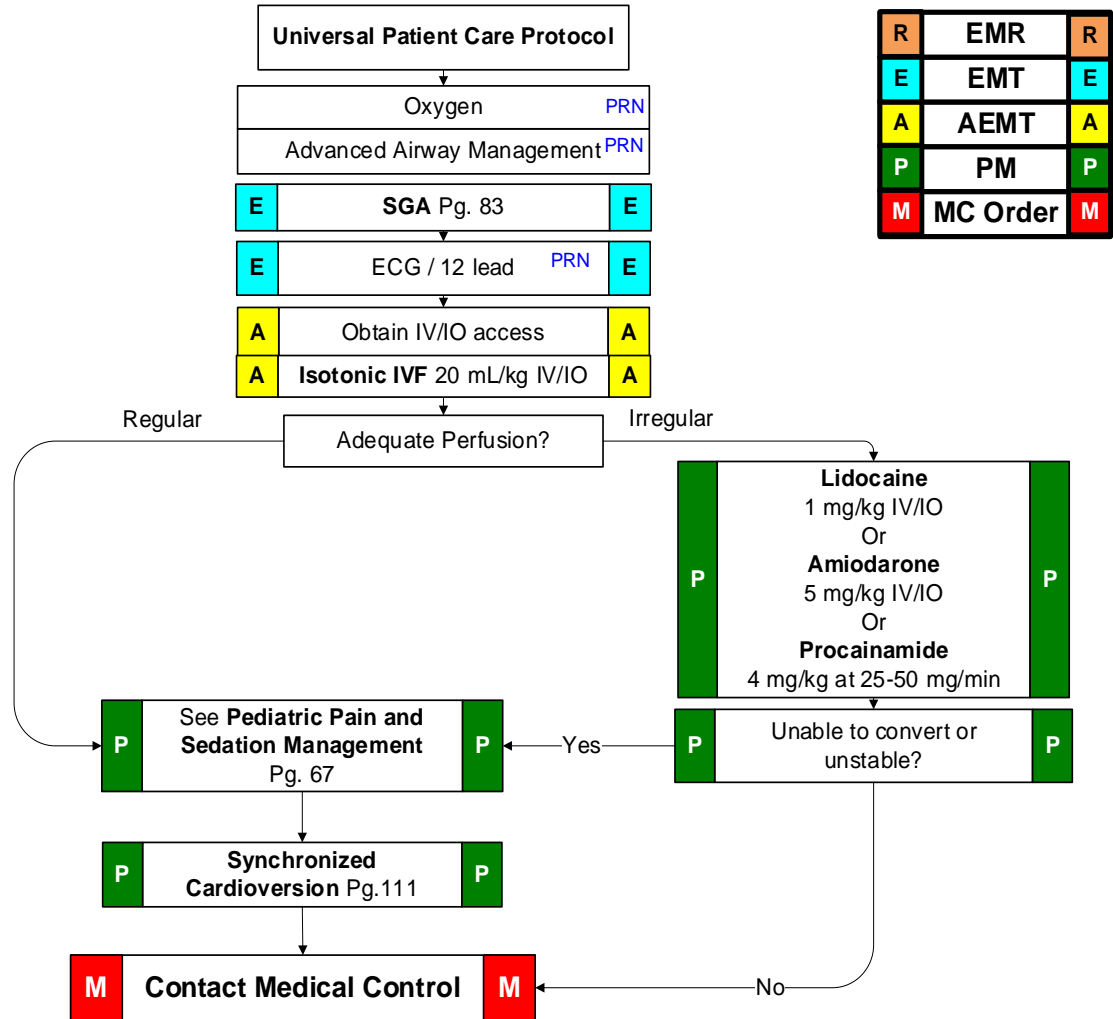


Pediatric Wide Complex Tachycardia



ALS evaluation and/or transport if available:

History:		Differential:	
<ul style="list-style-type: none"> Medications or toxins Congenital heart disease Respiratory distress 	<ul style="list-style-type: none"> Syncope Drugs (cocaine) 	<ul style="list-style-type: none"> Heart disease (congenital) Hypovolemia (dehydration) or anemia Electrolyte imbalance 	<ul style="list-style-type: none"> Anxiety Hypotension Medication / toxin / drugs

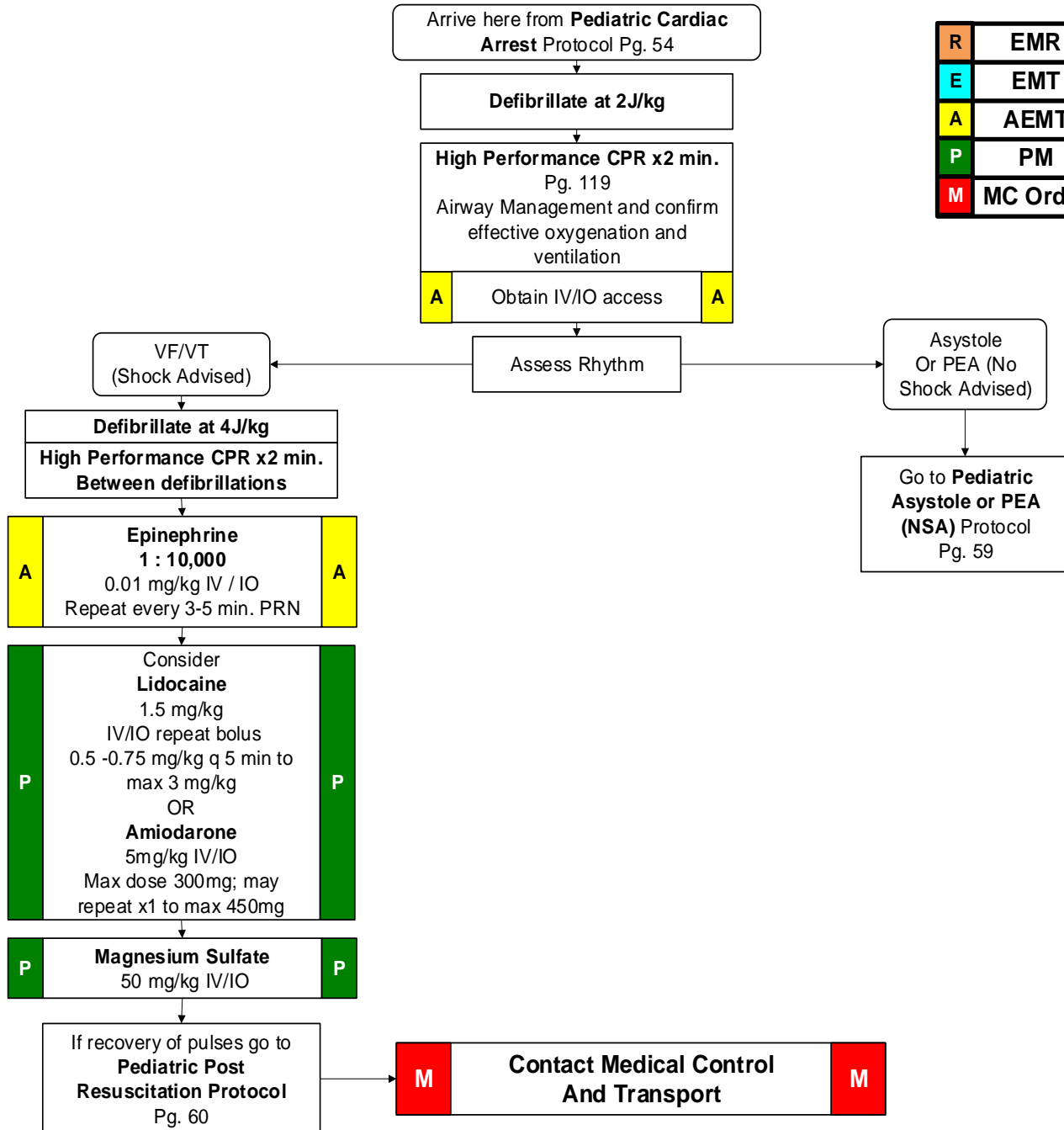


Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Lidocaine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Amiodarone	20 mg	30 mg	40 mg	50 mg	60 mg	75 mg	95 mg	120 mg	150 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Procainamide	16 mg	24 mg	32 mg	40 mg	48 mg	60 mg	76 mg	96 mg	120 mg



Pediatric V-Fib/Pulseless V-Tach (shock advised)

R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Lidocaine 1.5 mg/kg	6 mg	9 mg	12 mg	15 mg	18 mg	22 mg	28 mg	36 mg	45 mg
Lidocaine repeat bolus 0.5-0.75 mg/kg	2-3 mg	3-4 mg	4-6 mg	5-7 mg	6-9 mg	7-11 mg	9-14 mg	12-18 mg	15-22 mg
Amiodarone	20 mg	30 mg	40 mg	50 mg	60 mg	75 mg	95 mg	120 mg	150 mg
Magnesium Sulfate	200 mg	300 mg	400 mg	500 mg	600 mg	750 mg	950 mg	1200 mg	1500 mg

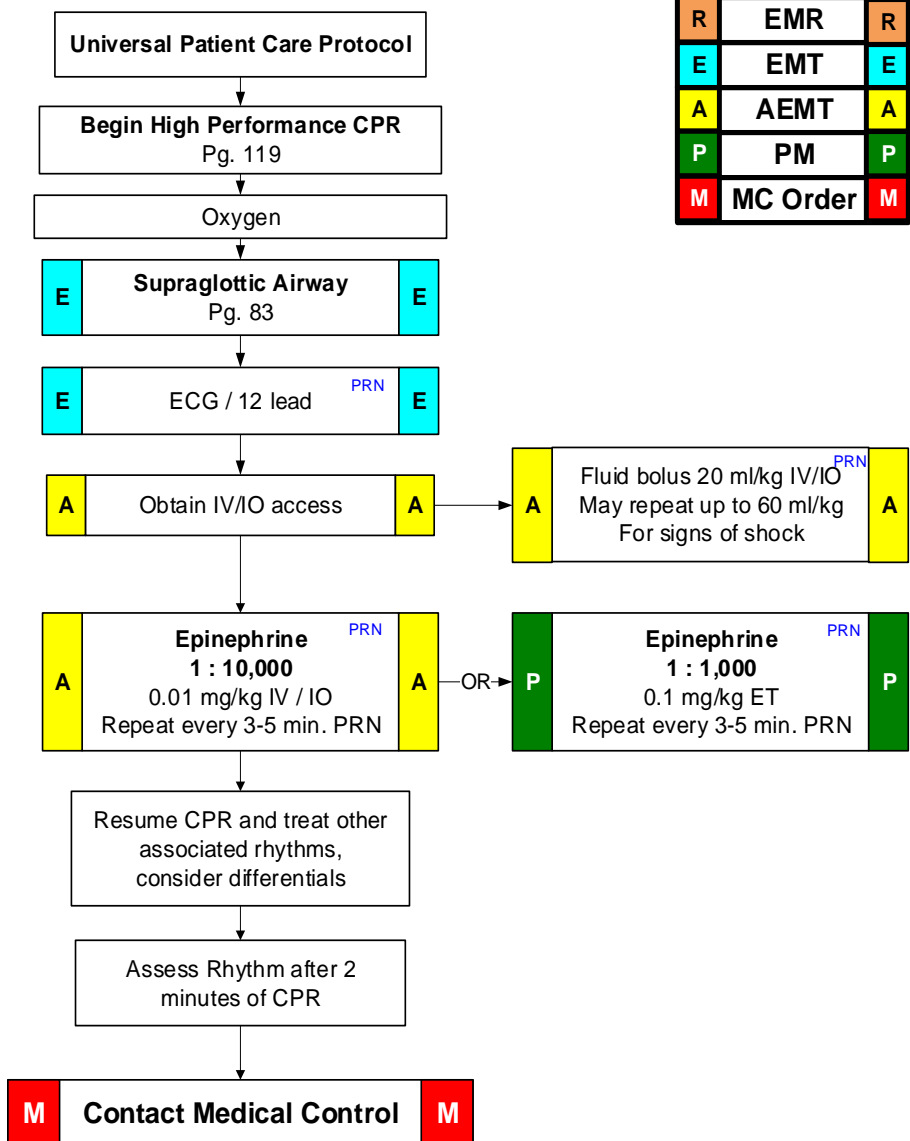


Pediatric PEA / Asystole



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Time of arrest • Medical history • Possibility of foreign body • Hypothermia • Non-accidental trauma • SIDS 	Differential: <ul style="list-style-type: none"> • Respiratory failure • Foreign body obstructions • Hypovolemia (dehydration) • Hypoxia • Hydrogen ion (acidosis) • Hypo-hyperkalemia • Hypoglycemia • Hypothermia 	<ul style="list-style-type: none"> • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis (coronary or pulmonary) • Trauma (hypovolemia, increased ICP)
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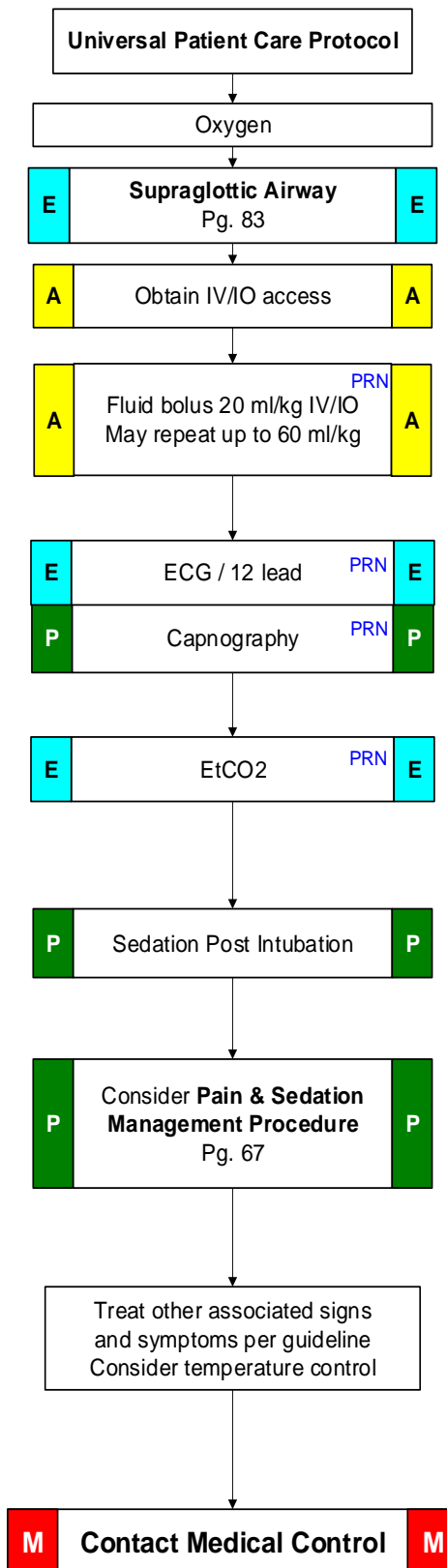
Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine 1 : 1,000 0.1 mg/kg ET	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg



Pediatric Post Resuscitation Management



ALS evaluation and/or transport if available:



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

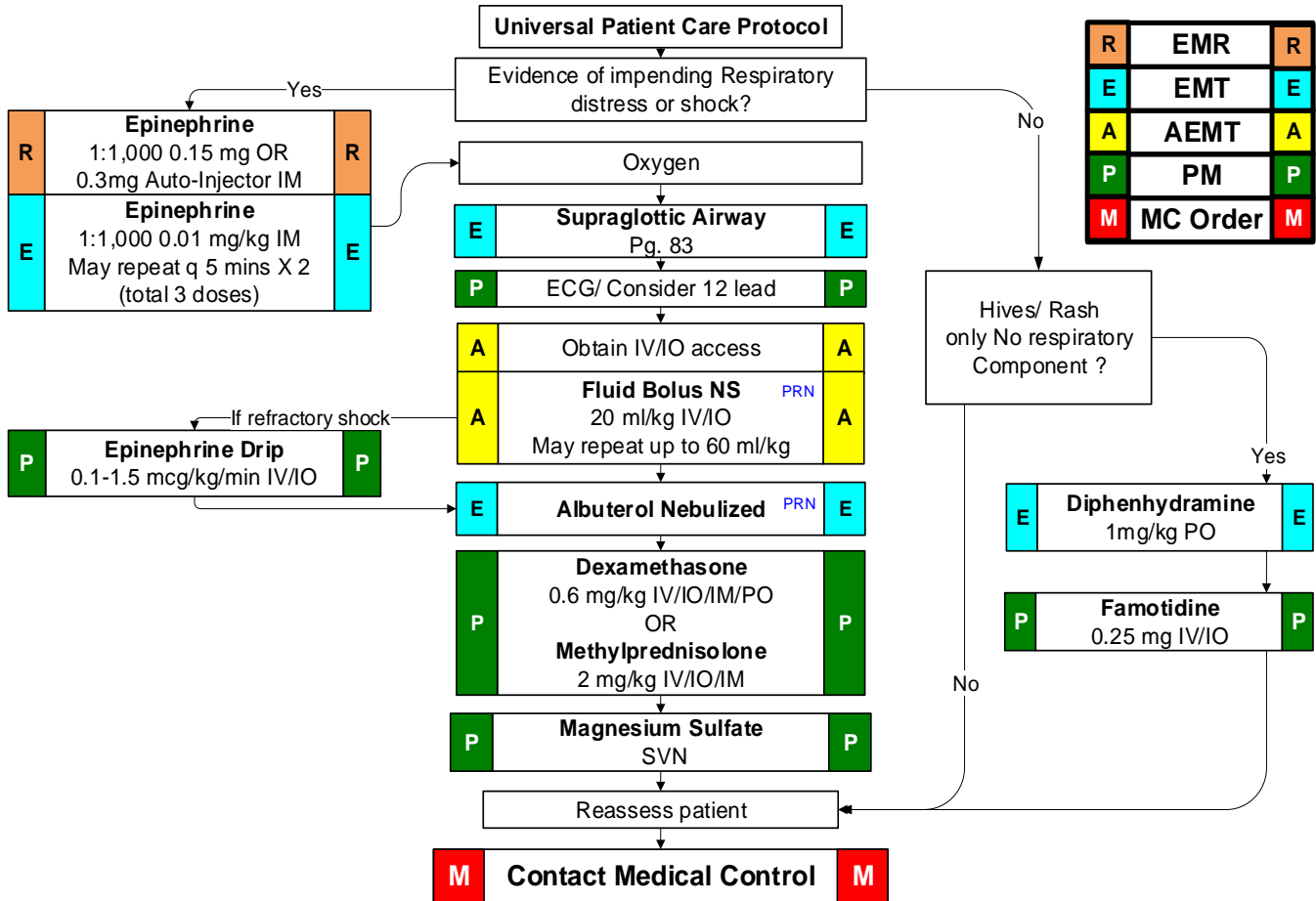


Pediatric Anaphylaxis



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Allergies Medications Past Medical history 	<ul style="list-style-type: none"> Last oral ingestion Event preceding 	Differential: <ul style="list-style-type: none"> Acute respiratory failure Anxiety Aspiration 	<ul style="list-style-type: none"> Asthma Drug reaction Shock
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Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Diphenhydramine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Methylprednisolone	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Famotidine	1 mg	1.5 mg	2 mg	2.5 mg	3 mg	3.75 mg	4.75 mg	6 mg	7.5 mg
Prednisone	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Dexamethasone	2.4 mg	3.6 mg	4.8 mg	6 mg	7.2 mg	9 mg	11.4 mg	14.4 mg	18 mg
Epinephrine	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Magnesium Sulfate	300 mg	300mg	300 mg	300 mg	300 mg	300 mg	600 mg	600 mg	600 mg
Epinephrine Drip 1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml Use 60 gtt tubing									
Mcg/min	2	4	6	8	10	12	15	19	24
Administer	30 gtt/min	60 gtt/min	90 gtt/min	120 gtt/min	150 gtt/min	180 gtt/min	225 gtt/min	285 gtt/min	360 gtt/min
Run gtt/sec	1 every 2 seconds	1 every second	1.5 every second	2 every second	2.5 every second	3 every second	3.75 every second	4.75 every second	6 every second

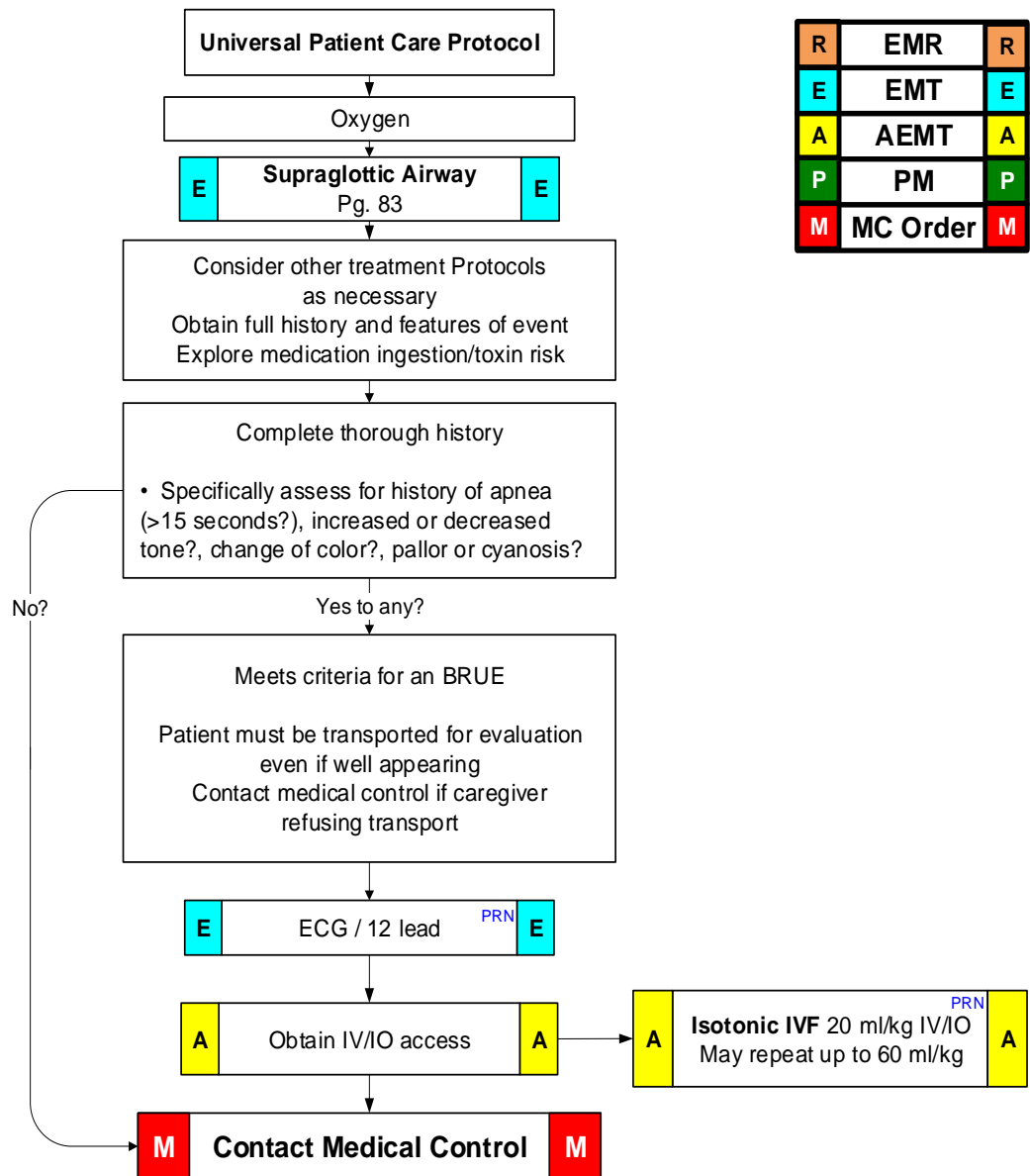


Pediatric Brief Resolved Unexplained Event (BRUE)



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Altered Mental Status Cardiac Respiratory Failure Seizures Syncope 	Differential: <ul style="list-style-type: none"> Hypovolemia (dehydration) Hypoxia Hydrogen ion (acidosis) Hypo-hyperkalemia Hypoglycemia Hypothermia Toxins Tamponade, cardiac Tension pneumothorax Thrombosis (coronary or pulmonary) Trauma (hypovolemia, increased ICP)
Inclusion: Suspected BRUE: An event in an infant less than 1 year old reported by a bystander as sudden, brief (less than 1 min) event, completely resolved upon EMS arrival that includes one or more of the following: <ul style="list-style-type: none"> Absent, decreased, or irregular breathing Color change (central cyanosis or pallor) Marked change in muscle tone (hyper- or hypotonia) Altered level of responsiveness 	Exclusion Criteria: Identifiable cause for the event, which may include: <ul style="list-style-type: none"> Gastric reflux (spitting up) Swallowing dysfunction Nasal congestion Color change that involved only redness (e.g. in the face) or isolated perioral or hand/feet cyanosis

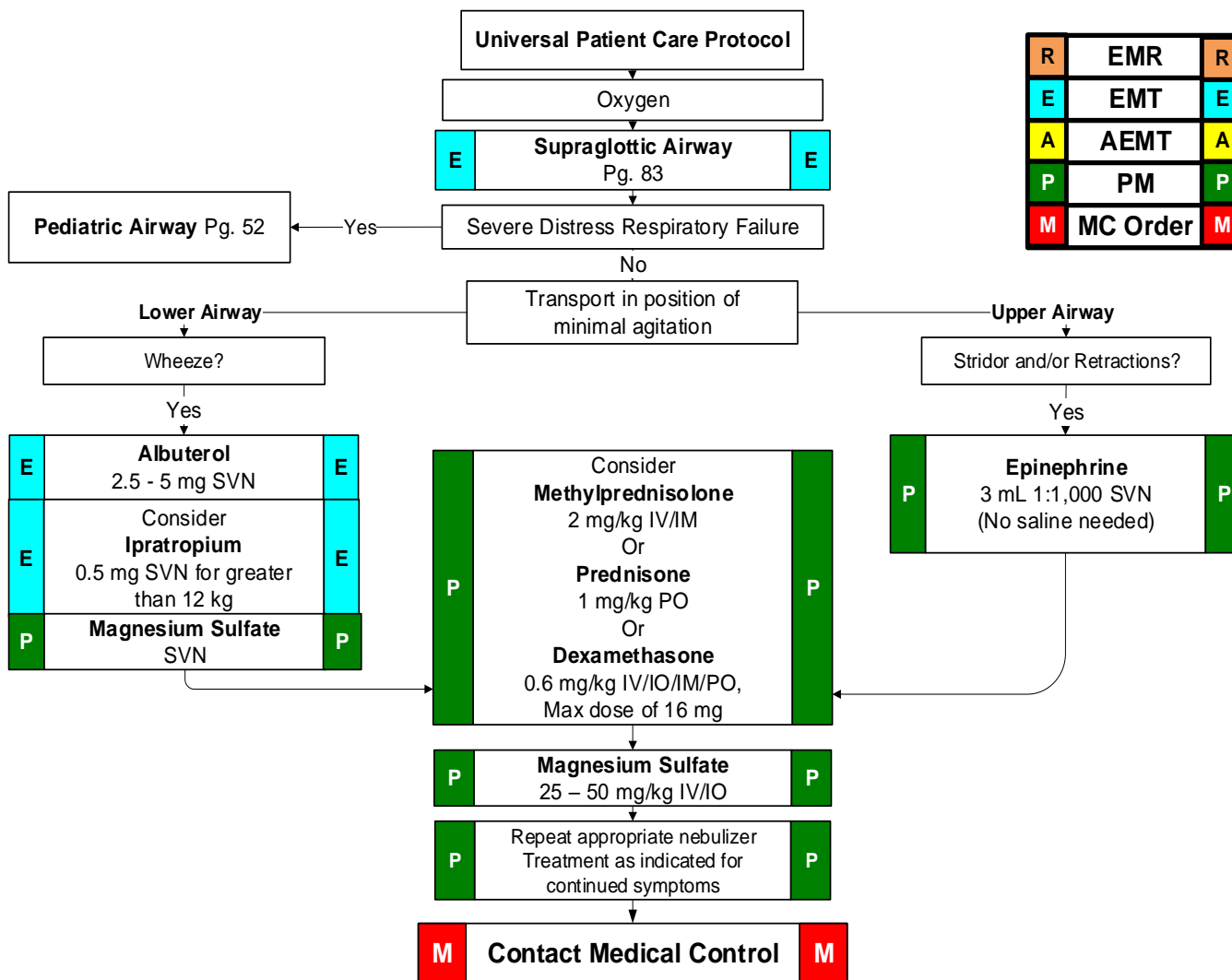


Pediatric Breathing Difficulty



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Possibility of foreign body • Cardiac/Respiratory history • Respiratory infection • Persistent Symptoms 	Differential: <ul style="list-style-type: none"> • Asthma • Aspiration • Foreign body • Pneumonia (aspiration) • Croup • Epiglottitis (Rare) • Congenital heart disease • Medication or Toxin • Trauma
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Epinephrine	3 mL SVN								
Nebulizer	Albuterol 2.5 mg				Ipratropium 0.5 mg				
Methylprednisolone	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Prednisone	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Dexamethasone	2.4 mg	3.6 mg	4.8 mg	6 mg	7.2 mg	9 mg	11.4 mg	14.4 mg	16 mg
Magnesium Sulfate SVN	300 mg	300 mg	300 mg	300 mg	300 mg	300 mg	600 mg	600 mg	600 mg
Magnesium Sulfate IV/IO	200 mg	300 mg	400 mg	500 mg	600 mg	750 mg	950 mg	1200 mg	1500 mg

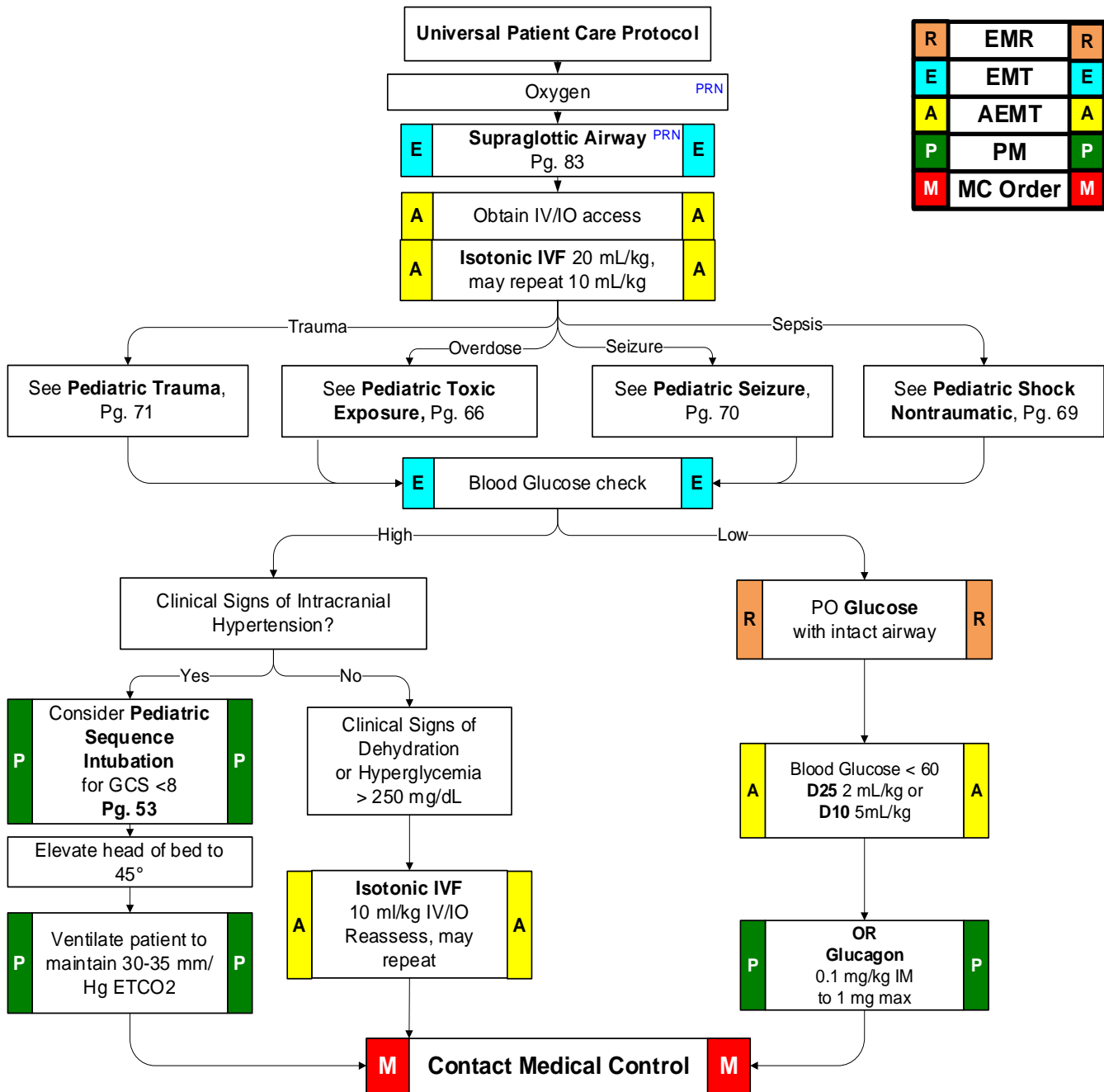


Pediatric Altered Mental Status



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Polyuria • Polydipsia • Vomiting • Weakness • Confusion 	Clinical Signs: <ul style="list-style-type: none"> • Dehydration • Kussmaul respirations • Smell of ketones • Change in mental status
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Notes:

- Signs of intracranial hypertension include severe headache, lethargy, vomiting, coma.

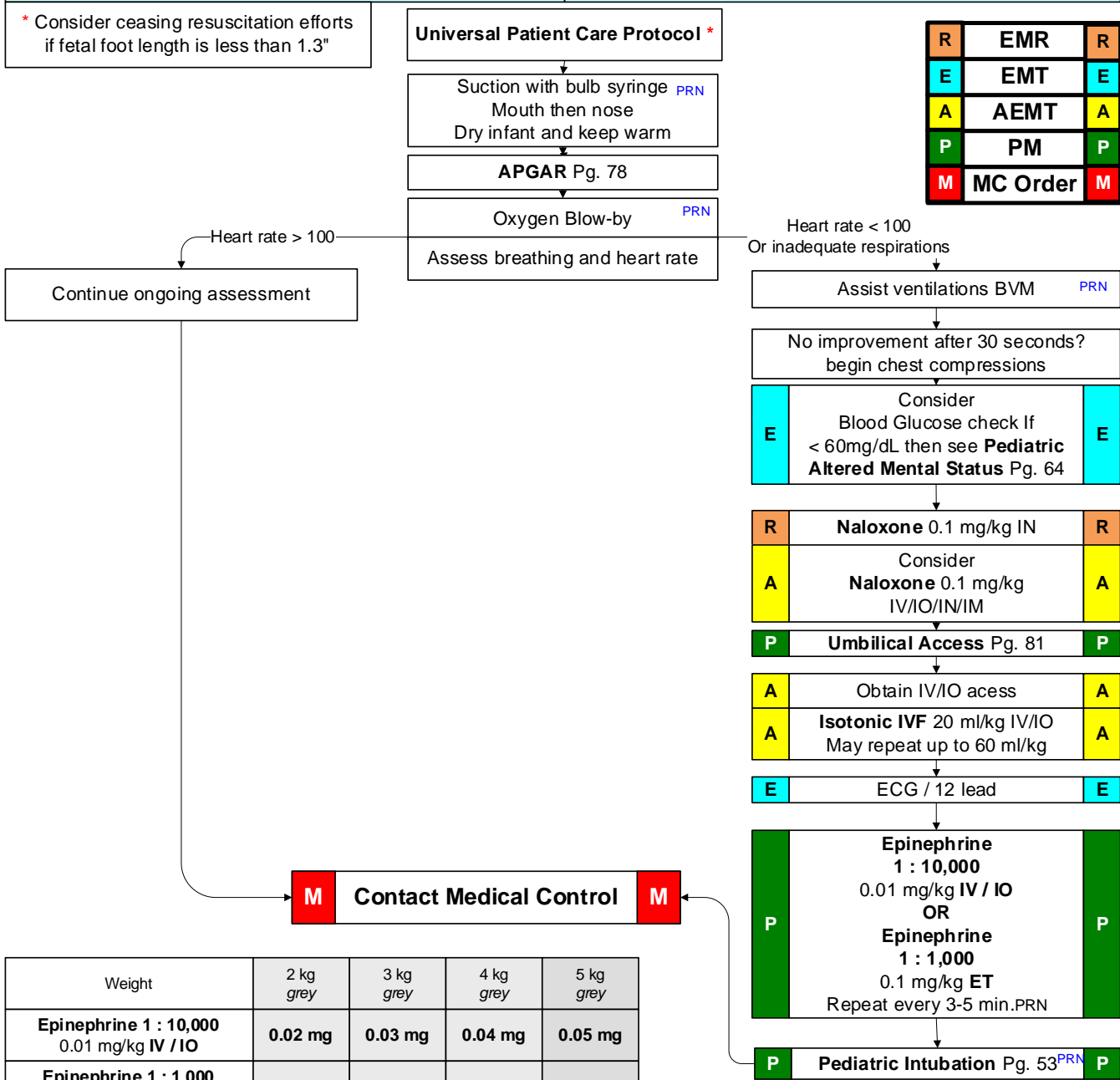


Newborn Resuscitation/Post Delivery Care



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Prenatal care and history • Due date/LMP • Expected multiple births • Meconium • Congenital disease • Medications • Maternal risk factors 	Differential: <ul style="list-style-type: none"> • Airway obstruction • Respiratory distress • Infection • Hypovolemia • Hypoglycemia • Congenital heart disease • Hypothermia • Persistent Central Cyanosis
---	--



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	2 kg <i>grey</i>	3 kg <i>grey</i>	4 kg <i>grey</i>	5 kg <i>grey</i>
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.02 mg	0.03 mg	0.04 mg	0.05 mg
Epinephrine 1 : 1,000 0.1 mg/kg ET	0.2 mg	0.3 mg	0.4 mg	0.5 mg

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Naloxone	0.4 mg	.06 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg



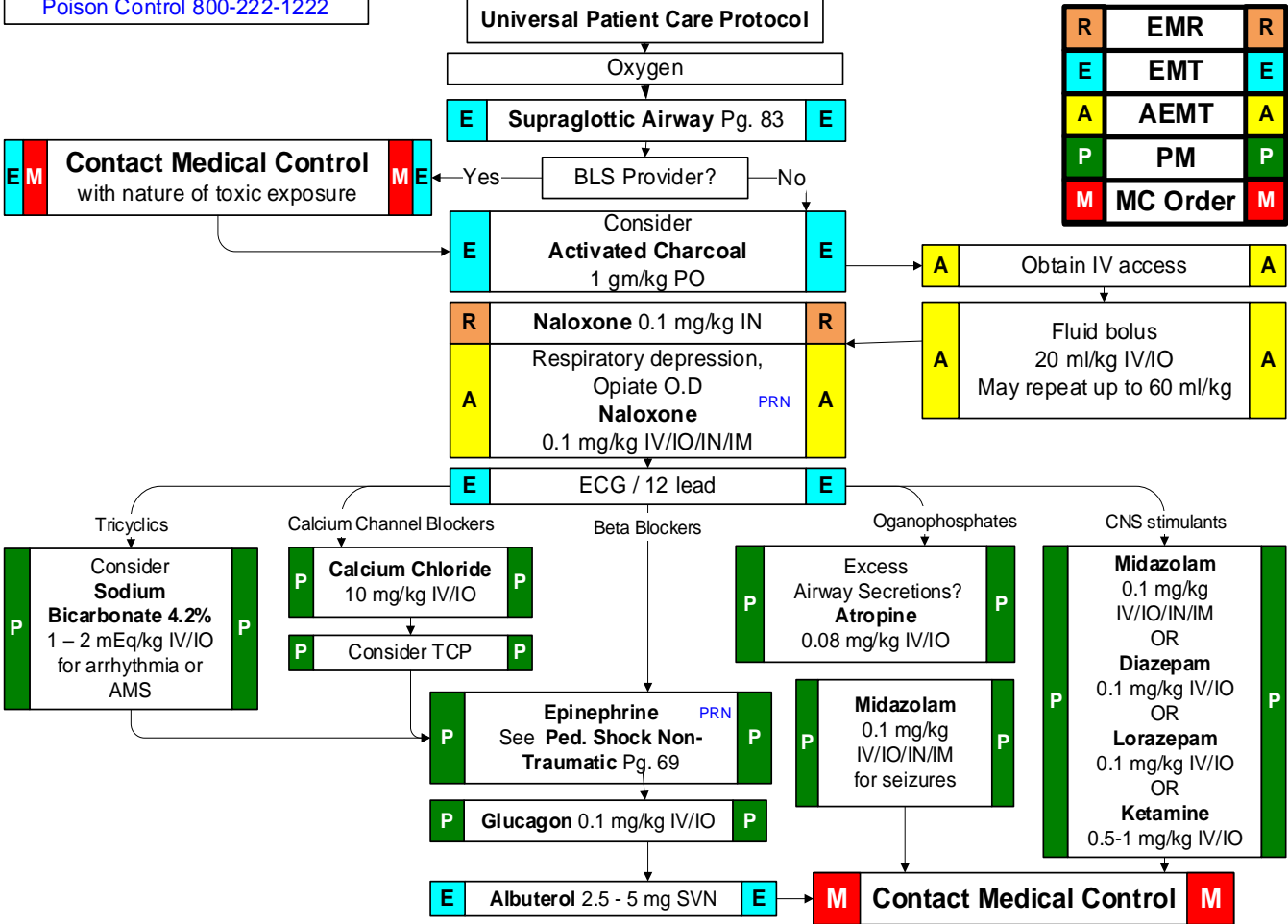
Pediatric Toxic Exposure



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Ingestion or suspected ingestion of a potentially toxic substance Substance ingested, route, quantity Time of ingestion 	<ul style="list-style-type: none"> Altered mental status Abnormal vital signs Reason (suicidal, accidental, criminal) Available medications in home 	Differential: <ul style="list-style-type: none"> Tricyclic antidepressants (TCAs) Acetaminophen (tylenol) Depressants Stimulants Anticholinergic 	<ul style="list-style-type: none"> Cardiac medications Solvents, Alcohols, Cleaning agents Insecticides (organophosphates)
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Poison Control 800-222-1222



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Activated Charcoal	4 gm	6 gm	8 gm	10 gm	12 gm	15 gm	19 gm	24 gm	30 gm
Naloxone	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Sodium Bicarbonate	4 mEq	6 mEq	8 mEq	10 mEq	12 mEq	15 mEq	19 mEq	24 mEq	30 mEq
Calcium Chloride	40 mg	60 mg	80 mg	100 mg	120 mg	150 mg	190 mg	240 mg	300 mg
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Atropine	0.32 mg	0.48 mg	0.64 mg	0.8 mg	0.96 mg	1.2 mg	1.52 mg	1.92 mg	2.4 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Ketamine	4 mg	6 mg	8mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg

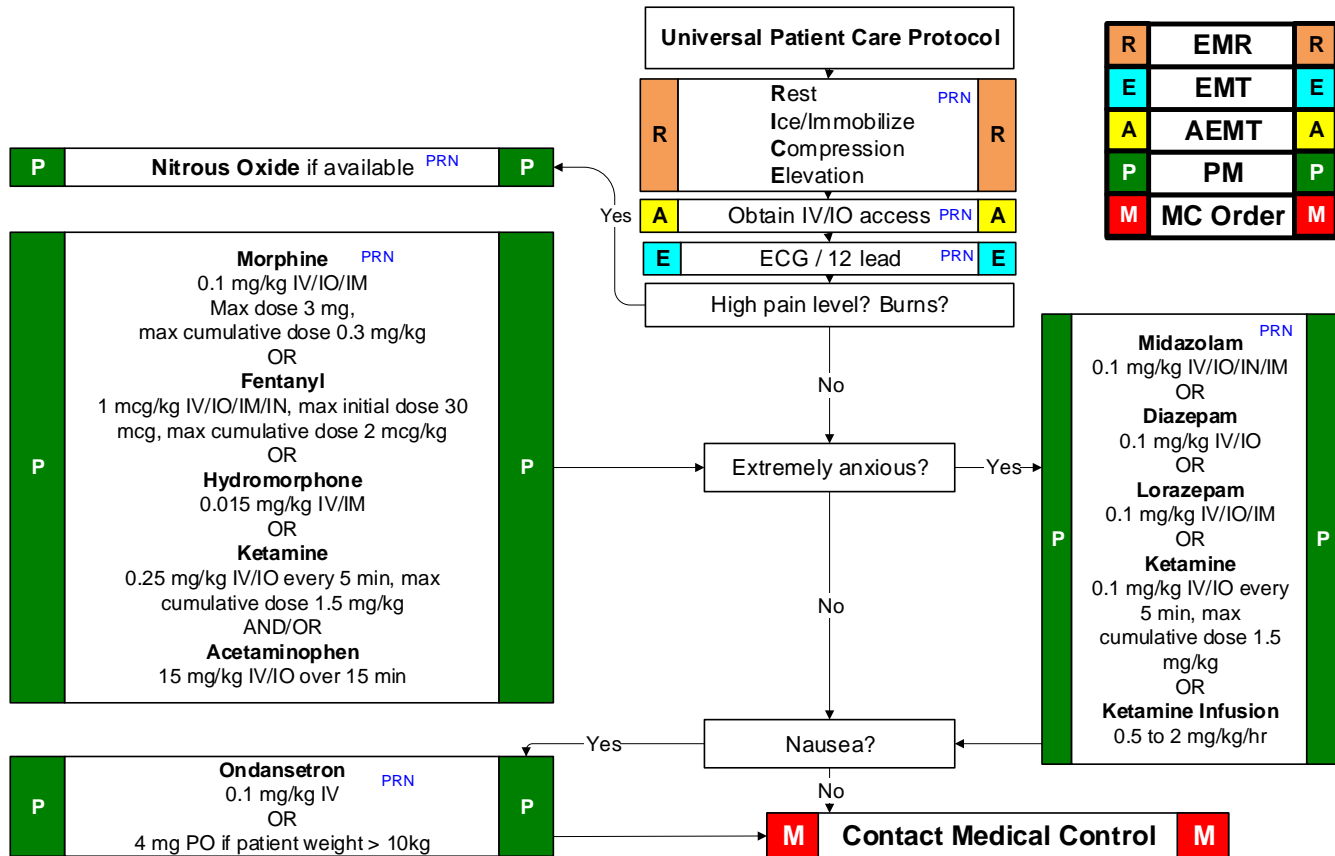


Pediatric Pain and Sedation Management



ALS transport if patients given a sedation medication

History: <ul style="list-style-type: none"> • Age • Location • Duration • Severity (1 - 10) • Past medical history 	<ul style="list-style-type: none"> • Medications • Drug allergies • Aggravating factors • Alleviating factors 	Differential: <ul style="list-style-type: none"> • Per the specific protocol • Musculoskeletal • Visceral (abdominal) • Cardiac • Pleural/ Respiratory • Neurogenic • Renal (colic)
--	---	---



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Morphine	.04 mg	.06 mg	.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Fentanyl max	8 mcg	12 mcg	16 mcg	20 mcg	24 mcg	30 mcg	38 mcg	48 mcg	60 mcg
Hydromorphone	0.06mg	0.09mg	0.12mg	1 mg	1 mg	1mg	1mg	1mg	1mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Ondansetron	Contact MC			1 mg	1 mg	1 mg	2 mg	2 mg	3 mg
Ondansetron PO	Contact MC			4 mg ODT					
Ketamine	1 mg	1.5 mg	2 mg	2.5 mg	3 mg	3.75 mg	4.75 mg	6 mg	7.5 mg
Ketamine Infusion (max dose)	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Acetaminophen IV	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg

Notes: Avoid polypharmacy and switching between multiple medications.

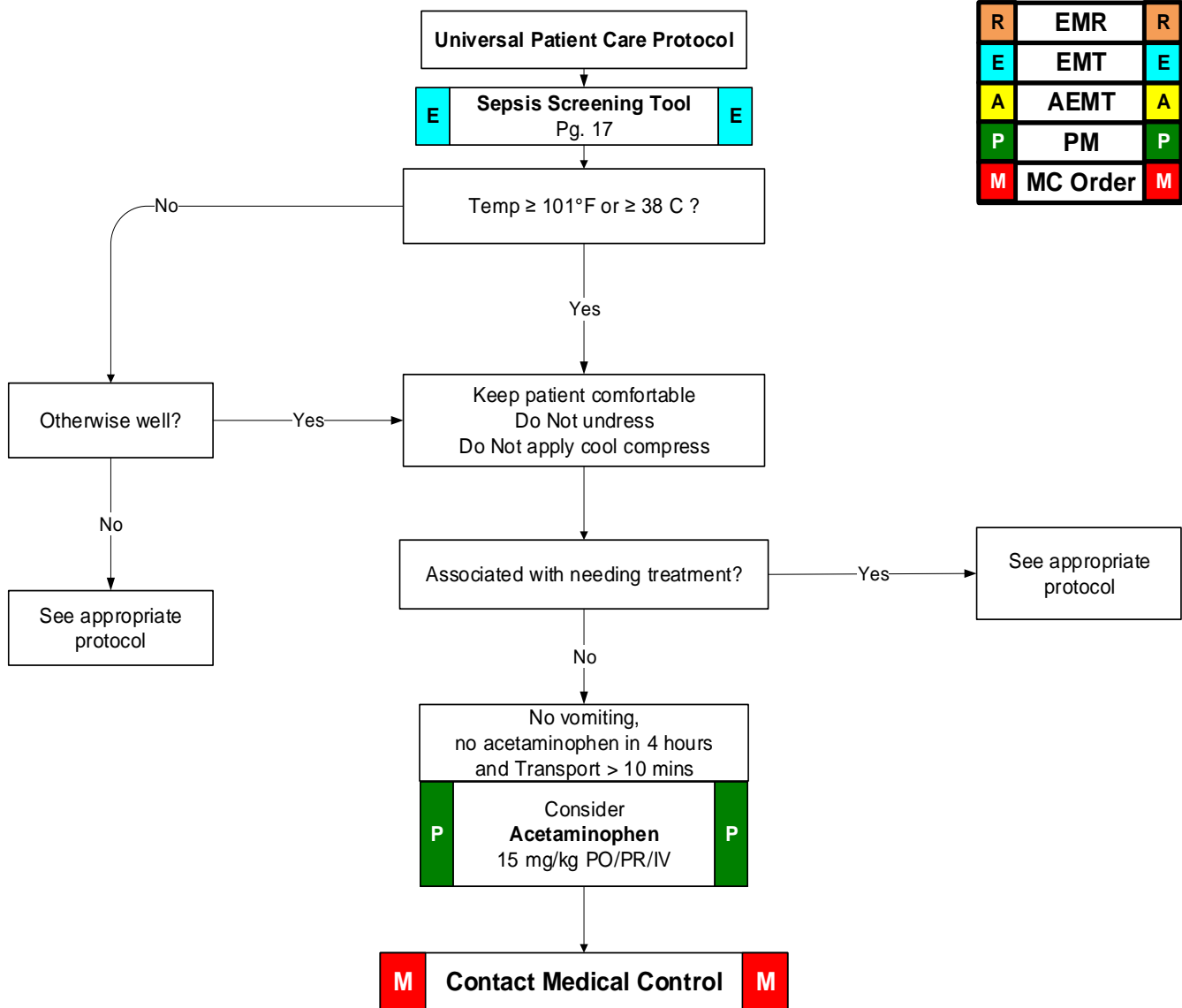


Pediatric Fever



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Fever not associated with heat injury does not require rapid temperature reduction 	Differential: <ul style="list-style-type: none"> Infections / Sepsis Medication or drug reaction Altered mental status
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Acetaminophen PO	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg
Acetaminophen IV	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg

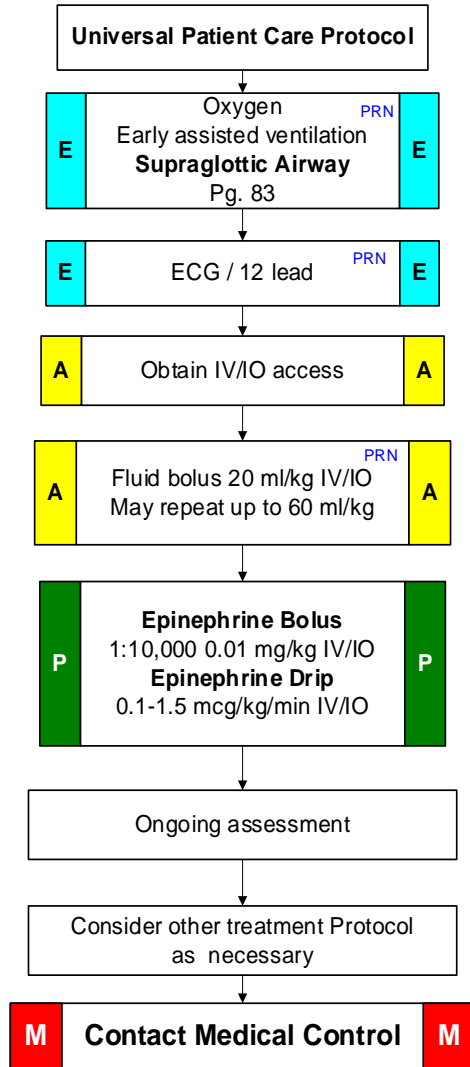


Pediatric Shock Non-traumatic



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Medical history • Respiratory distress or arrest • Possible toxic or poison exposure • Congenital disease • Medication (maternal or infant) • Non accidental trauma 	Differential: <ul style="list-style-type: none"> • Respiratory effort • Hypovolemia (dehydration) • Hypoxia • Hydrogen ion (acidosis) • Hypo-hyperkalemia • Hypoglycemia • Hypothermia 	<ul style="list-style-type: none"> • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis (coronary or pulmonary)
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine Drip 1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml Use 60 gtt tubing									
Mcg/min	2	4	6	8	10				
Administer	30 gtt/min	60 gtt/min	90 gtt/min	120 gtt/min	150 gtt/min				
Run gtt/sec	1 every 2 seconds	1 every second	1.5 every second	2 every second	2.5 every second				



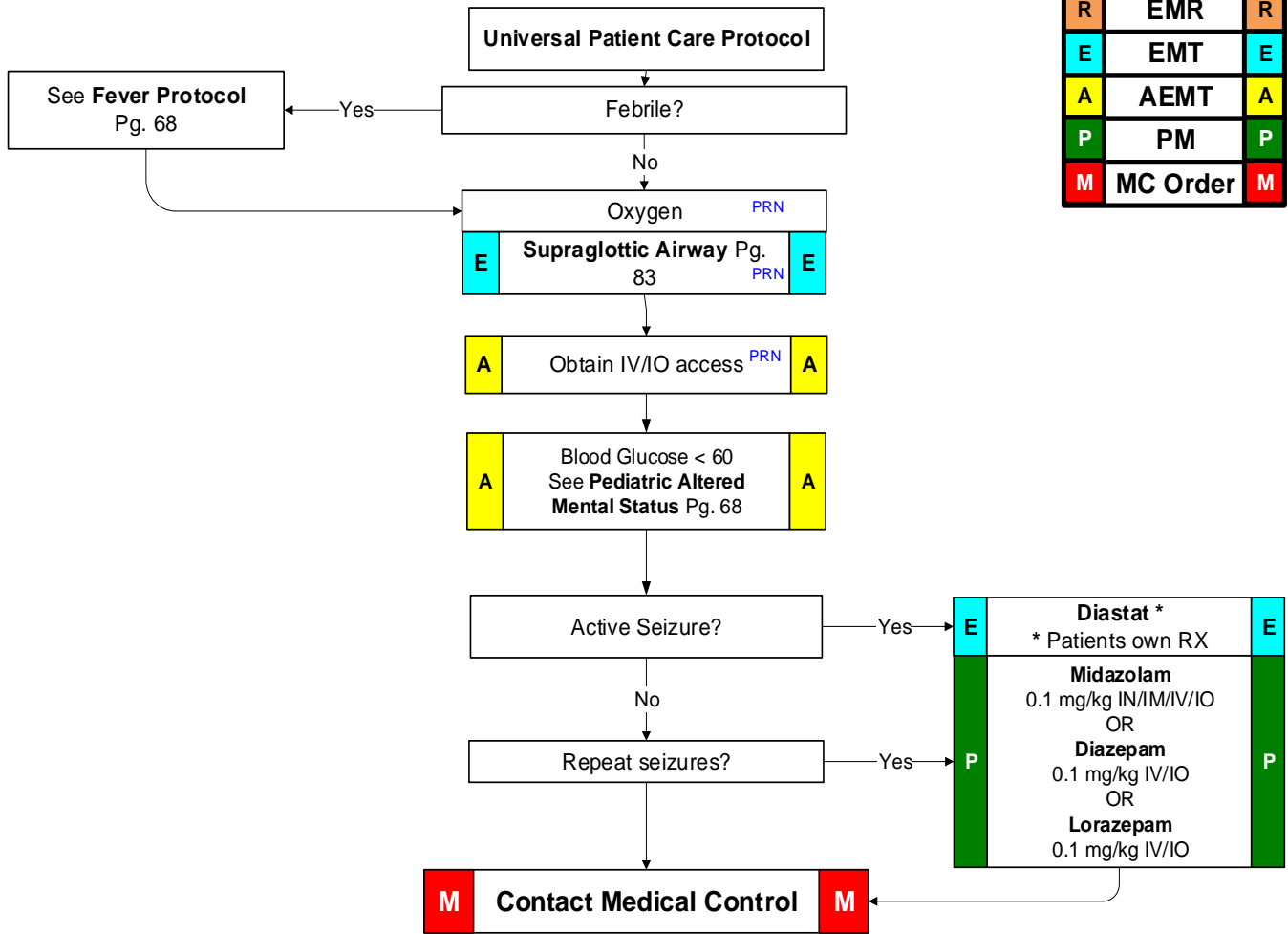
Pediatric Seizure



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Prior history of seizures • Seizure medications • History of VP Shunt • Fever • Head Trauma 	Differential: <ul style="list-style-type: none"> • Medication or Toxin • Hypoxia or Respiratory failure • Hypoglycemia • First time Seizure
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
D 25	8 mL	12 mL	16 mL	20 mL	24 mL	30 mL	38 mL	48 mL	60 mL
D10	20mL	30 mL	40 mL	50 mL	60 mL	75 mL	95 mL	120 mL	150 mL
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg

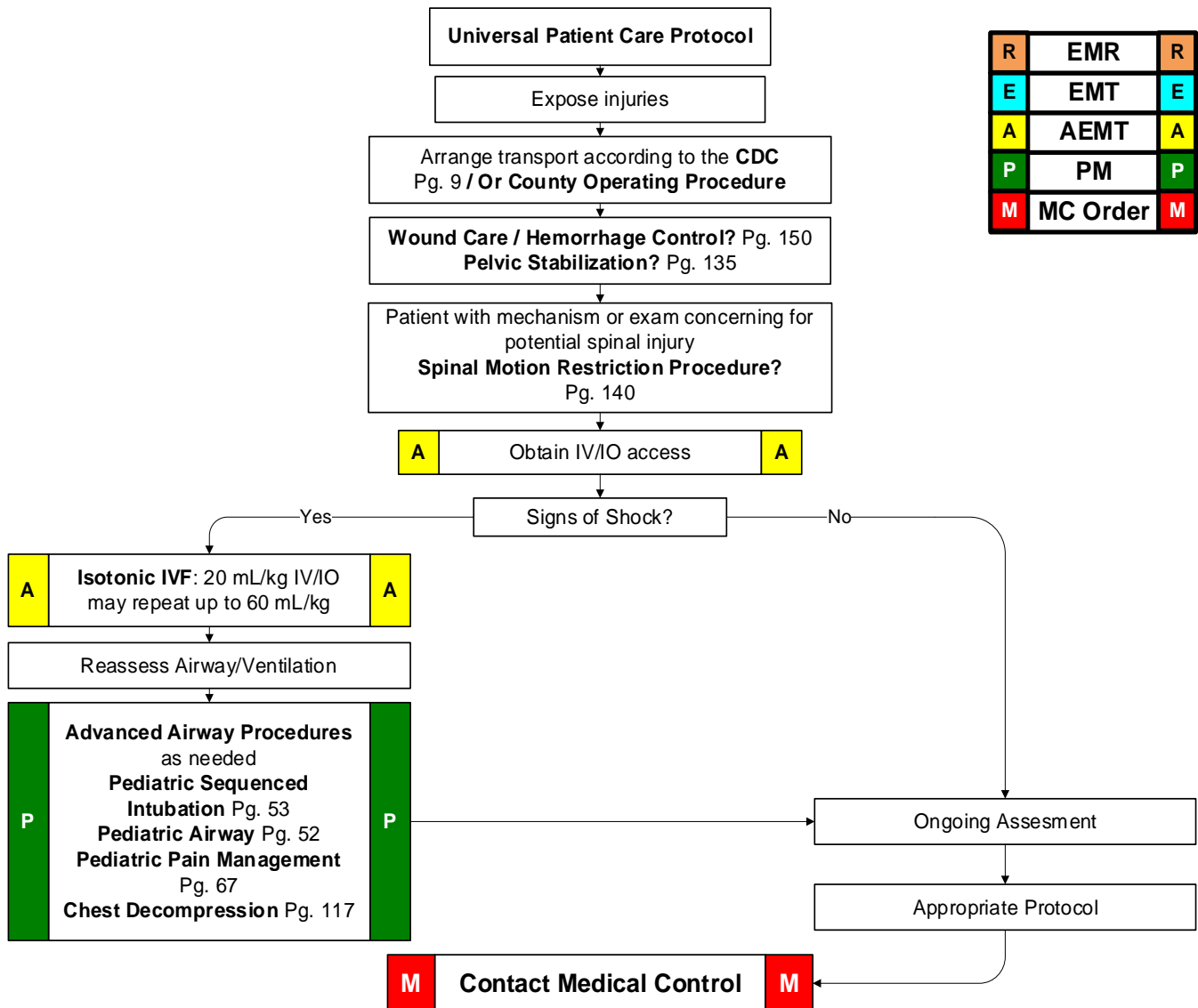


Pediatric Multi-system Trauma



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> • Time and Mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of MVA • Restraints / protective equipment • Symptoms preceding incident 	Signs and Symptoms: <ul style="list-style-type: none"> • Altered mental status or unconscious • Hypotension or shock 	Differential: <ul style="list-style-type: none"> • Chest Tension pneumothorax • Flail Chest • Pericardial Tamponade • Open chest wound • Hemothorax • Intra-abdominal bleeding • Pelvis/femur fracture • Spine fracture / Cord injury • Extremity fracture / Dislocation • HEENT (Airway Obstruction) • Hypothermia
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Notes:

- Exam : Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro
- Mechanism is often a good indicator of serious injury
- If domestic violence or abuse is suspected it is mandatory to report to Law Enforcement, receiving facility, airlift.



Pediatric Near Drowning



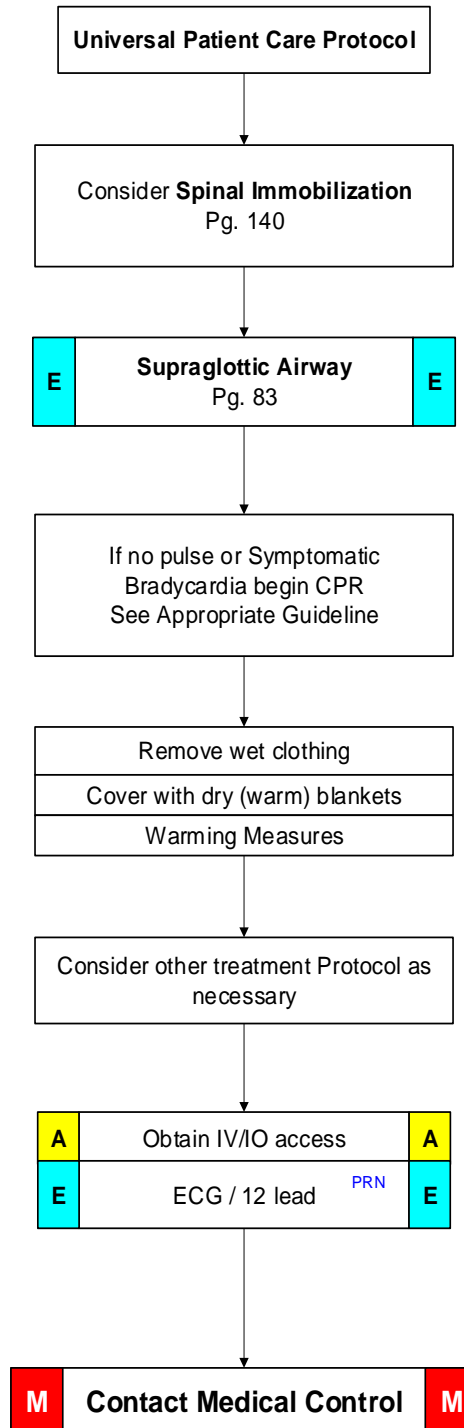
Transport ALL near drowning Patients

History:

- Submersion in water regardless of depth
- Possible history of trauma
- Duration of submersion
- Temperature of water
- Salt vs. Fresh Water

Differential:

- Trauma
- Pre-existing medical problems
- Barotrauma
- Decompression Sickness



R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M



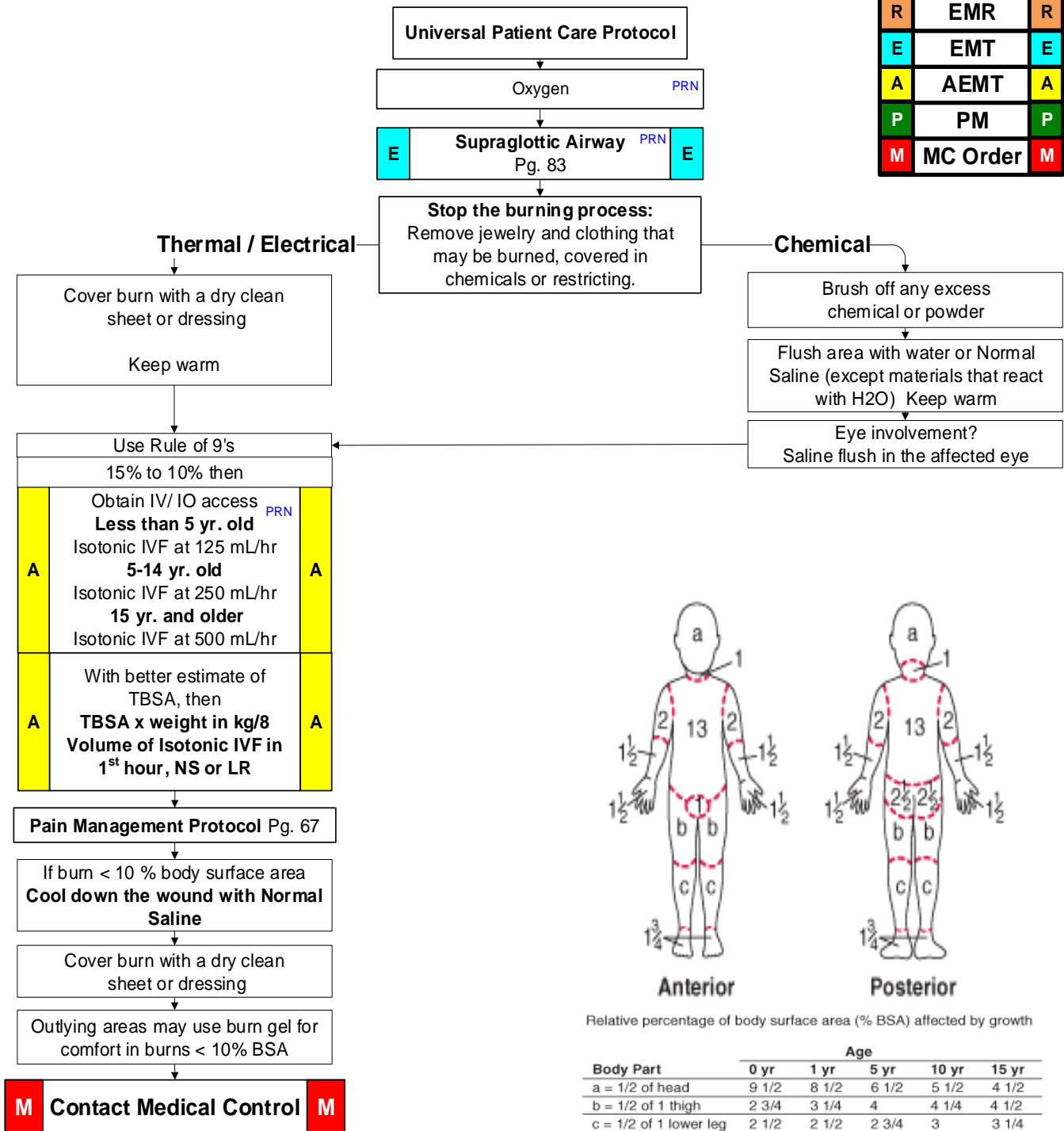
Pediatric Burns



ALS evaluation and/or transport if available > 15%:

History: <ul style="list-style-type: none"> Type of exposure Inhalation injury Time of injury Mechanism of Injury Non-accidental trauma Trauma 	Differential: <ul style="list-style-type: none"> Superficial (1°) red and painful Partial thickness (2°) blistering Full thickness (3°) charred or leathery skin Chemical Thermal Electrical
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R	EMR	R
E	EMT	E
A	AEMT	A
P	PM	P
M	MC Order	M

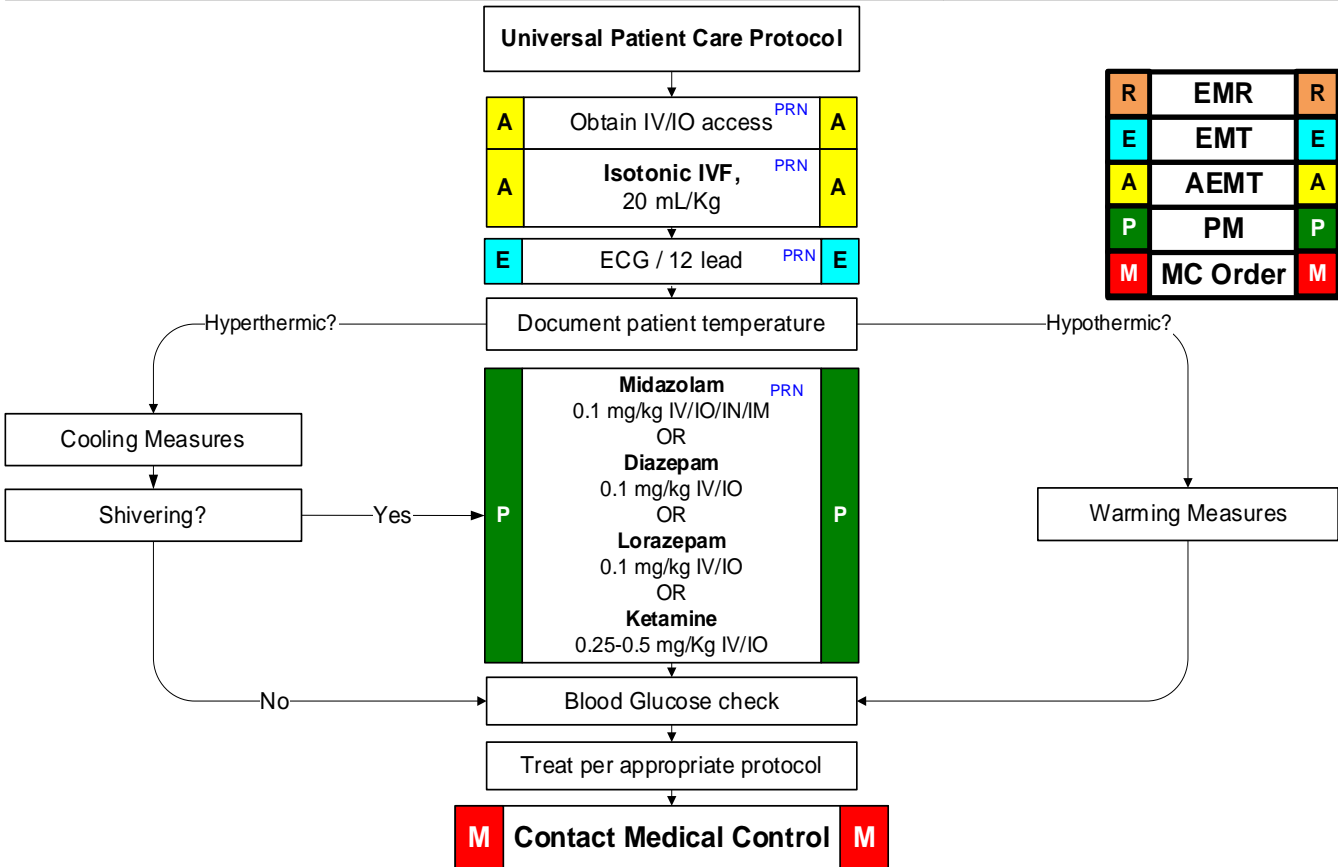


Pediatric Environmental Emergencies



ALS evaluation and/or transport if available:

History: <ul style="list-style-type: none"> Age Exposure to increase temperature and/or humidity Extreme exertion Time and length of exposure Fatigue and/or muscle cramping 	<ul style="list-style-type: none"> Altered Mental Status Temp > 104° F or 40 C due to heat Abnormal vital signs 	Differential: <ul style="list-style-type: none"> Infection Dehydration Medications Thyroid storm
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Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Diazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Ketamine max	2 mg	3 mg	4 mg	5 mg	6 mg	7.5 mg	9.5 mg	12 mg	15 mg

Notes:

- Succinylcholine not recommended for Hyperthermic patients
- Document patient's rectal temperature
- Rapid cooling to 39° C (103° F) to avoid overshooting and shivering.
- Apply room temperature water to skin and increase airflow around patient if possible.
- Ice packs to axillae and groin
- Be cautious with polypharmacy and using multiple medications

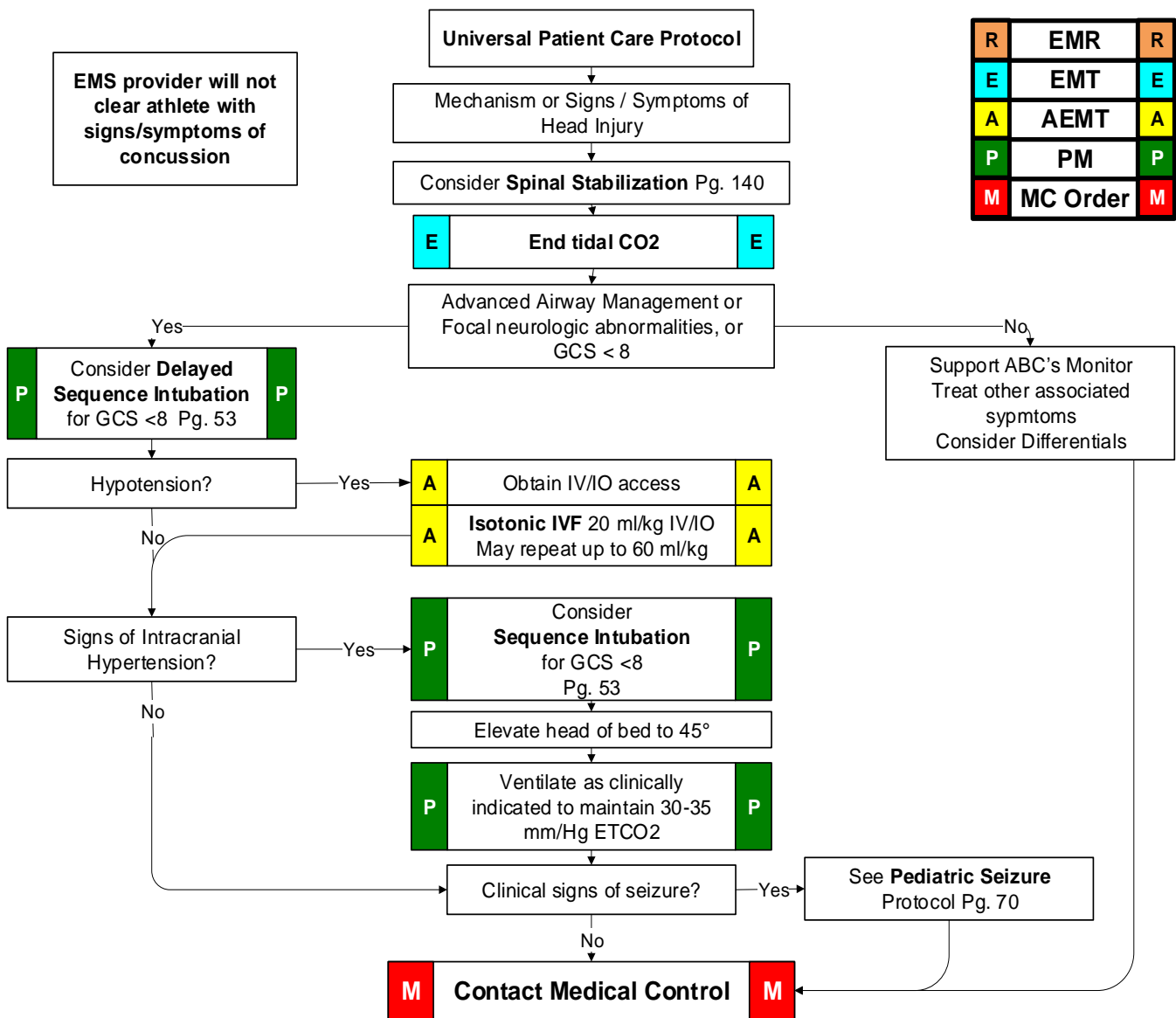


Pediatric Concussion/Traumatic Brain Injury



ALS evaluation and/or transport if available:

<p>Signs observed by Others:</p> <ul style="list-style-type: none"> • Appears dazed or stunned • Confusion • Forgetfulness • Unsure • Moves Clumsily • Answers Questions slowly • Loses consciousness • Behavior or personality Changes • Can't recall events prior to hit / fall • Apparent weakness • Neurological deterioration over time • Abnormal Vital signs 	<p>Symptoms Report by Athlete:</p> <ul style="list-style-type: none"> • Headache • Nausea or vomiting • Balance problems or dizziness • Double or blurry vision • Sensitivity to light • Sensitivity to noise • Numbness or weakness in extremities • Feeling sluggish, hazy, foggy, or groggy • Concentration or memory problems • Confusion / Altered Mental Status • DOES NOT "FEEL RIGHT"
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Notes:

Recommended that patient not return to sports until cleared by qualified medical professional

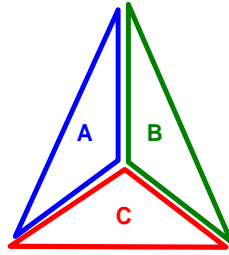


Pediatric Assessment

Airway & Appearance
(Open/Clear – Muscle Tone/Body Position)

Abnormal: **Abnormal** or absent cry or speech. Decreased response to parents or environmental stimuli. Floppy or rigid muscle tone or not moving.

Normal: Normal cry or speech. Responds to parents or to environmental stimuli such as lights, keys, or toys. Good muscle tone. Move extremities well.



Work of Breathing
(Visible movement/Respiratory Effort)

Abnormal: Increased/excessive (nasal flaring, retractions or abdominal muscle use) or decreased/absent respiratory effort or noisy breathing.

Normal: Breathing appears regular without excessive respiratory muscle effort or audible respiratory sounds.

Circulation to skin (Color / Obvious Bleeding)

Abnormal: Cyanosis, mottling, paleness/pallor or obvious significant bleeding.

Normal: Color appears normal for racial group of child. No significant bleeding.

Decision/Action Points:

Any abnormal findings or life-threatening chief complaint such as major trauma/burns, seizures, diabetes, asthma attack, airway obstruction, etc (urgent) – proceed to Initial Assessment. Contact ALS if not already on scene/enroute.

All findings normal (non-urgent) – proceed to Initial Assessment.

Initial Assessment (Primary Survey)

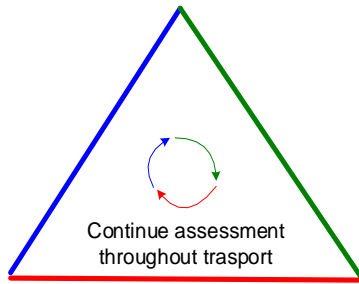
Airway & Appearance
(Open/Clear – Mental Status)

Abnormal: Obstruction to airflow. Gurgling, stridor or noisy breathing.

Verbal, **P**ain or **U**nresponsive on AVPU scale.

Normal: Clear and maintainable.

Alert on AVPU scale.



Breathing
(Effort / Sounds / Rate / Central Color)

Abnormal: Presence of retractions, nasal flaring, stridor, wheezes, grunting, gasping or gurgling. Respiratory rate outside normal range. Central cyanosis.

Normal: Easy, quiet respirations. Respiratory rate within normal range. No central cyanosis.

Circulation to skin (Color / Obvious Bleeding)

Abnormal: Cyanosis, mottling, or pallor. Absent or weak peripheral or central pulses; Pulse or systolic BP outside normal range; Capillary refill > 2 sec with other **abnormal** findings.

Normal: Color normal. Capillary refill at palms, soles, forehead or central body ≤2 sec. Strong peripheral and central pulses with regular rhythm.

Decision/Action Points:

Any abnormal findings (C,U, or P pg. 74) – Immediate transport with ALS. Open airway & provide oxygen. Assist ventilations, start CPR, suction, or control bleeding as appropriate. Check for causes such as diabetes, poisoning, trauma, seizure, etc. Assist patient with prescribed bronchodilators or epinephrine auto-injector, if appropriate.

All findings on assessment of child normal (S) – Continue assessment, detailed history & treatment at scene or enroute..



Pediatric References

Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Age	Newborn - 3 mos	6 mos	9 mos	1 yr	2 yrs	3 yrs	5 yrs	7 yrs	10 yrs
Pulse	100- 160	100- 160	100- 160	90- 150	90- 150	80- 140	70- 120	70- 120	70- 120
Respiratory Rate	30-60	30-60	30-60	24-40	24-40	22-34	18-30	18-30	18-30
Blood Pressure	40 mmHg	60 mmHg	60 mmHg	70 mmHg	70 mmHg	80 mmHg	80 mmHg	80 mmHg	90 mmHg
Endotracheal uncuffed	3.0	3.5	3.5	4.0	4.5	5.0	5.5	6.0	6.5
Endotracheal cuffed	2.5	3.0	3.0	3.5	4.0	4.5	5.0	5.5	6.0
Nasogastric Tube	5 Fr	5 Fr	8 Fr	8-10 Fr	10 Fr	10 Fr	12 Fr	14 Fr	14 Fr
Defibrillation	8 J	12 J	16 J	20 J	24 J	30 J	38 J	48 J	60 J
Cardioversion	2-4 J	3-6 J	4-8 J	5-10 J	6-12 J	8-15 J	10-20 J	12-24 J	15-30 J
Fluid Challenge	80 mL	120 mL	160 mL	200 mL	240 mL	300 mL	380 mL	480 mL	600 mL
Suction Catheter	6Fr	8Fr	8Fr	10Fr	10Fr	10Fr	10Fr	10Fr	12Fr



APGAR Scale

	0 Points	1 Point	2 Points
A – Appearance (Skin Color)	Blue / Pale	Normal, except for extremities	Normal over entire body
P – Pulse	Absent	Below 100	Above 100
G – Grimace (Reflex Irritability)	No Response	Grimace	Sneeze, cough, pulls away
A – Activity	Absent	Arms and Legs Flexed	Active Movement
R – Respiration	Absent	Slow, irregular	Good, strong cry

AVPU Infant / Child

Response	Infant	Child
A – Alert	Curious / Recognizes parents	Alert / Aware of surroundings
V – Responds to Voice	Irritable / Cries	Opens eyes
P – Responds to Pain	Cries in response to pain	Withdraws from pain
U – Unresponsive	No response	No response

CUPS Pediatric

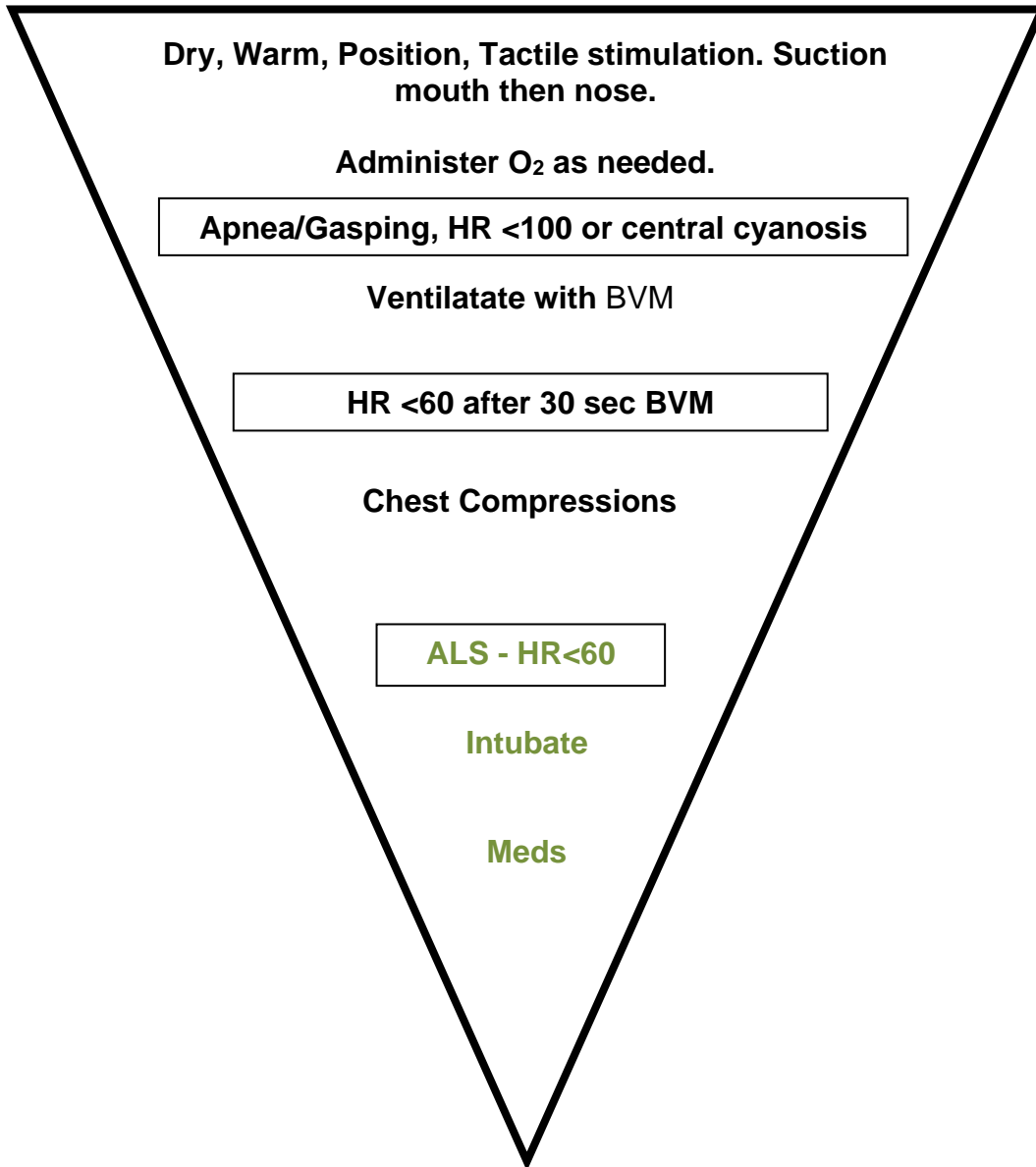
C – Critical	Absent airway, breathing or circulation (cardiac or respiratory arrest or severe traumatic injury)
U – Unstable	Compromised airway, breathing or circulation (unresponsive, respiratory distress, active bleeding, shock, active seizure, significant injury, shock, near-drowning, etc.)
P – Potentially Unstable	Normal airway, breathing & circulation but significant mechanism of injury or illness (Post-seizure, minor fractures, infant <3 months with fever, etc.)
S – Stable	Normal airway, breathing & circulation No significant mechanism of injury or illness (small lacerations or abrasions, infant \geq 3 months with fever)

TICLS

T – Tone	Refers to child's muscle tone
I – Interactivity	Refers to degree of interaction the child has with his/her environment or those attempting to interact with the child
C – Consolability	Refers to the child's response to parents or caregivers
L – Look/gaze	Identifies whether the child tracks things appropriately with his/her eyes or has a nonfocused gaze.
S – Speech or cry	Refers to how the child vocalizes.



Neonatal Resuscitation



Umbilical Vein Cannulation Pediatric

Clinical Indications:

- Emergency resuscitation and stabilization of neonates up to 10 days postpartum when unable to gain venous and/or IO access

Equipment:

- Umbilical clamps/Tape
- Scalpel
- 5 or 3.5 Fr feeding tube
- 10 cc syringe
- IV bag
- IV tubing
- 3 way stopcock

OR Commercially prepared umbilical line kit

Procedure:

1. Clamp and cut cord at least 3-4 inches from neonate's abdomen
2. Tie umbilical tape around base of cord and gently snug it to control bleeding and clean with betadine.
3. Using scalpel, **cut cord** about 2 cm above abdomen (take care not to cut the skin).
4. Wipe cut end of cord with alcohol
5. Measure for depth of insertion by measuring the distance of the cord plus 1-4cm (2cm) to that measurement.
6. Identify umbilical vein:
 - a. There are two small arteries small, thick walls
 - b. There is one larger, more "floppy" vein, typically at the 12 o'clock position
7. Flush catheter with NS
8. Only put in as far as you need to get blood return, usually 4 to 5 cm max total depth (5 Fr in normal gestation, 3.5 Fr in premature neonate).
9. Gently apply negative pressure on end of feeding tube with syringe, watching for blood return
10. Tape distal portion of catheter to abdomen
11. Disconnect syringe and connect 3 way stopcock, and flushed tubing.
12. Administer fluid and medications in a bolus fashion

Tips:

- It may be helpful to stabilize the cord by holding it at the base and applying gentle traction.
- Angle stump toward feet so catheter is directed toward the head
- Try loosening the umbilical tie just enough to pass the tubing



Venous Access Intraosseous Pediatric

Clinical Indications:

- Life threatening illness or injury in a child < 8 years of age (>8 years old see Adult Venous Access Intraosseous Adult Pg. 149)

Procedure:

1. Approved sites are the distal femur and proximal tibia
2. Expose the leg.
3. Identify the tibial tubercle (bony prominence below the knee cap) on the proximal tibia. The insertion location will be 1-2 cm (2 finger widths) below this and medially. If using distal femur, have knee slightly flexed with roll behind the knee. Site is anterior midline one finger width above top edge of patella.
4. Prep the site as per peripheral IV site.
5. **If using a commercially prepared device follow manufacturer's recommendation.**
6. Holding the intraosseous needle perpendicular to the skin, twist the needle handle with a rotating grinding motion applying controlled downward force until a "pop" or "give" is felt indicating loss of resistance. Do not advance the needle any further.
7. Remove the trocar and attach the IV.
8. Stabilize and secure the needle.
9. Document the procedure, time, and result (success) on/with the patient care report (PCR).



Airway I-gel Supraglottic Airway



Clinical Indications: Appropriate intubation is impossible due to patient access or difficult airway anatomy. Apneic children and adults without an intact gag reflex

- Airway, Adult; Airway Rapid Sequence Intubation; Failed Airway, Adult; & Cardiac Arrest
- Newborn Resuscitation
- Pediatric Airway; Pediatric Difficult Airway & Pediatric Rapid Sequence Intubation

Caution: This airway does not prevent or protect against aspiration

Clinical Contraindications:

- Pulmonary Fibrosis
- Tracheostomies, Chronically ventilated patients

Procedure:

1. Select the appropriate size i-gel

		<u>Compatible Endotracheal Tube</u>
Size 1.0	2 – 5 kg	3.0 mm I.D.
Size 1.5	5 – 12 kg	4.0 mm I.D.
Size 2	10 - 25 kg	5.0 mm I.D.
Size 2.5	25 - 35 kg	5.0 mm I.D.
Size 3	30 – 60 kg	6.0 mm I.D.
Size 4	50 – 90 kg	7.0 mm I.D.
Size 5	> 90 kg	8.0 mm I.D.

2. Lubricate with a water-soluble jelly on the middle of the smooth surface and return to the cradle
3. Pre-Oxygenate the patient
4. Grasp the lubricated i-gel along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the patient's chin (mental region of mandible)
5. The patient should always be in the 'sniffing position' with the head extended and neck flexed prior to insertion unless head/neck movement is inadvisable or contraindicated
6. Introduce the leading soft tip into the mouth of the patient in the direction of the hard palate
7. Glide the i-gel downward and backward along the hard palate with a continuous but gentle push until a definitive resistance is felt
8. Connect the i-gel to a bag-valve-mask and assess for breath sounds, adequate air exchange and end tidal CO₂ (EtCO₂)
9. Monitor oxygen saturation with pulse oximetry, EtCO₂ and heart monitor
10. Re-verify i-gel placement after every move and upon arrival in the Emergency Department
11. Secure the i-gel
12. Document the procedure, time, and result (success) on/with the patient care report (M.I.R./P.C.R.).

*When using the device after encountering a difficult intubation endotracheal intubation may be accomplished by passing a bougie through the i-gel into the trachea (see above chart for endotracheal tube compatibility). When advancing the bougie you may be able to "rail-road" the bougie to over the cartilaginous rings in the trachea to confirm proper location. Place an endotracheal tube over the bougie and advance into the trachea.




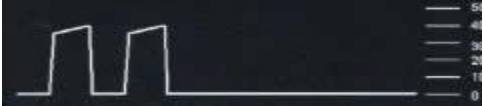




Airway Capnography, End Tidal CO₂

Clinical Indications:

- Should be used for suspected sepsis screening
- Capnography shall be used in all patients with endotracheal or supraglottic airways.
- If appropriate cannula-type sensors are available capnography may be used in non-intubated patients.

Procedure:

1. For non-intubated patients with severe respiratory distress/respiratory insufficiency, suspected sepsis, place cannula-type sensor in patient's nares.
2. Attach capnography sensor to supraglottic airway or endotracheal tube.
3. Note CO₂ level and waveform changes. These will be documented on each respiratory failure or cardiac arrest patient.
4. The capnometer shall remain in place with the airway and be monitored throughout the prehospital care and transport.
5. Any loss of CO₂ detection or waveform indicative of an airway problem should be documented.
6. The capnogram should be monitored as procedures are performed to verify or correct the airway problem.
7. Document the procedure and results on/with the Patient Care Report (PCR).

<p>NORMAL: "Square box" waveform; baseline CO₂ = 0; ETCO₂ = 35-45 mm Hg Management: Monitor</p>	
<p>DISLODGED ETT / ESOPHOGEAL INTUBATION: Loss of waveform, Loss of ETCO₂ reading Management: Replace ETT</p>	
<p>"SHARKFIN" with/without prolonged expiration = Bronchospasm (asthma, COPD, allergic rxn): Management: Bronchodilators (Albuterol, Atrovent, or epinephrine)</p>	
<p>RISING BASELINE = Patient is rebreathing CO₂: Management: Check equipment for adequate oxygen inflow Allow intubated patient more time to exhale</p>	
<p>HYPERVENTILATION: Rapid RR; shortened waveform; baseline ETCO₂ = 0; ETCO₂ < 35 mm Hg Management: Biofeedback if conscious, decrease assisted ventilation rate if unconscious/intubated</p>	
<p>PATIENT BREATHING AROUND ET TUBE: angled, sloping downstroke on waveform Broken cuff or tube is too small Management: Assess patient, oxygenation, ventilation; may need to reintubate</p>	

****Important: Severe metabolic acidosis (DKA, sepsis, salicylate poisoning, acute renal failure, methanol ingestion, tricyclic overdose) will cause tachypnea, but ETCO₂ will be HIGH.**

THIS IS NOT NORMAL



Airway

Cricothyrotomy Surgical (Adult)

Clinical Indications:

- Failed Airway Protocol
- Management of an airway when standard airway procedures cannot be performed or have failed in a patient > 12 years old

Clinical Contraindications:

- History of prior surgical airway
- Significant trauma to the trachea or larynx suspicious of a tear or fracture
- Massive neck edema obstructing landmark identification
- Children less than 12 years of age
- Ability to effectively ventilate / oxygenate and suction if necessary.

Procedure:

1. Have suction and supplies available and ready.
2. Place patient supine with the neck in a neutral position.
3. Locate the cricothyroid membrane utilizing anatomical landmarks.
4. Prep the area with an antiseptic swab.
5. Stabilize the thyroid cartilage with the non dominant hand.
6. Identify the cricothyroid membrane.
7. Make an incision over the cricothyroid membrane.
8. Visualize the cricothyroid membrane and puncture with the cric introducer or scalpel.
9. Dilate the cricothyroid membrane using any of the following techniques: kit dilator, curved hemostats, or gloved finger. You may insert a skin hook and advance a Bougie thru the incision with a curved tip directed towards the feet.
10. Insert a 5.5-6.5 ID ETT just until the cuff passes into the trachea. Be sure the cuff has cleared the cricothyroid space. If you've inserted a Bougie, pass the endotracheal tube over the top of the Bougie stylet.
11. Inflate the cuff with 5-10cc of air and ventilate the patient while manually stabilizing the tube.
12. All of the standard assessment techniques for insuring tube placement should be performed (auscultation, chest rise & fall, end-tidal CO2 detector, etc.). Esophageal bulb devices are not accurate with this procedure.
13. Secure the tube.
14. Document the time, procedure, and patient response on/with the Patient Care Report (PCR).



Airway Needle Cricothyrotomy (Adult & Pediatric)

Clinical Indications:

- Failed Airway Protocol.
- Management of an airway when standard airway procedures cannot be accomplished or has failed in a patient.

Procedure:

1. Have suction supplies available and ready.
2. Collect supplies including the endotracheal adapter of a 3.0 mm- ID ET tube.
3. Locate the cricothyroid membrane utilizing anatomical landmarks.
4. Use the non-dominant hand to secure the membrane.
5. Prep the area with antiseptic swab.
6. Using the syringe and the finder needle supplied in the commercial needle cricothyrotomy kit (or a 5-cc syringe attached to a 10 to 14 gauge catheter-over-needle device if needed), insert the needle through the cricothyroid membrane at a 45 to 60 degree caudal angle.
7. Aspirate for air with the syringe throughout the procedure.
8. Once air returns easily, stop advancing the device. If using an over the needle catheter, thread the catheter off the needle gently at a 60 degree caudal angle.
9. Attach the previously sized ET adapter to the end of the catheter and begin ventilation with a Bag Valve Mask connected to high flow oxygen source.
10. Assess breath sounds. Make certain ample time is used not only for inspiration but expiration as well. A 1:6 ratio is not unreasonable.
11. Secure needle by best method available, recognizing that this method may be direct hands-on control of the device throughout the entire transport.
12. If unable to obtain an adequate airway, resume basic airway management and transport the patient as soon as possible.
13. Regardless of success or failure of needle cricothyrotomy, notify the receiving hospital at the earliest possible time of a surgical airway emergency.

Document time/procedure/confirmation/change in patient condition/time on the patient care record (PCR).



Airway Difficult Airway Assessment

HEAVEN Criteria		
Physical signs	Less difficult airway	More difficult airway
H ypoexmia	<ul style="list-style-type: none"> SpO2 ≥ 93% at time of initial laryngoscopy 	<ul style="list-style-type: none"> SpO2 ≤ 93% at time of initial laryngoscopy
E xtrêmes of size	<ul style="list-style-type: none"> Adult patients Normal body habitus 	<ul style="list-style-type: none"> Age ≤ 8 years of age Clinically obese Other size related complications requiring special resources, equipment, or positioning
A natomic challenge	<ul style="list-style-type: none"> No facial, head, or neck trauma No swelling or foreign body, No other structural abnormality limiting laryngoscopic view 	<ul style="list-style-type: none"> Facial, head, neck trauma Airway swelling or foreign body Other structural abnormality limiting laryngoscopic view
V omit/blood/fluid	<ul style="list-style-type: none"> Pharynx and hypopharynx clear of blood, emesis, or other fluid 	<ul style="list-style-type: none"> Blood, vomit, or other fluid present in pharynx or hypopharynx limiting laryngoscopic view
E xanguination	<ul style="list-style-type: none"> No suspected anemia or blood loss 	<ul style="list-style-type: none"> Suspected or known anemia or blood loss which could accelerate desaturation during apneic periods
N eck	<ul style="list-style-type: none"> No suspected neck injury, medical condition, or device limiting cervical range of motion 	<ul style="list-style-type: none"> Known or suspected neck injury, medical condition, or device limiting cervical mobility



Airway

Passive Pre-oxygenation Procedure

Clinical indications:

- Cardiac arrest
- To support and maintain oxygen saturation throughout airway procedures
- All rapid sequence intubations
- All conscious sedations

Clinical contraindications:

- None

Procedure:

- Place a nasal cannula on all patients while preparing for RSI, with EtCO₂ monitoring if available
- 1. Low risk patient (96-100%):**
 - a. pre-oxygenation: non rebreather mask (NRB) w/ normal flow
 - b. induction: NRB and nasal cannula (NC) set to 15L/min
 - c. during intubation: NC kept at 15L/min
 - 2. High risk (91-95%):**
 - a. pre-oxygenation: NRB or CPAP or bag valve mask (BVM) with PEEP valve
 - b. induction: as above plus NC at 15L/min
 - c. intubation: NC at 15L/min
 - 3. Hypoxemic, Cardiac arrest (<90%):**
 - a. pre-oxygenation: CPAP or BVM w/ PEEP
 - b. induction: as above plus NC at 15L/min
 - c. intubation: NC at 15L/min
 - d. Cardiac arrest: NC at maximum output
 4. Once advanced airway has been placed the nasal cannula can be removed
 5. Document the procedure and results on/with the Patient Care Report (PCR)



Airway

ETT Placement Verification and Monitoring

Clinical Indications:

- Verification and monitoring of endotracheal tube (ET) placement in all intubated patients. The use of waveform capnography in initial confirmation and ongoing placement monitoring is mandatory for all intubated patients.

Procedure:

After successfully intubating the patient:

1. Assess for breath sounds high in axilla, anterior chest and over abdomen.
2. Assess for negative gastric sounds
3. Use inline ETCO₂ monitoring for confirmation and continuous monitoring of tube placement. This must be documented in narrative and capnography readings should be included in vitals.
4. Litmus paper CO₂ detector may be used at the initial stage of ET intubation, but inline continuous monitoring should occur thereafter.
5. In the perfusing patient, obtain and monitor SPO₂. These should be adequate or improving. Record data.



Airway Orotracheal Intubation

- **Video Laryngoscopy is preferred if available pg. 97**

Clinical Indications:

- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.
- Any patient medicated for rapid sequence intubation.

Procedure:

1. Prepare all equipment and have suction ready.
2. Pre-oxygenate the patient **Page 88**.
3. Apply cricoid manipulation.
4. Open the patient's airway and holding the laryngoscope in the left hand, insert the blade into the right side of the mouth and sweep the tongue to the left.
5. If using a Video Assisted Laryngoscope use as manufacturer has suggested and as instructed during training. Record and save for QI purposes if possible
6. Medicate according to appropriate **RSI procedure. Page 93-94**.
7. Use the blade to lift the tongue and epiglottis (either directly with the straight blade or indirectly with the curved blade).
8. Once the glottic opening is visualized, slip the tube through the cords and continue to visualize until the cuff is past the cords.
9. Number of attempts at ventilation shall not further compromise oxygenation. Oxygenate between each attempt and record SPO2. If unable to intubate after two (2) attempts proceed to **Failed Airway protocol Pg. 28**.
10. Remove the stylet and inflate the cuff (5-10cc until no cuff leak).
11. Auscultate for absence of sounds over the epigastrium and bilaterally for equal breath sounds.
12. This should be repeated frequently and after movement or manipulation.
13. Confirm the placement using a minimum of two (2) methods. CO2 detection device mandatory.
14. Secure the tube.
15. Document ETT size, time, result (success), and placement location by the centimeter marks either at the patient's teeth or lips on/with the patient care report (PCR).
16. Document all devices used to confirm initial tube placement. Also document positive or negative breath sounds before and after each movement of the patient.



Airway Intubation with Eschmann Catheter, Tracheal Tube Introducer or Gum Elastic Bougie

Technique

1. Perform direct video laryngoscopy after thorough pre-oxygenation. **Passive Preoxygen Pg. 88**
2. Insert bougie under direct video visualization (grade II) or semi blind (grade III) using epiglottis as a guide. Maintain midline bent end facing anteriorly.
3. With the tip directed anteriorly guide the bougie toward the epiglottis.
4. Advance the bougie posterior to the epiglottis and into the glottic opening.
5. Cricoid pressure may facilitate correct placement (when the tip of the introducer passes the cricoid cartilage and enters the trachea it also may be palpable at the anatomic location).
6. The operator may be able to feel the bougie “click” or “bump” over the anterior tracheal rings (“wash boarding or railroading”) .
7. Use the laryngoscope to elevate the pharyngeal soft tissue.
8. Subtle maneuvering may be required to traverse the vocal cords.
9. Advance to the carina (resistance to passage) to verify placement (approximately 45 cm). Once advanced to the carina, further insertion causes the bougie to rotate on entrance into a bronchus as an additional criterion to confirm correct placement. Failure to meet resistance after inserting nearly the full length of the bougie indicates esophageal placement. Withdraw and align the black “lip-line marker” with the lips (1 cm band located 40 cm (4 stripes) from proximal end).
10. Pass endotracheal tube (larger than 6.0 mm) over the bougie.
11. If the endotracheal tube catches on the arytenoid or aryepiglottic folds, withdraw the tube slightly and rotate it 90° counterclockwise and advance it forward (allows beveled end to pass).
12. For optimal passage of the tube over the bougie into the trachea, the laryngoscope may be left in place as the endotracheal tube is advanced with the bevel facing posteriorly.
13. Secure the tube (remove bougie) and verify tube placement.



Airway

Nasotracheal Intubation

Clinical Indications:

- A spontaneously breathing patient in need of intubation (inadequate respiratory effort, evidence of hypoxia or carbon dioxide retention, or need for airway protection).
- Patient must be 12 years of age or older.
- RSI would impose undue risk to patient

Procedure:

1. Premedicate the patient with nasal spray (oxymetazoline) Afrin®.
2. Select the largest and least obstructed nostril and insert a lubricated nasal airway to help dilate the nasal passage.
3. Pre-oxygenate the patient. Lubricate the tube with water soluble lubricant. **Passive Pre-oxygen Pg. 88**
4. Remove the nasal airway and gently insert the tube keeping the bevel of the tube toward the septum.
5. Insert the tube along the floor of the nasopharynx angling toward the posterior hypopharynx.
6. Continue to pass the tube listening for air movement and looking for vapor condensation in the tube. As the tube approaches the larynx, the air movement gets louder.
7. Open the patient's mouth to assure the tube is centered behind the uvula.
8. Gently and evenly advance the tube through the glottic opening on inspiration. This facilitates passage of the tube and reduces the incidence of trauma to the vocal cords.
9. Upon entering the trachea, the tube may cause the patient to cough, buck, strain, or gag. Do not remove the tube! This is normal, but be prepared to control the cervical spine and the patient, and be alert for vomiting.
10. Auscultate for bilaterally equal breath sounds and absence of sounds at the epigastrium. Observe for symmetrical chest expansion. The 15mm adapter usually rests close to the nostril with proper positioning.
11. Inflate the cuff with 5-10 cc of air. Confirm tube placement using an end-tidal CO₂ monitoring or esophageal bulb device.
12. Medicate patient as per protocol.
13. Secure the tube. Document the procedure, time, and result (success) on/with the patient care report (PCR).



Airway

Sequenced Induction and Intubation

Inclusion Criteria:

- Patients with an intact gag reflex who require proactive airway control and management due to clinical condition

Procedure:

1. Assemble equipment and ensure proper function using the Rapid Sequence Induction and Intubation Checklist
 - a. Ensure availability of atropine for all patients
 - b. Ensure availability of vasopressors for all patients
2. Preoxygenate with high flow oxygen
3. Assess patient for difficult airway
4. Explain the procedure to the patient as appropriate
5. If the patient displays clinical indications of shock, resuscitate as appropriate before attempting intubation, if possible
 - a. Hypovolemia: 250-500ml of isotonic crystalloid
 - b. Other causes of shock: vasopressors as appropriate.
 - c. A higher than normal target pressure (systolic greater than 130mmHg/MAP greater than 85mmHg) may be desirable in the shocked patient prior to intubation attempt(s)
6. Sedate/dissociate as appropriate:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Ketamine 1mg/kg Or Midazolam 0.1mg/kg (Max dose of 10mg) Or Etomidate 0.1 mg/Kg	Ketamine 0.5mg/kg

7. Consider continuing preoxygenation for up to 3 minutes if patient condition tolerates
8. Position the patient as appropriate
9. Paralyze as appropriate:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Succinylcholine 1.5mg/kg (Adult) Succinylcholine 2mg/kg (Pediatric) Or Rocuronium 0.6 to1.2 mg/kg	Succinylcholine 2mg/kg Or Rocuronium 0.6 to 1.2 mg/kg₉



Airway Sequenced Induction and Intubation (continued)

10. Intubate the patient per procedure

a. Consider using video laryngoscopy and/or bougie on first attempt

11. Consider ongoing sedation as needed:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Ketamine 1mg/kg Or Midazolam 0.1mg/kg (Max dose of 10mg) Or Diazepam 2-5mg with Fentanyl 1mg/kg	Ketamine 0.5mg/kg Or Diazepam 2-5mg with Fentanyl 1mg/kg Ketamine drip 0.5-2 mg/kg/hr

12. Consider ongoing paralysis as needed and clinically indicated:

Non-Shock/Normotensive Patient	Shocked/Hypotensive Patient
Rocuronium 0.1-0.2mg/kg IV (Adult) Rocuronium 0.075-0.125mg/kg IV (3mos.-14yrs) Or Vecuronium 0.1 mg/Kg	



Airway Nebulizer Inhalation Therapy

Clinical Indications:

- Patients experiencing bronchospasm.

Procedure:

1. Gather the necessary equipment.
2. Assemble the nebulizer kit.
3. Instill appropriate medication into the reservoir well of the nebulizer.
4. Connect the nebulizer device to oxygen at 6 liters per minute or adequate flow to produce a steady, visible mist.
5. Instruct the patient to inhale normally through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece.
6. If the patient is unable to maintain good lip seal around the mouth piece, nebulizer may be connected to a face mask. For a child, may hold nebulizer as blow by in front of the patient's face.
7. In the intubated patient, patient on NIPPV, or BVM, nebulizer should be placed in-line for effective medication delivery.
8. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.
9. Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.
10. Document the treatment, dose, and route on/with the patient care report (PCR).



Airway

Non-invasive Positive Pressure Ventilation (NIPPV)

Clinical Indications:

- Near drowning, Asthma/RAD, Passive oxygenation
- Consider in respiratory distress in the conscious patient suffering from:
 - Presumed pulmonary edema
 - Severe reactive airway disease
 - Conditions reactive under medical management (e.g. hypoxemic respiratory failure)
 - Consider use in patients DNR/DNI with signs of respiratory compromise
- **Continue medical management of cardiogenic pulmonary edema while preparing and during use of NIPPV**

Contraindications:

- Respiratory arrest
- Facial trauma/surgery/structural deformity that would affect ability to make a seal
- Known or suspected pneumothorax
- Upper airway obstruction
- Pulmonary fibrosis
 - **Relative contraindications** include inability to protect airway and impaired consciousness

Procedure:

1. Assemble equipment and assure proper function.
2. Ensure adequate oxygen supply to ventilation device.
3. Assess and document initial SpO₂, work of breathing and EtCO₂ if possible.
4. Explain the procedure to the patient.
5. Calmly and continuously reassure the patient.
 - a. Consider placement of a nasopharyngeal airway.
6. Place the delivery mask over the mouth and nose.
7. Secure the mask with provided straps or other provided devices
8. If using BIPAP, select IPAP similar to CPAP pressure and EPAP should be approximately HALF of IPAP. For example IPAP 10 cm H₂O and EPAP of 5 cm H₂O. Increase/titrate for effect
9. Begin at 7.5 cm H₂O with low pressure and increase as patient tolerates and/or the clinical situation dictates by 2.5cm H₂O to maximum of 15cm H₂O.
10. Frequently reassess patient's respiratory status and vital signs.
 - a. If rapid improvement NOT noted, discontinue NIPPV and manage respiratory condition via other means
11. Notify receiving facility of NIPPV use.
12. SVN can be utilized in line in the NIPPV circuit.



Airway

Video Assisted Laryngoscopy

Preferred method if available

Clinical Indications:

- Difficult airways
- Routine airways
- First-use intubations, replacing direct laryngoscopy (DL)
- Normal or restricted oropharyngeal views / visualization and assessment of the oropharynx
- Trauma airways
- Airway management in morbidly obese patients
- Preterm and neonatal intubations
- Patients requiring cervical spine immobilization
- Supervision and documentation of the laryngoscopy
- Nasal tracheal intubation
- Video-guided foreign body removal
- Awake intubation for difficult airway management
- Insertion of double lumen tubes (DLTs)

Procedure:

1. Prepare all equipment, activate video assisted laryngoscope, and have suction ready.
2. Pre-oxygenate the patient.
3. Medicate according to appropriate **Sequenced Intubation procedure. Pg. 93-94**
4. Record and save intubation whenever possible.
5. Instrument oropharynx as manufacturer has suggested and as instructed during training. An endotracheal tube stylet may be recommended by the manufacturer.
6. Using the video laryngoscope, visualize the tube to pass through the vocal cords.
7. Remove the stylet and inflate the cuff (5-10 mL until no cuff leak).
8. Auscultate for absence of sounds over the epigastrium and bilaterally equal breath sounds.
9. This should be repeated frequently and after movement or manipulation.
10. Confirm the placement using a minimum of two (2) methods. CO2 detection device mandatory.
11. Secure the tube.



Airway Suctioning-Basic

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient who cannot maintain or keep the airway clear.

Procedure:

Oropharyngeal

1. Ensure suction device is in proper working order with rigid suction tip in place.
2. Preoxygenate the patient as much as possible.
3. Explain the procedure to the patient if they are coherent.
4. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
5. If applicable, remove airway adjuncts from the airway.
6. Use the suction device to remove any secretions, blood, or other substances.
7. Be aware that a patient with altered mentation may bite on the catheter resulting in a foreign body obstruction.
8. The alert patient may assist with this procedure.
9. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient
10. Record the time and result of the suctioning in the patient care report (PCR).

Nasopharyngeal

1. Ensure suction device is in proper working order with flexible suction tip in place.
2. Lubricate the end of the suction catheter with water soluble lubricant.
3. Preoxygenate the patient as much as possible.
4. Explain the procedure to the patient if they are coherent.
5. Examine the oropharynx and remove any potential foreign bodies or material which may occlude the airway if dislodged by the suction device.
6. If applicable, remove ventilation devices from the airway.
7. Insert the flexible catheter through the largest nare following the floor of the nasal passage angling toward the posterior pharynx.
8. Use the suction device to remove any secretions, blood, or other substance.
9. Reattach ventilation device (e.g., bag-valve mask) and ventilate or assist the patient.
10. Record the time and result of the suctioning in the patient care report (PCR).



Airway Suctioning-Advanced

Clinical Indications:

- Obstruction of the airway (secondary to secretions, blood, or any other substance) in a patient currently being assisted by an airway adjunct such as:
 - a naso-tracheal tube
 - endotracheal tube
 - supraglottic airway
 - tracheostomy tube
 - cricothyrotomy tube

Procedure:

1. Ensure suction device is in proper working order.
2. Collect supplies including flexible suction catheter, sterile saline in container, clean gloves.
3. Pre-oxygenate the patient as much as possible. Do not over inflate the lungs.
4. Attach suction catheter to suction device, keeping end of catheter aseptic.
5. Measure length of catheter for proper depth of insertion based on the type of device in place.
6. If applicable, remove ventilation devices from the airway.
7. With the thumb port of the catheter uncovered, insert the catheter through the airway device.
8. Once the desired depth (measured in #5 above) has been reached, occlude the thumb port and remove the suction catheter slowly.
9. Interrupt ventilations for no more than 30 seconds.
10. Reattach ventilation device (e.g., bag-valve mask) and ventilate the patient.
11. Clear the suction catheter of thick secretions by aspirating sterile saline.
12. If thick secretions prevent effective suctioning instill 3-5 cc of sterile saline in the ET tube and ventilate the patient 3-4 breaths. Then repeat suctioning as described.
13. Document time and result including SpO₂ readings before and after procedure in the patient care report (PCR).



Airway

Tracheostomy Tube Change

Clinical Indications:

- Presence of Tracheostomy site.
- BLS attempt should only be with mature tracheostomy
- Urgent or emergent indication to change the tube such as:
 - obstruction that will not clear with suction,
 - dislodgement,
 - inability to oxygenate/ventilate the patient without other obvious explanation.

Procedure:

1. Enlist assistance of primary care giver if available
2. Have all airway equipment prepared for standard airway management, including equipment for orotracheal intubation and failed airway.
3. Have airway device (endotracheal tube or tracheostomy tube) of the same size as the tracheostomy tube currently in place as well as 0.5 size smaller available (e.g., if the patient has a #6.0 Shilley, then have a 6.0 and a 5.5 tube).
4. Lubricate the replacement tube(s) and check the cuff.
5. Remove the tracheostomy tube from mechanical ventilation devices and use a bag-valve apparatus to pre-oxygenate the patient as much as possible.
6. Once all equipment is in place, remove devices securing the tracheostomy tube, including sutures and/or supporting bandages.
7. If applicable, deflate the cuff on the tube.
8. Remove the tracheostomy tube.
9. Insert the replacement tube. Confirm placement via standard measures except for esophageal detection (which is ineffective for surgical airways).
10. If there is any difficulty placing the tube, re-attempt procedure with the smaller tube.
11. If difficulty is still encountered, use standard airway procedures such as oral bag-valve mask or endotracheal intubation (as per protocol). **More difficulty with tube changing can be anticipated for tracheostomy sites that are immature – i.e., less than two weeks old.**
- **Great caution should be exercised in attempts to change immature tracheotomy sites.**
12. Document procedure, confirmation, patient response, and any complications in the PCR.
13. If transporting patient, bring spare tube from home to hospital



Airway Ventilator Operation

Clinical Indications:

- Transport of an intubated patient

Procedure:

A. Initial ventilator therapy

1. Confirm the placement of tube as per airway protocol.
2. Ensure adequate oxygen delivery to the ventilator device.
3. Preoxygenate the patient as much as possible with bag-valve mask.
4. Remove BVM and attach tube to ventilator device.
5. Per instructions of device, set initial values. For example, set an inspiratory / expiratory ratio of 1:4 with a rate of 12 to 20, tidal volume 6-8 mL/kg.
6. Assess breath sounds. Allow for adequate expiratory time. Adjust ventilator setting as clinically indicated.
7. If any worsening of patient condition, decrease in oxygen saturation, or any question regarding the function of the ventilator, remove the ventilator and resume bag-valve mask ventilations.
8. Document time, SPO₂ / ETCO₂ trends, complications, and patient response on the patient care report (PCR)

B. Continued ventilation therapy

Principles of Therapy:

1. The following guidelines are to decrease work of breathing improve patient-ventilator synchrony, enhance patient comfort, maintain adequate blood gases, and prevent alveolar distension. Contact medical control for complex situations.
2. The patient and ventilator function as a dynamic system. No one set of ventilator parameters is ideal for all patient situations. Each patient has unique neural respiratory drives.
3. **“The brain’s desire to regulate respirations does not stop.”** Dysynchrony occurs when the ventilator settings do not match the patient’s needs well. Depending on the clinical situation, one goal of therapy make take precedence over others.
 - a. Dynamic hyperventilation
 - b. Compliance
 - c. Resistance.

Terms:

Assist Control – The ventilator delivers to a set tidal volume, or pressure, and rate regardless of whether or not the patient is spontaneously breathing. Best used with apneic patients (i.e. cardiac or respiratory arrest).



Airway Ventilator Operation (continued)

SIMV – Synchronized Intermittent Mechanical Ventilation. Ventilators with this capability are able to sense the negative pressure caused by a spontaneously breathing patient's inspiration which then triggers ventilation delivery to either a set volume or pressure. The patient's exhalation is also sensed triggering the ventilator to stop inspiration. In addition, a minimum rate can also be set (similar to a cardiac pacemaker on a ventricular demand setting) so that if the patient has a period of apnea, the ventilator will deliver a breath. This setting is quite often used in patients who are being weaned from, or on long-term, mechanical ventilation.

I:E - Ratio of inspiration time to expiration time. Often 1:2 or 1:3, but depending on the patient's needs, it may be more (1:5, 1:6, etc...).

FiO₂ – Fraction of Inspired Oxygen. Percent of oxygen in the ventilation. May be expressed as a decimal or percentage. For instance, 1.0 = 100%, 0.5 = 50%, etc...
Room air is 0.21 or 21%.

PEEP – Positive End Expiratory Pressure. The amount of pressure that a patient needs to exhale against. This helps prevent atelectasis by providing a pressure in the airways to 'stent' them open against the increased thoracic pressure during exhalation.

Commonly 5cmH₂O, although some patient's may need as much as

PIP – Peak Inspiratory Pressure. The maximum allowable pressure used during the inspiratory phase. Can be adjusted to the patient's condition. However some ventilators may have a hard limit (around 35cmH₂O) that cannot be exceeded.

Ve – Minute ventilation.

Vt – Tidal volume.

Mechanical Ventilation

INDICATIONS:

1. Ventilation of patient with an indwelling tracheal or supraglottic airway
2. Special Considerations
 - a. All patients with an artificial airway in place must be accompanied with an appropriate sized Bag Valve and mask and a 10cc syringe during transport
 - b. **Continuous monitoring of waveform capnography is required.**
 - i. The morphology of the waveform should be documented in the PCR
 - c. Lung protective ventilator strategies should be used on all patients. Use the minimum necessary tidal volume &/or pressure to obtain the desired result.
 - d. Obstructive ventilator strategies (permissive hypercapnea and prolonged expiratory time) should be used on all patients with concern for, or presence of, autoPEEP. These patients may also have a substantially elevated serum bicarbonate level.
 - e. SIMV in the transport of acutely ill patients is rarely indicated
 - i. If used, assure adequate pressure support to reduce increased work of breathing for patient triggered breaths.

CONTRAINDICATIONS:

1. None



Airway Ventilator Operation (continued)

PROCEDURE:

1. Trigger

- a. Volume Control Ventilation is generally the standard breath type unless:
 - i. Ventilation is suboptimal due to high PIP alarms
 - ii. Poor oxygenation exists, despite appropriate alveolar recruitment with PEEP to 20
 - iii. Flow requirements cannot be met with current compliance and inspiratory times.
 - iv. The patient is found ventilating well in PRVC or PCV and this modality can be safely continued during transport
- b. Pressure Regulated Volume Control
 - i. Breaths are delivered in a decelerating inspiratory flow pattern to a target pressure, calculated from the previous breath, maximizing mean airway pressures when used in concert with PEEP
 - ii. The target pressure is adjusted as patient's pulmonary compliance changes, based on the desired volume
 - iii. The maximum allowed target pressure should be at least 5 cmH₂O less than the set High Airway Pressure Alarm setting
 - iv. Caution should be used in spontaneously breathing patients as variability in tidal volumes can be extreme.
 - v. Caution should be used in obstructive lung disease patients as rapidly changing compliance can preclude adequate ventilation.

2. Lung Protection

- a. **NOTE: Lung size is a function of the height, not weight.)**
- b. V_t (Tidal Volume) should be 4-6mL/kg Ideal Body Weight (IBW).
 - i. Ideal Body Weight calculation is based on height measured in inches)
 1. FEMALE: $45.5 + 2.3 \times (\text{Height} - 60) = \text{mL of Vt}$
 2. MALE: $50 + 2.3 \times (\text{Height} - 60) = \text{mL of Vt}$
 - ii. Reduce V_t until pPLAT (plateau pressure) < 30cmH₂O
 - iii. Tidal volumes as low as 4mL/kg can be used if necessary
 1. CAUTION
 - a. Consider increasing rate to maintain V_e (minute ventilation).
 - b. Closely monitor I:E (Inspiratory Expiratory Ratio) and avoid inverse ratio ventilation.



Airway Ventilator Operation (continued)

3. Oxygenation

- a. Generally, 100% FiO₂ (Fraction of inspired Oxygen) should be utilized until SpO₂ is identified or obtained and is greater than 90%. Once at 90%, begin titrating FiO₂ to keep SpO₂ 93% to 99%. For inter-facility patients, FiO₂ should be the same as, or as close to, the transferring facility's ventilator.
 - i. While strategies exist that address hypoxia with sequential increases in PEEP and FiO₂, hyperoxia and free oxygen radicals have not been shown to be of concern in the acute resuscitative phase of an injury or illness.
- b. PEEP should be at least 5 cmH₂O on all patients. Some patients may require more. For pre-hospital patients, contact with the Base Station Physician is recommended. For inter-facility patients, PEEP should be the same as the facility's ventilator.
- c. PEEP should be increased to 20 cmH₂O to promote alveolar recruitment, prior to reflexively moving to pressure control ventilation
- d. PEEP may also be increased to reduce FiO₂ requirements in the long term setting

4. Ventilation

a. Ventilatory RATE

- i. Used to control minute ventilation to accommodate patient needs as they relate to pCO₂ and respiratory acidosis
- ii.
$$\frac{\text{Current Respiratory rate} \times \text{pCO}_2}{\text{Desired pCO}_2} = \text{New Respiratory Rate}$$

pCO₂ is typically 2-5 mm Hg higher than EtCO₂

Flow and I:E ratio

- b. Inspiratory time (i-Time)
- c. Reducing the i-Time increases flow (V_{ALC})
- d. Reducing the i-Time will increase the Peak Inspiratory Pressure
- e. Be cognizant of I:E ratio and inadvertent inverse ratio ventilation (i.e. 2:1).

For post-intubation HYPOXIA, consider **DOPES**

Displacement of endotracheal tube (ETT)

Obstructions of the ETT

Patient – **P**neumothorax, **P**ulmonary edema, **P**ulmonary embolism, collapse or bronchospasm

Equipment – ventilator malfunction

Stacked breaths – lack of expiratory time

For ETT suctioning: French size suction catheter = ETT size x 1.5

Simple way to determine proper ETT cuff pressure in order to prevent tracheal &/or anterior esophageal necrosis from overinflated cuffs:

1. Attach 10mL syringe to cuff pilot tube port.
2. Depress syringe plunger to inflate cuff w/ 10mL air.
3. WAIT for syringe plunger to retract back into syringe body. This indicates the equalization of pressures between the air within the cuff, atmospheric pressure & the pressure of the tracheal soft tissues on the cuff.
4. 10mL - Amount of equalized back into the syringe = Amount of air remaining in the cuff. Document.



Airway Ventilator Operation (continued)

FEMALE: Tidal Volume (mL) per Ideal Body Weight						
Height (inches)	IBW (kg)	4mL/kg	5mL/kg	6mL/kg	7mL/kg	8mL/kg
4' 0" (48")	17.9	72	90	107	125	143
4' 1" (49")	20.2	81	101	121	141	162
4' 2" (50")	22.5	90	113	135	158	180
4' 3" (51")	24.8	99	124	149	174	198
4' 4" (52")	27.1	107.8	136	163	190	217
4' 5" (53")	29.4	118	147	176	203	235
4' 6" (54")	31.7	127	159	190	222	254
4' 7" (55")	34	136	170	204	238	272
4' 8" (56")	36.3	145	182	218	254	290
4' 9" (57")	38.6	154	193	232	270	309
4' 10" (58")	40.9	164	205	245	286	327
4' 11" (59")	43.2	173	216	259	302	346
5' 0" (60")	45.5	182	228	273	319	364
5' 1" (61")	47.8	191	239	287	335	382
5' 2" (62")	50.1	200	251	301	351	401
5' 3" (63")	52.4	210	262	314	367	419
5' 4" (64")	54.7	219	274	328	383	438
5' 5" (65)	57	228	285	342	399	456
5' 6" (66")	59.3	237	297	356	415	474
5' 7" (67")	61.6	246	308	370	431	493
5' 8" (68")	63.9	256	320	383	447	511
5' 9" (69")	66.2	265	331	397	463	530
5' 10" (70")	68.5	274	343	411	480	548
5' 11" (71")	70.8	283	354	425	496	566
6' 0" (72")	73.1	292	366	439	512	585
6' 1" (73")	75.4	302	377	452	528	603
6' 2" (74")	77.7	311	389	466	544	622
6' 3" (75")	80	320	400	480	560	640
6' 4" (76")	82.3	329	412	494	576	658
6' 5" (77")	84.6	338	423	508	592	677
6' 6" (78")	86.9	348	435	521	608	695
6' 7" (79")	89.2	357	446.9	535	624	714
6' 8" (80")	91.5	366	458	549	641	732
6' 9" (81")	93.8	375	469	563	657	750
6' 10" (82")	96.1	384	481	577	673	769
6' 11" (83")	98.4	394	492	590	689	787
7' 0" (84")	100.7	403	504	604	705	806



Airway Ventilator Operation (continued)

MALE: Tidal Volume (mL) per Ideal Body Weight						
Height (inches)	IBW (kg)	4mL/kg	5mL/kg	6mL/kg	7mL/kg	8mL/kg
4' 0" (48")	22.4	90	112	134	157	179
4' 1" (49")	24.7	99	124	148	173	198
4' 2" (50")	27	108	135	162	189	216
4' 3" (51")	29.3	117	147	176	205	234
4' 4" (52")	31.6	126	158	190	221	253
4' 5" (53")	33.9	136	170	203	237	271
4' 6" (54")	36.2	145	181	217	253	290
4' 7" (55")	38.5	154	193	231	270	308
4' 8" (56")	40.8	163	204	245	286	326
4' 9" (57")	43.1	172	216	259	302	345
4' 10" (58")	45.4	182	227	272	318	363
4' 11" (59")	47.7	191	239	286	334	382
5' 0" (60")	50	200	250	300	350	400
5' 1" (61")	52.3	209	262	314	366	418
5' 2" (62")	54.6	218	273	328	382	437
5' 3" (63")	56.9	228	285	341	398	455
5' 4" (64")	59.2	237	296	355	414	474
5' 5" (65)	61.5	246	308	369	431	492
5' 6" (66")	53.8	255	319	383	447	510
5' 7" (67")	66.1	264	331	397	463	529
5' 8" (68")	68.4	274	342	410	479	547
5' 9" (69")	70.7	283	354	424	495	566
5' 10" (70")	73	292	365	438	511	584
5' 11" (71")	75.3	301	377	452	527	602
6' 0" (72")	77.6	310	388	466	543	621
6' 1" (73")	79.9	320	400	479	559	639
6' 2" (74")	82.2	329	411	493	575	658
6' 3" (75")	84.5	338	423	507	592	676
6' 4" (76")	86.8	347	431	521	608	694
6' 5" (77")	89.1	356	446	535	624	713
6' 6" (78")	91.4	366	457	548	640	731
6' 7" (79")	93.7	375	469	562	656	750
6' 8" (80")	96	384	480	576	672	768
6' 9" (81")	98.3	393	492	590	688	786
6' 10" (82")	100.6	402	503	604	704	805
6' 11" (83")	102.9	412	515	617	720	823
7' 0" (84")	105.2	421	523	631	736	842



Blood Product Administration

POLICY: This is a physician order procedure. **For inter-facility transfer only.** Only paramedics who have successfully completed MPD approved training will be monitoring the administration of blood products.

Clinical Indications:

- To replace blood loss while maintaining adequate circulating volume and oxygen during transport.
- To replace clotting factors or other life saving blood products.

Complications:

- Transfusion reactions may manifest as anaphylaxis with shortness of breath, hypotension with BP<90, tachycardia, angioedema, altered mental status, rash or fever. Severe reactions are usually manifested during the initial 50cc or less of infusion.
- Too rapid an infusion producing a volume overloaded state.

Equipment Use: Infusion pumps may be helpful but not required unless delivery is through a central venous catheter or pediatrics. **Blood admin. sets will be provided by the hospital.**

Procedure:

1. Initial blood administrations will be instituted at the transferring hospital. All additional units must have the transferring hospital nursing staff cross check for correct blood before accepting. (The paramedic is allowed to begin administering a new bag that has been cross checked and verified by the transferring nursing staff.) Document RN in PCR
2. Verify the physician order for blood product, blood type, rate of infusion and use of micro-aggregate or leukocyte removal filter.
3. ***Check for history of previous reaction to a blood product and for pre-transfusion symptoms that could be mistaken for a transfusion reaction. (i.e fever, hypotension, tachycardia, shortness of breath, altered mental status or rash) See #4 below.***
4. Assess baseline temperature, pulse, RR and BP prior to starting transfusion and at least every 15 minutes while blood is infusing and again when transfusion is completed (except albumin and plasma protein fraction). Vital signs must be documented.
5. Assess TPR and BP every 15 minutes x 4 during intravenous gamma globulin administration.
6. Replace blood tubing after every 2 units or after 4 hours of use. Discard tubing immediately following completion of transfusion.
7. Monitor peripheral site and infusion system at least every 15 minutes during blood product administration.
8. For any suspected reaction:
 - a. Stop transfusion, do not clear tubing
 - b. Recheck labels
 - c. Notify base station physician
 - d. See **Allergic Reaction protocol, Pg. 33**
 - d. Remove bag and tubing; start isotonic saline
 - e. Monitor and treat symptoms of anaphylaxis
 - f. Collect a urine specimen for receiving hospital. Keep containers available.
 - g. Save blood bag - deliver to receiving hospital along with urine specimen for further testing



Cardiac

Automatic Implantable Cardiac Defibrillator (AICD) Deactivation

Clinical Implications:

- For verified frequent and recurrent inappropriate AICD discharges
- End of Life Care
- During resuscitation
- With External Transcutaneous Pacing
- During Central Line Placement

Procedure:

1. Monitor to verify triggering rhythm and inappropriate defibrillator discharge
2. Record EKG rhythm before and after magnet application
3. Identify location of AICD
4. Place magnet directly over AICD and secure in place
5. Treat underlying rhythm

Considerations:

- Identification of AICD type, date of implantation should be found on wallet card with patient

Note:

MAGNET INHIBITION:

In most devices, placing a magnet over a permanent pacemaker temporarily “reprograms” the pacer into asynchronous mode. It does not turn off the pacemaker. Each pacemaker type has a unique asynchronous rate for beginning-of-life (BOL), elective replacement indicator (EFI), and end-of-life (EOL). Therefore, if the device company parameters are known, application of a magnet can determine if the pacer’s battery needs to be replaced. Further interrogation or manipulating of the device should be performed by an individual skilled in the technique. If patient’s condition deteriorates with magnet in place then remove magnet and reassess patient.

Although many different branded pacemaker/ICD magnets are available, in general any pacemaker/ICD magnet can be used to inhibit the device. When a magnet is applied to an ICD, it can temporarily turn off defibrillation therapy without affecting its pacemaker ability. Some devices can be programmed not to respond to a magnet.



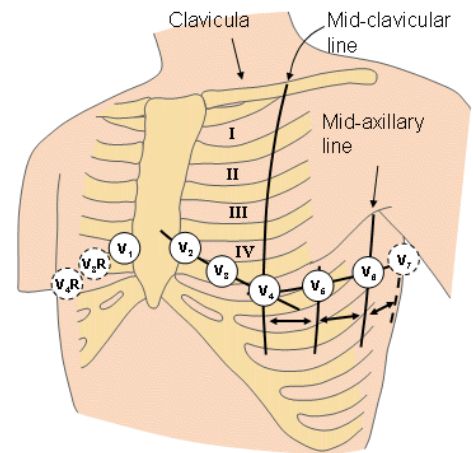
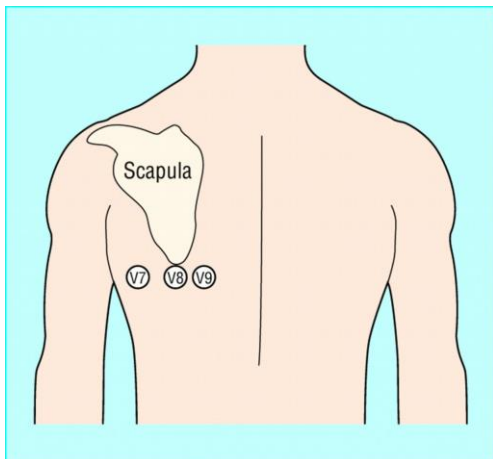
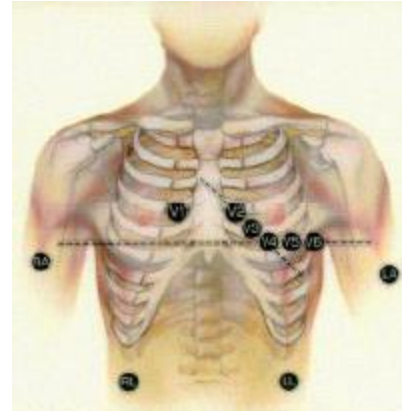
Cardiac 15 Lead ECG

Clinical Indications:

- Chest pain/upper abdominal pain age > 35
- Suspect cardiac etiology

Procedure:

1. Assess patient and monitor cardiac status.
2. Administer oxygen as patient condition warrants.
3. If patient presents with pain or complaint, suspect of a cardiac related emergency, then perform a ECG. (EMT can perform ECG - read only)
4. Prepare ECG monitor and connect patient cable with electrodes.
5. Enter the required patient information (patient name, etc.) into the ECG device.
6. Expose chest and prep as necessary. Modesty of the patient should be respected.
7. Apply chest leads and extremity leads using the following landmarks:
 - RA -Right arm
 - LA -Left arm
 - RL -Right leg
 - LL -Left leg
 - V1 -4th intercostal space at right sternal border
 - V2 -4th intercostal space at left sternal border
 - V3 -Directly between V2 and V4
 - V4 -5th intercostal space at midclavicular line
 - V5 -Level with V4 at left anterior axillary line
 - V6 -Level with V5 at left midaxillary line
 - V7 -same level as V6 at left posterior axillary line, use V4
 - V8 -level with V7 at inferior tip of scapula, use V5 lead
 - V9 -level with V7 and V8 at medial edge of scapula, use V6 lead
 - VR3 -right 5th intercostal space between right sternal border and midclavicular line
 - VR4 -right 5th intercostal space at midclavicular line



Cardiac 15 Lead ECG (continued)

8. Instruct patient to remain still.
9. Press the appropriate button to acquire the ECG.
10. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the ECG acquisition will be interrupted until the noise is removed.
11. Once acquired, transmit the ECG data by fax (where available) to the appropriate hospital.
12. Contact the receiving hospital to notify them that a ECG has been sent.
 - If V1 and V2 ST depression, transition to 15 lead ECG
 - If tall R wave in V1 or V2, or inferior ST elevation, perform right sided ECG
 - If lateral ST elevations, perform V7 and V8
13. Monitor the patient while continuing with the treatment protocol.
14. Download data as per guidelines and attach a copy of the ECG to the Patient Care Report.
- 15. Document the procedure, time, and results on/with the patient care report (PCR)**

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral
RV3 Right Ventricle	RV4 Right Ventricle	V7 Apical/Posterior	V8 Apical/Posterior
V9 Posterior			



Synchronized Cardioversion

Clinical Indications:

- **Unstable** patient with a tachydysrhythmia (rapid atrial fibrillation known to be less than 48 hours onset, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation)

Procedure:

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.
2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.
3. See **Sedation Protocol Pg. 38**.
4. Set energy selection to appropriate level per AHA guidelines.
 - a. Suggested energies for adult 50-100 J in SBT, 100-200 J in atrial fibrillation, Wide complex tachycardia begin at 100 J.
 - b. Pediatrics start with 0.5-1J/kg, if unsuccessful increase to 2J/kg
5. Set monitor/defibrillator to synchronized cardioversion mode. Verify synchronized markers.
6. Make certain all personnel are clear of patient.
7. Press and hold the button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to “synchronize”, so there may be a delay between activating the cardioversion and the actual delivery of energy.
8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient’s rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation. Follow the procedure for **Defibrillation-Manual on page 113**.
9. If the patient’s condition is unchanged, repeat steps 2 to 8 above, using appropriate energy level per AHA guidelines. Re-select SYNCHRONIZED mode for subsequent attempts
10. If the patient has not improved after two attempts of synchronized cardioversion, contact medical control.
11. Note procedure, response, and time in the patient care report (PCR).
12. Attach rhythm strips to PCR and document energy used in procedure.



Cardiac Defibrillation - Automated

Clinical Indications:

- Non-traumatic cardiac arrest in patients older than 1 year of age

Procedure:

1. Confirm the cardiac arrest. Instruct partners or First Responders to initiate CPR while the defibrillator is set up. If defibrillation is underway by First Responders, continue resuscitation as outlined.
2. Turn the defibrillator on and begin documentation.
3. Attach the cables to the appropriate pads and then apply the pads to the patient's chest in the proper position.
4. **Stop CPR and clear the patient** prior to rhythm analysis.
5. Analyze the patient's rhythm by pushing the "analyze" button. After analysis and shock is advised, perform 30 compressions (1 cycle) of CPR before SHOCK while AED is charging.
6. **Assertively state "CLEAR" and visualize that no one, including yourself, is in contact with the patient prior to defibrillation.**
7. Defibrillate if appropriate by depressing the "shock" button.
8. The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.
9. Immediately resume CPR for two minutes and then repeat steps 4 - 7 as indicated.
10. Minimize time off chest while analyzing rhythm or shocking patient.
11. If "no shock advised" appears, perform CPR for two minutes and then reanalyze.
12. If ROSC (return of spontaneous circulation), turn off AED unit.
13. Transport and continue treatment as indicated.



Cardiac Defibrillation - Manual

Clinical Indications:

- Non-traumatic cardiac arrest with ventricular fibrillation or pulseless ventricular tachycardia

Minimize time OFF the chest while performing CPR and completing this procedure.

Procedure:

1. Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.
2. After application of an appropriate conductive agent if needed, apply defibrillation paddles or hands free pads to the patient's chest in the proper position.
3. Set the appropriate energy level according to AHA guidelines and device type (mono vs biphasic).
4. Charge the defibrillator to the selected energy level.
 - a. for pediatrics start with 0.5-1J/kg, if unsuccessful increase to 2J/kg
5. Assure proper placement of the paddles or pads.
6. Make sure fast patch pads have good skin contact.
7. **Assertively state, "CLEAR" and visualize that no one, including yourself, is in contact with the patient.**
8. Deliver the shock by depressing the **shock button**.
9. Immediately resume High Performance CPR for 2 minutes.
10. Repeat the procedure as indicated by patient response and ECG rhythm.
11. Document the dysrhythmia and the response to defibrillation with ECG strips on/with the PCR.



Cardiac Transcutaneous Pacing

Clinical Indications:

- Patients with symptomatic bradycardia.
- If used in asystole, it must be used early.

Procedure:

1. Oxygen, ECG monitor, IV (if possible) should be in place prior to pacing. 12 or 15 lead ECG if clinically appropriate.
2. Confirm the presence of the dysrhythmia (include a copy of the ECG strip) and evaluate the patient's hemodynamic status.
3. Adjust the QRS amplitude so the machine can sense the intrinsic QRS activity.
4. Apply pacing pads to the patient's chest in either of the following positions - anterior-posterior (preferred) or anterior-lateral.
 - a. Pediatric patients requiring external transcutaneous pacing require the appropriate placement of pads for pediatric patients per the manufacturer's guidelines.
5. Attach the pacing pads to the therapy cable from the machine.
6. See **Sedation Protocol, Pg. 38**
7. Turn the pacer on.
8. Observe the ECG screen for a "sense" marker on each QRS complex. If a "sense" marker is not present, readjust ECG size or select another lead.
9. Set the desired pacing rate (60-80) .
10. Start at the lowest setting and increase the current slowly while observing the ECG screen for evidence of electrical pacing capture. Confirm mechanical capture.
11. Assess the patient's response to the pacing therapy.
12. Document the dysrhythmia and the response to external pacing with ECG strips.



Central Venous Device

Clinical Indications:

- Need for vascular access using a patient's current externally accessible central venous device.
- For multi-lumen lines, PICC lines, Hickman's and Groshong catheters.
- Subcutaneous ports

Procedures:

1. Apply gloves.
2. Gather all equipment required: antiseptic; 10 mL syringe of Normal Saline; IV solution and tubing; extra syringes
3. If thumb or slide clamps are present, assure they are in the locked position before beginning. Clamps need to be closed before removing any syringe of adapter from the hub. Always clean the hub with antiseptic while changing of syringes or adapters.
4. Clean hub with alcohol swab and attach a syringe of saline.
5. Flush with 5 ml of Normal Saline, aspirate for blood return and flush with the remaining 5 ml of Normal Saline.
6. Regardless of the type of PICC line access, if resistance is met, assume the lumen is obstructed and repeat procedure on the second lumen if available. Also repeat the procedure on the second lumen if aspirating for blood is unsuccessful.
7. If drawing labs and a clamp is present, close it, remove the syringe, clean the hub, attach a new syringe, open the clamp and aspirate 5ml of blood to discard. Attach a new syringe if needed, open the clamp and draw blood for labs.
8. Establish IV fluids at minimum TKO rate or desired infusion rate and secure the line.
9. Discontinue if complication occurs.

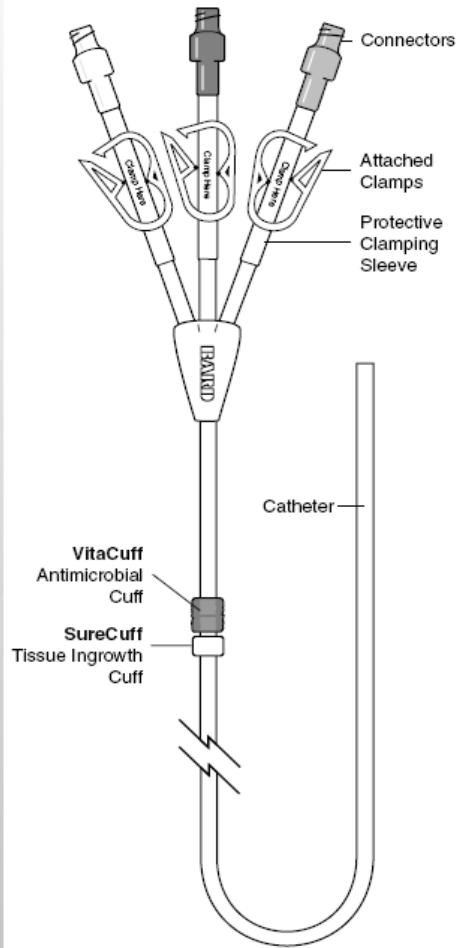
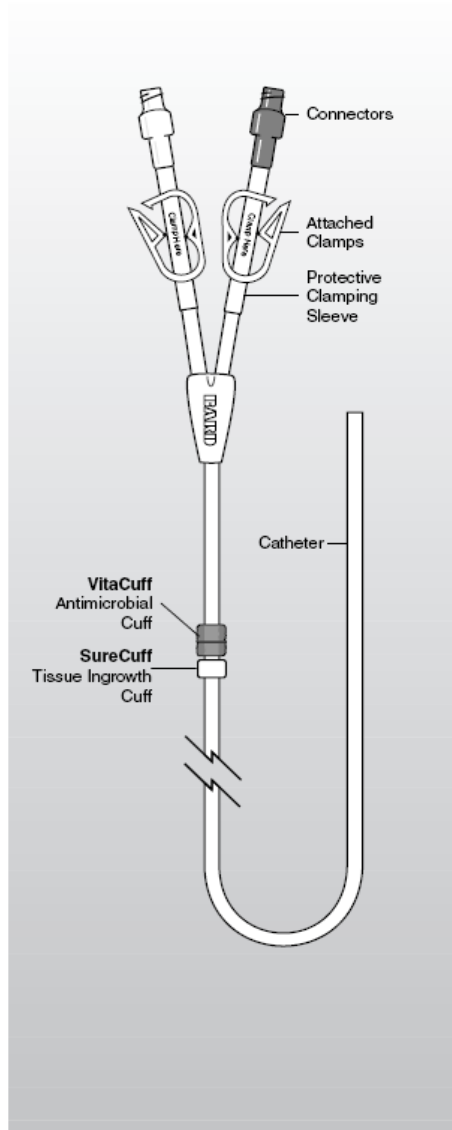
Accessing a Subcutaneous Implanted Port

1. Don mask and sterile gloves.
2. Palpate port to locate septum.
3. Stabilize device with thumb and index finger.
4. Cleanse area around port with 3 separate antiseptic swabs/pads.
5. While stabilizing port, insert Huber needle at 90 degree angle through skin into the septum. Apply pressure until needle comes into contact with metal backing of device.
6. Aspirate for blood to confirm placement. If no blood return, attempt to irrigate with saline and aspirate blood again.
7. Add new syringe of saline and flush with saline.
8. Assess for swelling around device. If swelling occurs, STOP INJECTION.
9. Tape down Huber needle "wings".
10. Apply transparent dressing.



Central Venous Device (continued)

Hickman Catheter



Chest Decompression

Clinical Indications:

- Tension pneumothorax

Procedure:

1. Confirm presence of a tension pneumothorax or identify strong clinical evidence in a rapidly deteriorating patient in the setting of major trauma. Consider in the setting of refractory PEA.
2. Locate the insertion site at the second intercostal space at the midclavicular line on the affected side of the chest. May consider fifth intercostal space in the midaxillary line.
3. Prep the insertion site.
4. Insert the appropriate length, 10/ 12/ 14/ 16 gauge angiocath (1¼ inch, 18 gauge angiocath in patients less than 8 years) with a 10cc syringe attached, by directing the needle just over the top of the third rib (2nd intercostal space) or (fifth intercostal space in the midaxillary line) to avoid intercostal nerves and vessels which are located on the inferior rib borders.
5. Advance the catheter 1-2 inches (¾ - 1 inch in patients less than 8 years) through the chest wall. Pull back on the plunger of the syringe as the needle is advanced. Tension should be felt until the needle enters the pleural space. A “pop” or “give” may also be felt. Do not advance the needle any further.
6. Withdraw the needle and advance the catheter until flush with the skin. Listen for a gush or “hiss” of air which confirms placement and diagnosis. Caution: this is frequently missed due to ambient noise.
7. Dispose of the needle properly and **never reinsert into the catheter**.
8. Secure the catheter and rapidly transport the patient providing appropriate airway assistance.



Childbirth / Fundal Massage

Clinical Indications for Childbirth:

- Imminent delivery with crowning

Procedure for Childbirth:

1. Delivery should be controlled so as to allow a slow controlled delivery of the infant. This will prevent injury to the mother and infant.
2. Support the infant's head as needed.
3. Check for the umbilical cord surrounding the neck. If it is present, slip it over the head. If unable to free the cord from the neck, double clamp the cord and cut between the clamps.
4. Suction the airway with a bulb syringe. Mouth then nose.
5. Grasping the head with hands over the ears, gently aim the baby down to allow delivery of the anterior shoulder.
6. Gently aim the baby up to allow delivery of the posterior shoulder.
7. Slowly deliver the remainder of the infant.
8. Clamp the cord 2 inches from the abdomen with 2 clamps and cut the cord between the clamps.
9. Record **APGAR** scores at 1 and 5 minutes. **Pg. 78**
10. Child should be placed skin to skin with mother as soon as possible.
11. Follow the **Newborn Resuscitation/Post Delivery Care Protocol** for further treatment. **Pg. 65**
12. The placenta will deliver spontaneously, usually within 5 minutes of the infant. Do not force the placenta to deliver.
13. Continue rapid transport to the hospital.

Clinical Indications for Fundal Massage:

- Post partum hemorrhage AFTER placental delivery

Procedure for Fundal Massage:

1. Assure complete delivery of placenta.
2. Place absorbent material underneath pelvis of patient to facilitate the estimation of blood loss.
3. Place the ulnar aspect of your non dominant hand perpendicular to the abdomen, parallel and just superior to the symphysis pubis.
4. Exert moderate pressure up and in toward the spine.
5. With your dominant hand find the uterine fundus and begin a "kneading" motion using moderate pressure.
6. This procedure will be uncomfortable to the patient but should not be painful.
7. Uterine massage should result in uterine contracture and the feeling of a firm "grapefruit" sized mass.
8. Continue procedure until bleeding subsides.
9. If hemorrhage continues, perform bimanual compression.
 - a. Insert a gloved hand into the vagina with fist against or behind the cervix
 - b. The second hand on the abdomen over the uterine fundus
 - c. Compress the two hands together and hold until bleeding stops
10. Document patient condition, procedure and response on PCR.



High Performance CPR

MANEUVER	Adult HCP: Adolescent and older	Child HCP: 1 year to adolescent	Infant Under 1 year old
RECOGNITION	Unresponsive (for all ages)		
	No breathing or no normal breathing (ie, only gasping)	No breathing or only gasping	
	No pulse palpated within 10 seconds for all ages (HCP only)		
ACTIVATE: Emergency Response Number (lone rescuer)	Activate when victim found unresponsive HCP: if asphyxial arrest likely, call after 5 cycles (2 minutes) of CPR Activate after performing 5 cycles of CPR for sudden witnessed collapse, activate after verifying that victim is unresponsive		
CPR Sequence	C-A-B		
Compression Rate	At least 100-120/min		
Compression Depth (Use FEEDBACK DEVICES)	At least 2 inches (5cm)	At least 1/3 AP diameter About 2 inches (5cm)	At least 1/3 AP diameter About 1 ½ inches (5cm)
Chest Wall Recoil (Use FEEDBACK DEVICES)	Allow complete recoil between compressions HCPs rotate compressors every 2 minutes		
Compression Interruptions	Minimize interruptions in chest compressions Attempt to limit interruptions to <10 seconds		
Initiate Mechanical CPR Device	Apply Mechanical CPR device, See Pg. 120		
Airway	Head tilt-chin lift (Health Care Provider suspected trauma: jaw thrust), Passive Oxygenation See Pg. 88		
Compression-to-ventilation ratio (until advanced airway placed)	30:2 1 or 2 rescuers		30:2 Single rescuer 15:2 2 HCP rescuers
Ventilations: when rescuer untrained or trained and not proficient	Compressions only		
Ventilations with advanced airway (HCP)	1 breath every 6-8 seconds (8-10 breaths/min) Asynchronous with chest compressions About 1 second per breath, Visible chest rise		
Foreign-body airway obstruction	Responsive: Abdominal thrusts Unresponsive: CPR with airway check		Responsive: Back slaps and chest thrusts Unresponsive: CPR with airway check
Defibrillation	Attach and use AED as soon as available. Minimize interruptions in chest compressions before and after shock; resume CPR beginning with compressions immediately after each shock.		



Mechanical CPR Device

Clinical Indications:

- Cardiopulmonary arrest with limited personnel or need for prolonged High Performance CPR or need for uninterrupted performance CPR.
- Adult or child, the patient must fit in device and come within 15 mm of the device.

Material:

1. Automated CPR device
2. AED or monitor/defibrillator (ALS)

Procedure:

1. Confirm cardiopulmonary arrest.
2. Contact dispatch to declare "CARDIAC ARREST".
3. Begin High Performance CPR
4. Apply automated CPR device and activate the device per manufacturer's specifications.
5. Select "Continuous" setting for device
6. Apply AED/defibrillator pads.
7. Elevate head of gurney to 30 degrees after 2 min of CPR
8. Assess the adequacy of CPR by palpating peripheral pulses.

Continuously assess the location and application of the device on the patient. Readjust as necessary



Discontinuation of CPR, Do not attempt Resuscitation Determination of Field Death

DO NOT ATTEMPT RESUSCITATION: Obvious death

- Decomposition of body tissue
- Total decapitation
- Total incineration
- Total separation or destruction of the heart or brain
- Fetus with a foot length of 33mm or less, less than 24 weeks gestation
- Traumatic Arrest (Non-breathing and pulseless)
- Rigor Mortis
- Lividity
- End-stage/terminal condition, at verbal request of family

POLST form or DNR papers are dated and signed by the patient with appropriate witnessed signatures and there is no question they belong to the patient. The patient may be of any age.

DISCONTINUATION WITHOUT MEDICAL CONTROL: (must meet 3 requirements)

- Non-breathing
- Pulselessness
- Asystole in two leads **OR** No Shock Advised on AED (EMT's can transmit Rhythm strip to hospital for convenience)

Note: Exception – suspected hypothermia requires full resuscitation efforts

DISCONTINUATION OF EFFORTS: (any of these apply)

1. Advanced airway and drug therapy appropriate to the presenting rhythm, according to AHA guidelines, have been initiated and the patient remains apneic, pulseless, and in asystole or PEA. EtCO₂ less than 20 and not rising, at least 15 minutes of resuscitation efforts, document in PCR
2. Compelling reasons to withhold CPR/Resuscitation efforts. Such as but not limited to
 - End stage of terminal condition
 - Living will
 - Verbal request by family

Note: Prehospital care providers desiring support in the field may contact the Medical Control at any time for Determination of Death

3. DNR or POLST form has been presented after CPR was initiated.

Once death has been determined and resuscitation efforts discontinued, all EMS therapeutic modalities initiated during the resuscitation must be left in place until it has been determined that the patient will not be a Coroners' case. This includes such equipment as endotracheal tubes, IV catheters, monitor electrodes and personal items including clothes, jewelry etc. If the coroner releases the body while the prehospital care provider is still on scene, remove all medical equipment used during the resuscitation.

Time of death recorded on PCR.



Field Ultrasound

Clinical Indications:

- When a patient presents with either obvious or possible high-impact, high mechanism torso or abdominal trauma
- To confirm the presence or absence of wall motion in the cardiac arrest patient

Contraindications:

- Procedure would delay care and disposition of the patient.
- Provider is not fully trained and endorsed.
- Patients exhibiting severe abdominal pain with radiation to the back, flank, and/or groin area

Procedure:

Many high-impact, high-mechanism trauma patients do not exhibit signs and/or symptoms of internal bleeding in the first hour of the event. Utilizing prehospital ultrasound technology allows an additional non-invasive exam to increase survival and decrease morbidity and mortality from internal hemorrhage. When ultrasound is available, a FAST exam will be completed in the following order with at least a six-second recording of each exam. In addition, patients who have the possibility of abdominal aortic aneurysm can benefit from the prehospital ultrasound exam. Anytime the Cessation of Resuscitation Efforts protocol is being utilized for PEA, and prehospital ultrasound is available, it will be used to further confirm the absence of cardiac activity.

- a. For patients presenting with torso or abdominal pain or who present with high impact, high-mechanism trauma, a prehospital FAST exam should be considered.
 - i. (1) Morison's perihepatic view (RUQ)
 - ii. (2) Pelvic view
 - iii. (3) Perisplenic view (LUQ)
 - iv. (4) Cardiac view
- b. For patients with suspected pneumothorax or pulmonary edema.
- c. For patients who have a high clinical suspicion for abdominal aortic aneurysm, an abdominal ultrasound should be considered.
- d. Before termination of resuscitation, a cardiac ultrasound should be considered, when available.

The trained provider will complete the appropriate prehospital ultrasound exam recording for at least six seconds

AT NO TIME SHOULD A PREHOSPITAL U/S EXAM DELAY PATIENT TREATMENT OR TRANSPORT

Exam will be interpreted and transmitted to the consulting hospital for preparation of incoming patient when multi-system trauma is present, when possible

Continue patient care as appropriate for either medical and or traumatic emergency
Assure exam is transmitted to the receiving facility through closed, secure network with patient care report.

Provider must complete MPD specialized training



Firefighter rehabilitation procedure

Purpose:

To provide guidance on the implementation and use of a rehabilitation process as a requirement of the incident management system (IMS) at the scene of a fire, other emergency, or training exercise. It will ensure that personnel who might be suffering the effects of metabolic heat buildup, dehydration, physical exertion, and/or extreme weather receive evaluation and rehabilitation during emergency operations. SCOPE. All personnel attending or operating at the scene of a fire/emergency or training exercise.

Rules:

1. Rehabilitation shall commence when fire/emergency operations and/or training exercises pose a health and safety risk.
2. Rehabilitation shall be established for large-scale incidents, long-duration and/or physically demanding incidents, and extreme temperatures.
3. The incident commander shall establish rehabilitation according to the circumstances of the incident. The rehabilitation process shall include the following:
 - a. Rest
 - b. Hydration to replace lost body fluids
 - c. Cooling (passive and/or active)
 - d. Warming
 - e. Medical monitoring
 - f. Emergency medical care if required
 - g. Relief from extreme climatic conditions (heat, cold, wind, rain)
 - h. Calorie and electrolyte replacement
 - i. Accountability
 - j. Release

Responsibilities:

The incident commander shall be responsible for the following:

1. Include rehabilitation in incident/event size-up
2. Establish a rehabilitation group to reduce adverse physical effects on fire fighter while operating during fire/emergencies, training exercises, and extreme weather conditions
3. Designate and assign a supervisor to manage rehabilitation
4. Ensure sufficient resources are assigned to rehabilitation
5. Ensure EMS personnel are available for emergency medical care of fire fighters as required

The rehabilitation manager shall be responsible for the following:

1. Don the rehabilitation manager vest
2. Whenever possible, select a location for rehabilitation with the following site characteristics:
 - a. Large enough to accommodate the number of personnel expected (including EMS personnel for medical monitoring)
 - b. Have a separate area for members to remove personal protective equipment
 - c. Be accessible for an ambulance and EMS personnel should emergency medical care be required



Firefighter rehabilitation procedure (continued)

- d. Be removed from hazardous atmospheres including apparatus exhaust fumes, smoke, and other toxins
- e. Provide shade in summer and protection from inclement weather at other times
- f. Have access to a water supply (bottled or running) to provide for hydration and active cooling
- g. Be away from spectators and media
3. Ensure personnel in rehabilitation "dress down" by removing their bunker coats, helmets, hoods, and opening their bunker pants to promote cooling
4. Provide the required resources for rehabilitation including the following:
 - a. Potable drinking water for hydration
 - b. Sports drinks (to replace electrolytes and calories) for long duration incidents (working more than one hour)
 - c. Active cooling where required
 - d. Medical monitoring equipment (chairs to rest on, blood pressure cuffs, stethoscopes, check sheets, etc.)
 - e. Food where required and a means to wash or clean hands and face prior to eating
 - f. Blankets and warm, dry clothing for winter months
 - g. Washroom facilities where required
5. Time personnel in rehabilitation to ensure they receive at least 10 minutes to 20 minutes of rest
6. Ensure personnel rehydrate themselves
7. Ensure personnel are provided with a means to be actively cooled where required
8. Maintain accountability and remain within rehabilitation at all times
9. Document members entering or leaving rehabilitation
10. Inform the incident commander, accountability officer (resource status unit), and EMS personnel if a member requires transportation to and treatment at a medical facility
11. Serve as a liaison with EMS personnel

Company officers shall be responsible for the following:

1. Be familiar with the signs and symptoms of heat stress and cold stress
2. Monitor their company members for signs of heat stress and cold stress
3. Notify the IC when stressed members require relief, rotation, or reassignment according to conditions
4. Provide access to rehabilitation for company members as needed
5. Ensure that their company is properly checked in with the rehabilitation manager and accountability officer (resource unit), and that the company remains intact

Crew members shall be responsible for the following:

1. Be familiar with the signs and symptoms of heat and cold stress
2. Maintain awareness of themselves and company members for signs and symptoms of heat stress and cold stress
3. Promptly inform the company officer when members require rehabilitation and/or relief from assigned duties
4. Maintain unit integrity



Firefighter rehabilitation procedure (continued)

EMS personnel shall be responsible for the following:

1. Report to the incident commander and obtain the rehabilitation requirements
2. Coordinate with rehabilitation manager
3. Identify the EMS personnel requirements
4. Check vital signs, monitor for heat stress and signs of medical issues
5. Document medical monitoring
6. Provide emergency medical care and transportation to medical facilities as required
7. Inform the incident commander and the rehabilitation manager when personnel require transportation to and treatment at a medical facility
8. Document emergency medical care provided

Procedures:

1. All personnel shall maintain hydration on an ongoing basis (preincident, incident, postincident).
2. Members shall be sent to rehabilitation as required.
3. All members shall be sent to rehabilitation following the use of two 30-minute or 45-minute SCBA cylinders or one 60-minute SCBA cylinder. Shorter times might be considered during extreme environmental conditions.
4. Passive cooling shall be employed to reduce fire fighter heat stress. This could include moving to a shaded or air-conditioned area, removal of PPE, ingestion of cool fluids, and rest.
5. Active cooling shall be employed to reduce fire fighter heat stress when passive cooling is ineffective or when a member is experiencing heat-related illness. This could include forearm immersion, misting fans, and cold towels.
6. In hot, humid conditions, a minimum of 10 minutes (20 minutes is preferable) of active cooling shall be applied following the use of the second and each subsequent SCBA cylinder.
7. Personnel in rehabilitation shall rest for at least 10 minutes to 20 minutes prior to being reassigned or released.
8. EMS personnel shall provide medical monitoring and emergency medical care as per medical protocol.
9. If a member is demonstrating abnormal vital signs, he or she shall be monitored frequently during rehabilitation.
10. Personnel who are weak or fatigued with pale clammy skin, low blood pressure, nausea, headache, or dizziness shall be assessed by EMS personnel.
11. Personnel experiencing chest pain, shortness of breath, dizziness, or nausea shall be transported to a medical facility for treatment.
12. Personnel transported to a medical facility for treatment shall be accompanied and attended to by a department representative.
13. Members should drink water during rehabilitation. After the first hour, a sports drink containing electrolytes should be provided. Soda and caffeinated and carbonated beverages should be avoided.
14. Nutritional snacks or meals shall be provided as required during longer duration incidents.
15. No tobacco use shall be permitted in or near the rehabilitation area.



Firefighter rehabilitation procedure (continued)

REHAB GROUP — CHECK IN/.OUT SHEET

Incident Name:		Incident Location:	Date:
Name/Assignment		Times	
First	Time In	Disposition	
Last		Released from Rehab	
	Time Out	Referred to Medical	
Assignment		Demobilized	
		Vital signs taken on Entry Q	Vital signs taken on Exit Q
Name/Assignment		Times	
First	Time In	Disposition	
Last		Released from Rehab	
	Time Out	Referred to Medical	
Assignment		Demobilized	
		Vital signs taken on Entry Q	Vital signs taken on Exit
Name/Assignment		Times	
First	Time In	Disposition	
Last		Released from Rehab	
	Time Out	Referred to Medical	
Assignment		Demobilized	
		Vital signs taken on Entry Q	Vital signs taken on Exit Q
Name/Assignment		Times	
First	Time In	Disposition	
Last		Released from Rehab	
	Time Out	Referred to Medical	
Assignment		Demobilized	
		Vital signs taken on Entry	Vital signs taken on Exit
Name/Assignment		Times	
First	Time In	Disposition	
Last		Released from Rehab	
	Time Out	Referred to Medical	
Assignment		Demobilized	
		Vital signs taken on Entry Q	Vital signs taken on Exit Q
Name/Assignment		Times	
First	Time In	Disposition	
Last		Released from Rehab	
	Time Out	Referred to Medical	
Assignment		Demobilized	
		Vital signs taken on Entry Q	Vital signs taken on Exit Q



Glucometry

Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, etc.)
- Patients with Altered Mental Status
- Any patient where appropriate
- Reference range normal is 60 to 120 mg/dL correlated to patient's condition.

Procedure:

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis should be obtained according to device manufacturers recommendations.
3. Place correct amount of blood on reagent strip or site on glucometer per the manufacturer's instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading and treat the patient as indicated by the presenting symptoms, analysis, and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and document patient response on the PCR.
7. Follow manufacture recommendations for device calibration.



Glasgow Coma Score

Glasgow Coma Score		
Infants		Children/Adults
Eye Opening		
Spontaneous	4	Spontaneous
To speech/sound	3	To speech
To pain	2	To pain
No response	1	No response
Verbal Response		
Coos or babbles	5	Oriented
Irritable crying	4	Confused
Cries to pain	3	Inappropriate words
Moans to pain	2	Incomprehensible
None	1	None
Motor Response		
Spontaneous	6	Obeys commands
Withdraws touch	5	Localizes pain
Withdraws pain	4	Withdraws pain
Abnormal flexion	3	Abnormal flexion
Abnormal extension	2	Abnormal extension
No response	1	No response



Impedance Threshold Device

Clinical Indications:

- Cardiopulmonary arrest 12 years and older

Contraindications:

- Patients under 12 years old
- Traumatic cardiopulmonary arrest

Procedure:

1. Confirm absence of pulse and begin CPR immediately.
2. After an advance airway has been established, attach EtCO₂ detector and then impedance threshold device as per manufacturer's specifications.
3. Continue CPR with minimal interruptions and ventilate asynchronously.
4. If return of spontaneous circulation occurs, remove impedance threshold device and assist ventilations as indicated.



Injections-Subcutaneous, Intramuscular

Clinical Indications:

- When medication administration is necessary and the medication must be given via the SQ or IM route or as an alternative route in selected medications.

Procedure:

1. Receive and confirm medication order or perform according to standing orders.
2. Prepare equipment and medication, expelling air from the syringe.
3. Needle size Subcutaneous Injection
 - a. 25g 5/8 inch needle for average adult
 - b. 25-27g ½ inch needle for infant, child, elderly, or thin patient
 - c. The most common site for subcutaneous injection is the arm. Injection volume should not exceed 1 cc.
4. Needle size Intramuscular injection:
 - a. 20-25g 1-2 inch depending on patient size.
 - b. The possible injection sites for intramuscular injection include the arm, buttock and thigh.
5. Injection volume should not exceed 1 cc for the arm and not more than 2.5 cc in the thigh or buttock.
6. The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.
7. Explain the procedure to the patient and reconfirm patient allergies.
8. Expose the selected area and cleanse the injection site with topical antiseptic swab.
9. Insert the needle into the skin with a smooth, steady motion
- 10. SQ: 45 degree angle IM: 90 degree angle**
11. Aspirate for blood. If blood is aspirated do not inject medication. Discard and begin again.
12. Inject the medication.
13. Withdraw the needle quickly and dispose of properly without recapping.
14. Apply pressure to the site.
15. Monitor the patient for the desired therapeutic effects as well as any possible side effects.
16. Document the medication, dose, route, patient response and time on/with the patient care report (PCR).



Intranasal Medication Delivery

Clinical Indications:

- When medication administration is necessary and an alternative route is not available or impractical.

Materials:

1. Appropriate sized syringe and needle/needleless device to draw up medication.
2. Atomizer
3. Medication of appropriate concentration for nasal medication delivery

Maximum volume WITHOUT an atomizer is 1 mL

Procedure:

1. Aspirate the proper volume of medication required to treat the patient. An extra 0.1 mL of medication should be drawn up to account for the dead space within the atomizer at the end of the procedure.
2. Remove the syringe from the needle/needleless device
3. Attach the atomizer tip via Luer lock mechanism (twist into place).
4. Using your free hand to hold the crown of the head, place the tip of the atomizer snugly into the nostril aiming slightly upward and outward (toward the ear on the same side).
5. Briskly compress the syringe plunger to deliver half the medication into the nostril.
6. Move the device to the opposite nostril and administer the remaining medication as in step 5.

Notes:

Medications which are appropriate for intranasal use include:

- Diazepam (5mg/mL) 2-5mg
- Fentanyl (50mcg/mL) 25-50mcg
- Glucagon (solubilize two 1mg vials in 1mL sterile water) 2 mg
- Ketamine (100mg/mL) 50-100mg
- Lorazepam (2mg/mL) 0.5-4mg
- Midazolam (5mg/mL) 1-10mg
- Naloxone (1mg/mL) 0.4-2mg



Nasogastric Tube Insertion

Clinical Indications:

- Gastric decompression in intubated patients.
- Administration of activated charcoal in patients with altered mental status with a advanced airway.

Procedure:

1. Assemble all supplies. Assure functioning suction unit.
2. Estimate insertion length by superimposing the tube over the body from the nose, to the ear, to the stomach.
3. Mark the proper insertion distance with tape.
4. Flex the neck **if not contraindicated** to facilitate esophageal passage.
5. Liberally lubricate the distal end of the tube and pass through the patient's nostril along the floor of the nasal passage. Do not orient the tip upward into the turbinates. This increases the difficulty of the insertion and may cause bleeding.
6. In the setting of an unconscious, intubated patient or a patient with facial trauma, oral insertion of the tube may be considered or preferred.
7. Continue to advance the tube gently until the appropriate distance is reached.
8. Confirm placement by injecting 20cc of air and auscultate for the swish or bubbling of the air over the stomach. Additionally, aspirate gastric contents to confirm proper placement.
9. Secure the tube.
10. Decompress the stomach of air and food either by connecting the tube to suction or manually aspirating with the large catheter tip syringe.
11. Mechanical suction should not reach high setting.
12. Document the procedure, time, patient response, and result (success) on/with the patient care report (PCR).



Orthostatic Blood Pressure Measurement

Clinical Indications:

- Patient situations with suspected blood / fluid loss / dehydration who have the mobility to complete the procedure.
- Patients larger than the Length Based tape

Procedure:

1. Assess the need for orthostatic vital sign measurement.
2. Obtain patient's pulse and blood pressure while supine.
3. Have patient stand for two minutes.
4. Obtain patient's pulse and blood pressure while standing.
5. If pulse has increased by 30 BPM **or** systolic blood pressure decreased by 30 mmHg, the orthostatics are considered positive. If dizzy or symptomatic during procedure, consider the test positive.
6. If patient is unable to stand, orthostatics may be taken while the patient is sitting with feet dangling.
7. If positive orthostatic changes occur while sitting, **DO NOT** continue to the standing position.
8. Patients on prolonged beta-blocker therapy will not demonstrate orthostatic vital sign changes. Provider must complete assessment and utilize clinical judgment.
9. Document the time and vital signs for supine and standing positions on/with the patient care report (PCR).
10. Determine appropriate treatment based on protocol.



Pain Assessment and Documentation ADULT

Clinical Indications:

- Any patient with pain

Definitions:

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Procedure:

1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient's self report.
2. Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.
3. Pain should be assessed using the appropriate approved scale.
4. Two pain scales are available: the 0 - 10 and the Wong - Baker "faces" scale.
5. 0 – 10 Scale: the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient; simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain at all and 10 is the worst pain ever.

Visual Analog Scale

0 1 2 3 4 5 6 7 8 9 10
No Pain Worst pain

6. Wong – Baker “faces” scale: may be used with geriatrics or any patient with a language barrier. The faces correspond to numeric values from 0-10. This scale can be documented with the numeric value or the textual pain description.



From Wong D.L., Hockenberry-Eaton M., Wilson D., Winkelstein M.L., Schwartz P.: Wong's Essentials of Pediatric Nursing, ed. 6, St. Louis, 2001, p. 1301. Copyrighted by Mosby, Inc. Reprinted by permission.



Pelvic Fracture Stabilization

Clinical Indications:

- Physical exam indicates and mechanism of injury suggests a pelvic fracture

Procedure:

1. Physical exam shows instability of pelvis with compression.
2. Assess the abdomen and neurovascular status of the lower extremities.
3. Assess for blood at the perineum
4. Fold a sheet lengthwise into a swathe approximately 12 to 18 inches wide.
5. Pass this swathe under the patient's buttocks and clamp or tie circumferentially around the pelvis covering buttocks posteriorly. The swathe should be just below the iliac crests. Secure ends of sheet with clamps or zip ties.
6. Bind the feet together

OR

1. Physical exam shows instability of pelvis with compression.
2. Assess the abdomen and neurovascular status of the lower extremities.
3. Assess for blood at the perineum.
4. Utilize a commercial pelvic stabilization device following the manufacturer's specifications.
5. Bind the feet together



Pulse Oximetry

Clinical Indications:

- Patients with suspected hypoxemia.

Procedure:

1. Turn the machine on and allow for self-tests.
2. Apply probe to patient as recommended by the device manufacturer.
3. Allow machine to register saturation level.
4. Record time and initial saturation percent on room air if possible on/with the patient care report (PCR).
5. Verify pulse rate on machine with palpated pulse of the patient.
6. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients for a few minutes as oxygen saturation can vary.
7. Document percent of oxygen saturation every time vital signs are recorded and in response to therapy to correct hypoxemia.
8. In general, normal saturation is SpO₂ 94-98%. Below 94%, suspect a respiratory compromise.
9. For patients with low oximetry at baseline, treat the patient and not oximetry.
10. The pulse oximeter reading should never be used to withhold oxygen from a patient in respiratory distress or when it is the standard of care to apply oxygen.
11. Factors which may reduce the reliability of the pulse oximetry reading include:
 - (a) Poor peripheral circulation (blood volume, hypotension, hypothermia)
 - (b) Excessive pulse oximeter sensor motion
 - (c) Fingernail polish (may be removed with acetone pad)
 - (d) Carbon monoxide bound to hemoglobin
 - (e) Irregular heart rhythms (atrial fibrillation, SVT, etc.)
 - (f) Jaundice
 - (g) Excessive light entering the side of the probe causing "washout" of the signal



Restraints

Clinical Indications:

- Patients with actual or potential threat to self or others.
- Involuntary hold

Procedure:

1. Planning:
 - A. Request assistance from Law Enforcement.
 - B. EMS personnel are not to knowingly place themselves at risk during the process of restraining a patient.
 - C. Obtain necessary resources to manage scene and patient.
 - D. Assess patient for any condition that may contribute to violent behavior. Treatment for identified conditions is to be initiated according to protocol immediately after controlling the situation and patient behavior.
 - E. Consult Medical Control if questions or concerns.
 - F. Verbal de-escalation techniques are to be implemented and documented. If verbal de-escalation fails, providers may need to implement physical and or chemical restraint measures.
2. Application of restraints:
 - A. Obtaining and preparing appropriate restraints
 - Padded leather restraints
 - Soft restraints (i.e. posey, Velcro or seatbelt type)
 - Any method utilized must allow for quick release
 - B. Assessing the safety of the situation
 - Complete a visual check for potential weapons
 - If there is suspicion of weapon involvement request involvement of Law Enforcement prior to engaging in patient interaction.
 - Providers should remove any potential weapons from their person. (i.e., pens, flashlights, trauma shears etc.)
 - C. Assigning a contact for the out of control person
 - Minimize the number of people speaking to the out of control person.
 - Continue use of verbal de-escalation
 - D. Designating who will direct and cue team members in the application of restraints
 - Assign each limb and the head to specific team members
 - Give the signal to go hands-on (this may be a non-verbal signal)
 - Supervise the application of restraints
 - Give the verbal signal for hands-off (RELEASE)
 - No team member is to release their designated limb until directed
 - E. Conduct a preliminary debriefing
 - Assess team members and patient for any injuries
 - Re-assess restraints for appropriate application



Restraints (continued)

3. Reassessment / Chemical Adjuncts:
 - A. EMS personnel must assess the patient to determine the need for administration of an anxiolytic, or sedative to prevent continued forceful struggling against the restraint. Continued forceful struggling against the restraint can lead to hyperkalemia, rhabdomyolysis, or cardiac arrest. See **Psychological/Emotional/Excited Delirium Protocol Pg. 39**
 - B. Chemical adjuncts to physical restraints are to be administered in accordance with patient care protocols and / or on line medical direction.
 - C. Post restraint assessment must include hemodynamic, respiratory, and neurologic systems. Restrained extremities should be evaluated for pulse quality, capillary refill, color, nerve and motor function distal to restraints, a minimum of every fifteen minutes.
4. Documentation:
 - A. In addition to standard information, the Medical Incident Report must document the following:
 - i. Complete assessment of patient
 - ii. Objective description of patient behavior (competence) (Use BAR score)
 - iii. Use and effectiveness of verbal de-escalation techniques
 - iv. Reason for physical restraint
 - v. Explanation offered to the patient
 - vi. Type of restraint used and time applied
 - vii. Post restraint serial extremity evaluation
 - viii. Post evaluation of the patient's respiratory status
 - ix. Condition of the patient enroute and on transfer to Emergency Department Staff.
5. Approved restraint devices / patient positioning:
 - A. The following forms of restraint are NOT to be utilized by EMS personnel:
 - i. "Sandwiching" patients between backboards, scoop-stretchers, or mattresses, as a restraint
 - ii. Restraining a patient's hands and feet behind the patient (i.e. hog-tying)
 - iii. Methods or other material applied in a manner that could cause respiratory, vascular, or neurological compromise, including the use of "choke holds".
 - iv. Locking handcuffs
 - v. Hard plastic ties or any restraint device requiring a key to remove
 - B. Patients should not be transported in the prone position. EMS personnel must ensure that the patient's position does not compromise the patient's respiratory, circulatory, or neurological systems, and does not preclude any necessary medical intervention to protect the patient's airway should vomiting occur.
 - C. Occasionally it is necessary for Law Enforcement to apply restraint devices that are not approved for EMS use (e.g. handcuffs) in order to protect the safety of the patient and the public. As soon as the situation is controlled EMS personnel are to exchange these devices for those that are approved for EMS use. In the event that restraint exchange cannot safely occur, Law Enforcement must accompany patient during transport.



Simple Thoracostomy

Clinical Indications:

- Patients in traumatic cardiac arrest or peri-arrest state with ongoing positive pressure ventilation and clinical indications of pneumothorax.
- Patients presenting with a tension pneumothorax with hypoxia, hypotension, and unilaterally absent breath sounds.
- In the setting of blunt traumatic cardiac arrest, bilateral thoracostomies should be considered

Equipment:

- Sterile gloves
- Eye protection/face shield
- Chlorhexidine prep
- Scalpel
- Hemostats or other blunt instrument
- Skin marking pen

Procedure:

1. Utilize universal precautions, especially face and eye protection.
2. With arm abducted, find and mark the area over the fifth rib at the midaxillary line (within the triangle of safety).
3. Clean the area as best as possible with an antiseptic swabstick.
4. Make a 1-2" (3-5 cm) transverse incision through the skin over the 5th rib at the marked location just anterior to the mid axillary line.
5. With a large forceps, rapidly dissect over the rib and through the intercostal muscles.
6. Push through the pleura and open the forceps.
7. With the forceps open, retract from the chest.
8. Insert finger along the track into the pleural cavity and perform sweep.
9. Assess for release of air or blood.
10. Each wound should be circled with a permanent marker and labeled EMS-R or EMS-L to identify incisions made by EMS in the event of autopsy or criminal investigation.



Spinal Motion Restriction

Conduct a focused spinal exam:

- Can the patient focus on the exam or are they in severe distress from other injuries or emotional stressors?
- Assess distal CMS/bi-lateral grips/push-pull.
- Palpate the entire spine on the bony processes one at a time from C1 to L5. Patient should not have focal midline tenderness to palpation or obvious deformity.
- Ask the patient to rotate their head 45 degrees from side to side without assistance, which should be pain free.

Focused spinal assessment reveals:

- Unresponsive
- Inability/barrier to perform focused spinal exam
- Gross motor or sensory deficits from blunt trauma

Yes

Full Spinal Motion Restriction:

Application of a cervical collar and placement of patient on padded backboard or equivalent with head and body secured with straps and tape.

No

Focused spinal assessment reveals:

- Any abnormal findings from the focused spinal exam
- Blunt injury from significant mechanism (high energy events such as ejection, high fall, axial loading and abrupt deceleration crashes)
- Appears clinically intoxicated (drugs or alcohol, which the clinician determines is reducing pain sensorium)
- Altered level of consciousness, excluding unresponsive
- Injury detracts from or prevents reliable history and exam
- Gross motor or sensory deficits from penetrating injury (Patient should be positioned supine)
- Midline upper third thoracic/cervical spine pain or tenderness
- Spine deformity (Patient should be positioned supine)
- Limited cervical spine active range of motion

Yes

Focused Spinal Motion Restriction:

Application of a cervical collar and placement of patient in a position of comfort on gurney with normal seat belt straps applied.

No

If no to all the above, focused spinal motion restriction not necessary

Pearls:

- Consider modified restriction in any patient with arthritis, cancer, dialysis, kyphosis or other underlying spinal or bone disease or who may have increased risk of spinal compromise.
- Any patient may be motion restricted based on EMS provider discretion.



Splinting

Clinical Indications:

- Immobilization of an extremity, either due to suspected fracture, sprain, or injury.
- Immobilization of an extremity to secure medically necessary devices such as intravenous catheters.

Procedure:

1. For any reduction, see **Pain and Sedation Management Pg. 38**
2. Remove all clothing, jewelry or restricting items from the extremity.
3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.
4. Do not secure the splint directly over the injury or device.
5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.
6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these 3 parameters, remove the splint and reassess.
7. If a femur fracture is suspected and there is no evidence of pelvic and/or knee fracture or instability, place a traction splint as per manufacturer's specifications. The following procedure may be followed for placement of a femoral traction splint:
 - a. Place the ankle device over the ankle.
 - b. Place the proximal end of the traction splint on the posterior side of the affected extremity, being careful to avoid placing too much pressure on genitalia or open wounds. Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis.
 - c. Extend the distal end of the splint at least 6 inches beyond the foot.
 - d. Attach the ankle device to the traction crank.
 - e. Twist until moderate resistance is met.
 - f. Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.
8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).



Stroke BEFAST Assessment

Clinical Indications:

- Suspected Stroke Patient

Procedure:

1. If possible, prehospital care providers should establish the time of onset of stroke signs and symptoms.
2. Last known well

Stroke test

1. **Balance** – Sudden change in patient’s balance or equilibrium.
2. **Eyes** – Sudden loss of vision in one or both eyes.
3. **Facial droop** – Have patient show their teeth or smile.
 - a. Normal – Both sides of face move equally
 - b. Abnormal – One side of the face does not move as well as the other.
4. **Arm drift** – Have the patient close their eyes and hold both arms straight out with palms upward.
 - a. Normal – Both arms move the same direction or do not move at all (pronator grip may be helpful).
 - b. Abnormal – One arm does not move or one arm drifts down compared to the other.
5. **Speech** – Have the patient say “you can’t teach an old dog new tricks”.
 - a. Normal – The patient uses the correct words with no slurring
 - b. Abnormal – The patient slurs their words, uses inappropriate words or is unable to speak.
6. Any positive findings in steps 1-5 may indicate stroke and you should consider activating your Code Stroke per County Operating Procedure.
7. Report specific findings for example: left side facial drooping, slurred speech.
8. Perform LAMS score. A score of 4 or 5 suggests a large vessel occlusion (LVO) Activate your Code stroke per County Operating Procedure

Los Angeles Motor Scale (LAMS)²²

Face	0	Both sides move normally
	1	One side is weak or flaccid
Arm	0	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move
Grip	0	Both sides move normally
	1	One side is weak
	2	One side is flaccid/doesn't move
Total	0-5	



Taser Dart Removal

Clinical Indication:

- The darts should only be removed in the field if they do not involve the eye, genitalia, or potential for vascular involvement. Patients with retained darts in these areas should be transported to a hospital for removal by a physician.

Procedure:

1. Prior to removal, patient must be adequately restrained.
2. Body substance isolation procedures must be taken.
3. Ensure that wires are disconnected from the gun or the wires have been cut.
4. On the body part which the barbed dart (straight #8 fish hook) is imbedded, apply pressure to either side of the dart and pull it straight out.
5. Apply alcohol or iodine to the puncture area and dress wound.
6. Treat the dart as a “contaminated sharp”. The dart should be placed in a biohazard sharps container and turned over to law enforcement.
7. Patient must be thoroughly assessed to determine if other medical problems or injuries are present.
8. If the individual does not have any other presenting injuries/illness, they may be left in the custody/care of law enforcement.
9. If transported to the hospital, follow the Patient Care Procedure regarding restraints for aggressive or violent patients.
10. Detailed documentation is very important as it is likely to become evidence.



Temperature Measurement

Clinical Indications:

- Monitoring body temperature in a patient with suspected infection, hypothermia, hyperthermia, or to assist in evaluating resuscitation efforts.
- Continuous monitoring for hypothermia and hypothermic arrest.

Procedure:

1. If clinically appropriate, allow the patient to reach equilibrium with the surrounding environment. For example, the temperature of a child or infant that has been heavily bundled is often inaccurate, so “unbundle” the child for 3 to 5 minutes before obtaining temperature.
2. For adult patients that are conscious, cooperative, and in no respiratory distress, an oral temperature is preferred (steps 3 to 5 below). For infants or adults that do not meet the criteria above, a rectal temperature is preferred (steps 6 to 8 below).
3. To obtain an oral temperature, ensure the patient has no significant oral trauma and place the thermometer under the patient’s tongue with appropriate sterile covering.
4. Have the patient seal their mouth closed around thermometer.
5. If using an electric thermometer, leave the device in place until there is indication an accurate temperature has been recorded (per the “beep” or other indicator specific to the device). If using a traditional thermometer, leave it in place until there is no change in the reading for at least 30 seconds (usually 2 to 3 minutes). Proceed to step 9.
6. Prior to obtaining a rectal temperature, assess whether the patient has suffered any rectal trauma by history and/or brief examination as appropriate for patient’s complaint.
7. To obtain a rectal temperature, cover the thermometer with an appropriate cover, apply lubricant, and insert into rectum no more than 1 to 2 cm beyond the external anal sphincter.
8. Follow guidelines in step 5 above to obtain temperature.
9. Record time, temperature, method, and scale (C° or F°) in Patient Care Report (PCR).



Thrombolytic Screen

Clinical Indications:

- Rapid evaluation of a patient with suspected acute stroke, acute myocardial infarction, or acute pulmonary embolus who may benefit from thrombolysis. (e.g. BEFAST and LAMS)
- OR USE YOUR COUNTY OPERATING PROCEDURE IF AVAILABLE

Procedure:

1. Follow the appropriate protocol for patient's complaint to assess need for thrombolysis (e.g., FAST assesment for suspected stroke, 12-lead EKG for suspected myocardial infarction, etc.). If the screen is positive, proceed to step 2 below.
2. By history from the patient and/or family members, obtain and record the following information:
 - a. history of active internal bleeding?
 - b. history of CNS neoplasm, arteriovenous (AV) malformation, or CNS aneurysm?
 - c. history of CNS surgery in past 2 months?
 - d. history of severe, uncontrolled hypertension (>200/130)?
 - e. history of bleeding disorder?
 - f. history of aortic dissection?
 - g. history of allergy to thrombolytic?
 - h. Currently anticoagulated?
3. Record all findings in the Patient Care Report (PCR).



Venous Access Blood Draw

Clinical Indications:

- Collection of a patient's blood for laboratory analysis.

Procedure:

1. Utilize universal precautions as per **Infection control standards Page 11**.
2. Select vein and prep with topical antiseptic as usual.
3. Select appropriate blood-drawing devices: Vacutainer blood tubes and blood tube holders with male or female adaptors shall be available and used to obtain and transfer all blood samples
4. Draw appropriate tubes of blood for lab testing per destination hospital protocol.
5. Assure that the blood samples are labeled with the correct information (a minimum of the patients name, along with the date and time the sample was collected).
6. Deliver the blood tubes to the appropriate individual at the hospital.
7. Nitrous oxide (where available) can be use to facilitate venous access in the pediatric patient.
8. May inject a small intradermal wheal of 2% Lidocaine prior to blood draw.



Venous Access

External Jugular

Clinical Indications:

- External jugular vein cannulation is indicated in a critically ill patient > 8 years of age who requires intravenous access for fluid or medication administration and in whom an extremity vein is not obtainable.
- External jugular cannulation can be attempted initially in life threatening events where no obvious peripheral site is noted.

Procedure:

1. Utilize universal precautions as per **Infection Control Standards Page 11**.
2. Place the patient in a supine head down position. This helps distend the vein and prevents air embolism.
3. Turn the patient's head toward the opposite side if no risk of cervical injury exists.
4. Prep the site as per peripheral IV site.
5. May inject a small intradermal wheal of 2% Lidocaine prior to IV insertion.
6. "Tourniqueting" the vein lightly with one finger above the clavicle, puncture the vein midway between the angle of the jaw and the clavicle and cannulate the vein in the usual method.
7. Attach the IV and secure the catheter avoiding circumferential dressing or taping.
8. Document the procedure, time, and result (success) on/with the patient care report (PCR).



Venous Access Extremity

Clinical Indications:

- Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition).

Procedure:

1. Utilize universal precautions as per **Infection Control Standards Page 11**.
2. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.
3. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.
4. Place a tourniquet around the patient's extremity to restrict venous flow only.
5. Select a vein and an appropriate gauge catheter for the vein and the patient's condition.
6. Prep the skin with an antiseptic solution.
7. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the blood flash is visualized in the catheter.
8. Advance the catheter into the vein. **Never** reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.
9. Draw blood samples when appropriate.
10. Remove the tourniquet and connect the IV tubing or saline lock.
11. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.
12. Cover the site with a sterile dressing and secure the IV and tubing.
13. Document the procedure, time and result (success) on/with the patient care report (PCR).



Venous Access

Intraosseous Adult

Clinical Indications:

- Inability to obtain vascular access in a patient that requires emergent access.

Procedure:

1. Utilize universal precautions as per **Infection Control Standards Page 11**.
2. Assemble standard intravenous access equipment as well as IO needle. **If a commercial kit is being used (O™, Bone Injection Gun™), or hand held Intraosseous needle, follow the procedure recommended by the manufacturer.**
3. Follow manufacturers' specifications for placement. Suggested sites: proximal humerus, proximal tibia distal tibia and distal femur.
4. Holding the I/O needle perpendicular to the site, insert it with a twisting motion until you feel decreased resistance or feel a "pop". Stop advancing the needle.
5. Remove the trochar.
6. Flush 1-5mL of 2% **Lidocaine** in conscious patients PRN.
7. Begin infusion of IV fluids. The fluids should flow easily. Once ease of flow has been established, the line may be used just as any other IV line.
8. Stabilize the IO needle.
9. Record the procedure, any complications, and clinical response in the patient care report (PCR).



Wound Care and Hemorrhage Control

Clinical Indications:

- Bleeding control of open wounds, including tourniquet use.
- Protection and care for open wounds.

Procedure:

1. Utilize universal precautions as per **Infection Control Standards Page 11**.
2. Control Bleeding
 - A. Apply direct pressure to wound with clean gauze pad. If extremity wound, elevate above the level of the heart.
 - B. If gauze soaks through, apply additional gauze on top of original- do not remove initial dressing.
 - C. Use pressure points if unable to control bleeding using direct pressure, elevation, and additional gauze.
 - D. If prolonged extrication or transport and unable to control bleeding to extremity wound, consider use of commercially-prepared gauze impregnated with a hemostatic non-thermogenic agent (ie Quick Clot gauze). Follow manufacturers' recommendations for packing, dressing and bandaging site.
 - E. Tourniquets. For partial or complete extremity amputation or uncontrolled bleeding, consider use of commercial tourniquet device. Use blood pressure cuff only if commercial device not available and continuous pressure monitoring can be assured.
 - i. Follow device manufacturers' recommendations for application and monitoring.
 - ii. Apply tourniquet pressure only to point bleeding is controlled to preserve as much distal tissue as possible.
 - iii. Record application time
 - iv. Providers may immediately apply commercial tourniquets in the setting of severe, life-threatening bleeding to an extremity.
 - F. Once bleeding is controlled, bandage dressing in place – do not rely on bandage to control bleeding.
3. Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (this may have to be avoided if bleeding was difficult to control). Consider analgesia per protocol prior to irrigation.
4. Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.
5. Monitor wounds and/or dressings throughout transport for bleeding.
6. Document the wound and assessment and care in the patient care report (PCR).



Acetaminophen (Tylenol)

P

Indications:	Fever, Pain
ADULT Dose:	ADULT: 20mg/kg PO TOXIC DOSE IS 150 mg/kg
Contraindications:	Documented hypersensitivity
Pediatric Considerations:	15mg/kg PO Liquid solutions vary in concentration verify correct dose Do not exceed 5 doses in 24 hours
Precautions:	Use cautiously in patients with long term alcohol use Many OTC products contain APAP- Consider Toxicity
Adverse Effects:	Hypoglycemia Allergic reaction
Onset/Duration:	20-30 minute onset 4-6 hour duration
Classification:	Antipyretic, Analgesic
Action:	Antipyretic, Analgesic
Notes:	Caution with long term alcohol ingestion

Acetylsalicylic acid/Aspirin (Bayer/Ecotrin)

R E A P

Indications:	Chest Pain with Suspected MI
ADULT Dose:	81mg X 4 tabs Chewable up to 325 mg PO
Contraindications:	Known Hypersensitivity
Pediatric Considerations:	Contraindicated
Precautions:	Toxic dose is 200-300 mg/kg
Adverse Effects:	Angioedema Nausea- GI upset Occult Blood loss Hepatotoxicity
Onset/Duration:	30-60 minute onset 4-6 hour duration
Classification:	Antiplatelet, Analgesic, Antipyretic, Anti-inflammatory
Action:	Inhibition of platelet aggregation and platelet synthesis Reduction of risk of death in patients with a history of myocardial infarction or unstable angina
Notes:	Salicylate Toxicity: tinnitus, nausea, vomiting,



Activated Charcoal (Actidose-Aqua/Insta-Char)

E A P

Indications:	Suspected overdose or accidental ingestion of drugs or chemicals within 30 minutes.
ADULT Dose:	ADULT 50 grams PO/NG
Contraindications:	ALOC (may give via NGT with secured airway) Diminished or absent gag reflex Caustic, corrosive, or petroleum distillate ingestion
Pediatric Considerations:	PED 1 gm/kg PO/NG Do not use preparations containing sorbitol
Precautions:	Unpleasant taste be prepared for spitting or vomiting Use of straw may facilitate administration in adult patient
Adverse Effects:	Vomiting Aspiration
Onset/Duration:	Immediate onset 24 hour duration
Classification:	Chemical adsorbent
Action:	Inhibits gastrointestinal absorption of drugs or chemicals.
Notes:	Most effective if administered within 30 minutes of ingestion

Adenosine (Adenocard)

P

Indications:	Supra-ventricular tachyarrhythmias (stable)
ADULT Dose:	6 mg Rapid IVP followed with 10 -20 cc NS flush Repeat dose of 12 mg as indicated
Contraindications:	2nd or 3rd degree heart block Sick sinus syndrome Hypersensitivity to adenosine Relative contraindication in WPW
Pediatric Considerations:	0.1 mg/kg initial Repeat 0.2 mg/kg
Precautions:	Some Asthma patients may experience bronchoconstriction
Adverse Effects:	Headache Dizziness Dyspnea Nausea/vomiting Chest pressure Transient asystole
Onset/Duration:	Immediate Onset 10 second duration
Classification:	Antidysrhythmic agent Endogenous purine nucleoside
Action:	Slows conduction through the A-V node, can interrupt the re-entry pathways through the A-V node
Notes:	Individuals with long term adjustment to nicotine or high doses of caffeine may require larger dose of Adenosine. Warn patient of unpleasant effects of medication PRIOR to administration
Drug : Drug interactions	Theophylline, nicotine, caffeine- may require higher doses



Albuterol (Proventil / Ventolin)

E A P

Indications:	Treatment of Bronchospasm in patients with reversible obstructive airway disease
ADULT Dose:	E: 1-2 puffs of patients OWN Metered Dose Inhaler (MDI), 2.5 mg SVN (with specialized training) AP: 2.5 mg in 3cc NS via nebulizer May initiate continuous nebulizer for persistent distress. Do not exceed 15mg/ hr
Contraindications:	Known hypersensitivity Tachycardia (relative)
Pediatric Considerations:	2.5-10 mg as per Broselow tape
Precautions:	Cardiovascular disease Hypertthyroidism Diabetes mellitus
Adverse Effects:	Tachycardia Hypertension Palpitations Dizziness Dysrhythmias Restlessness Nausea
Onset/Duration:	5 minute onset 3-4 hour duration
Classification:	Bronchodilator
Action:	Relaxes bronchial smooth muscle by stimulating beta2 receptors resulting in bronchodilation
Drug : Drug interactions	Beta Blockers:Pt may not respond as effectively to medication Sympathomimetics: additive effects



Amiodarone (Cordarone)

P

Indications:	VF/pulseless VT; pulsed wide-complex, Narrow complex tachycardia tachycardia; monomorphic sustained VT; SVT.
ADULT Dose:	VF/pulseless VT: 300mg IV/IO (dilute in NS/D5W 20cc). May repeat 150mg IVP x 1 in 5-10min. Max 450mg. VT, wide-complex tachycardia, narrow complex tachycardia: 150mg IV infusion over 10min (mix in NS/D5W 100cc).
Contraindications:	Known hypersensitivity; cardiogenic shock; bradycardia with ventricular escape beats; marked sinus bradycardia; 2 nd or 3 rd -degree AV blocks. Antiarrhythmics are not indicated for prophylactic treatment of ectopy or as a prophylactic post-arrest. Do not use with medications that prolong QT interval (procainamide).
Pediatric Considerations:	VF/pulseless VT: 5mg/kg IV/IO (dilute in NS/D5W 15cc). May repeat q 5-10min to max 15mg/kg. VT, wide-complex tachycardia, Narrow complex tachycardia: 5mg/kg IV/IO infusion over 20-60min (mix in NS/D5W 100cc),
Precautions:	Dosing varies for specific arrhythmias, pay attention to dosing/concentration for specific patient age and clinical presentation. Lidocaine should be used for pulsed patients. If allergic to lidocaine or if lidocaine is not carried or if amiodarone has already been given, then administer amiodarone. May potentiate effects of oral anticoagulants, digoxin, antiarrhythmics and cyclosporine. Amiodarone will effect Lidocane if the two agents are used together.
Adverse Effects:	Flushing; N/V; HA; tinnitus; blurred vision; dizziness; restlessless; confusion; tremors; numbness; hypotension; edema; CHF; dysrhythmias; SA node dysfunction; bradycardia (may be resistant to atropine and require pacing); Q-T prolongation; heart block; sinus arrest; abdominal pain; muscle twitching; seizures, respiratory depression. Phlebitis may occur at IV site with higher concentrations. May cause grayish-blue skin discoloration. Discontinue if significant adverse effects occur.
Onset/Duration:	Onset via IV 15min/half-life 40 days.
Classification:	Antiarrhythmic Class III; has effects in all four classes. Class I – sodium channel blockade; Class II – noncompetitive alpha and beta-adrenergic inhibition; Class III – prolonged repolarization and refractoriness by increased action potential duration; and Class IV – slight calcium channel blockade.



Amiodarone (Cordarone) *continued*

P

Action:	Suppresses ventricular ectopy, increases ventricular fibrillation threshold; increases cardiac refractory period without influencing resting membrane potential; relaxes vascular smooth muscle, reduces peripheral vascular resistance, and slightly increases cardiac index.
Notes:	Amiodarone will form precipitate in IV lines if combined with aminophylline, heparin sodium or sodium bicarbonate. If sodium bicarbonate needs to be administered, after amiodarone flush IV line with NS 10-20cc. Also precipitates with cefamandole nafate, cefazolin sodium and mezlocillin sodium, Amiodarone leeches plasticizers from IV tubing and IV bags; bags should be mixed and run when needed. Do not premix or save unused mixed bags.

Atropine (Atreza)

P

Indications:	Symptomatic bradycardia Pulseless electrical activity HR < 60 (PEA) Organophosphate poisoning (OPP) Oral secretions for palliative care
ADULT Dose:	Bradycardia: 0.5- 1 mg IV / IO q 3-5 min to maximum of 3 mg PEA HR < 60: 1 mg IV / IO q 3-5 minutes to maximum of 3mg Organophosphate Poisoning: 2 mg IV / IO q 3-5 minutes until Oral secretions improve Oral secretions: add 2-4 drops in oral cavity
Contraindications:	Non symptomatic bradycardia (Relative: Asthma, Myasthenia Gravis, narrow angle glaucoma)
Pediatric Considerations:	Organophosphate poisoning 0.08 mg/Kg IV/IO Contraindicated in neonates Sequenced intubation adjunct 0.02 mg/kg
Precautions:	Use with caution in patients with suspected acute myocardial infarction (AMI) Will not be effective for Type II AV Block and new Third Degree Block with wide QRS complexes (In these patients may cause paradoxical slowing. Be prepared to pace).
Adverse Effects:	Tachycardia Increased myocardial O ₂ demand Palpitations Nausea/vomiting Dilated pupils Increased intraocular pressure
Onset/Duration:	2-5 minute onset 20 minute duration
Classification:	Parasympathetic blocker (Anticholinergic) Antidysrhythmic agent
Action:	Blocks acetylcholine receptors, Decreases vagal tone resulting in increased heart rate and AV conduction, Dilates bronchioles and decreases respiratory tract secretions, Decreases gastrointestinal secretions and motility



Bumetanide (Bumex)

P

Indications:	Pulmonary edema
ADULT Dose:	0.5 to 2mg IV/IO to maximum of 10 mg as a daily dose
Contraindications:	Anuria, hepatic encephalopathy, hepatic coma
Pediatric Considerations:	NONE
Precautions:	Patients using potassium depleting steroids, h/o lupus, h/o hepatic cirrhosis, increased risk of hypokalemia in patient taking digoxin, dehydration, pneumonia. Potential crossreactivity with SULFA allergy.
Adverse Effects:	Hypotension, electrolyte imbalance, transient hearing loss.
Onset/Duration:	5-10 minutes for preload reduction, 30 min for diuresis onset 2-4 hours duration
Classification:	Non-potassium sparing loop diuretic
Action:	Inhibits sodium and chloride re-absorption in the proximal loop of Henle promoting excretion of sodium, water, chloride, and potassium. Also reduces cardiac preload by increasing venous capacitance.
Notes:	Bumetanide 0.5 mg IV = Furosemide 20mg IV Bumetanide 1 mg IV = Furosemide 40mg IV Bumetanide 2 mg IV = Furosemide 80mg IV

Calcium Chloride (CaCl₂)

P

Indications:	Hyperkalemia specific arachnid envenomation Over dose of calcium channel blockers	Hypermagnesemia Crush Syndrome
ADULT Dose:	10 to 20 mg/kg slow IV /IO	
Contraindications:	VF (unless due to hyperkalemia) Hypercalcemia	
Pediatric Considerations:	DOSE : 10 mg/kg IV/IO	
Precautions:	Causes tissue necrosis if injected into interstitial space Precipitates with sodium bicarbonate May increased digoxin toxicity Clear IV with 20cc NS before and after administration	
Adverse Effects:	Bradycardia, hypotension, syncope	
Onset/Duration:	5 to 15 minute onset duration is dose dependent, effects may persist for up to 4 hrs	
Classification:	Electrolyte	
Action:	Couples electrical and mechanical events of the myocardium Increases myocardial contractility Increases ventricular irritability	
Notes:	200mg IV prophylactic to diltiazem admin in elderly dehydrated or drug-induced hypotension	



Clopidogrel Bisulfate (Plavix)

P

Indications:	STEMI confirmed with Medical Control authorization required
ADULT Dose:	300mg PO with TNKase 600mg PO with primary PCI
Contraindications:	Active pathological bleeding, bleeding conditions/disorders (hemophilia), peptic ulcer Intracranial hemorrhage Recent surgery, recent serious injury (physical trauma)
Precautions:	Avoid concomitant use CYP2C19 inhibitors (e.g., omeprazole) medications
Adverse Effects:	Bruising, bleeding
Onset/Duration:	2 hrs onset 7-10 day duration
Classification:	Anti-platelet, thienopyridine class inhibitor
Action:	Inhibits platelets' ability to clump together as part of blood clot. Inhibitor of adenosine diphosphate (ADP) induced platelet aggregation acting by direct inhibition of ADP binding to its receptor and of subsequent ADP-mediated activation of glycoprotein GPIIb/IIIa complex.

Dexamethasone (Decadron)

P

Indications:	Counteract allergic anaphylactic shock. RAD, bronchospasm, croup
ADULT Dose:	4 to 8 mg intravenously
Contraindications:	Hypersensitivity to the product
Pediatric Considerations:	0.6 mg/kg IV/IO/IM max dose 16 mg
Precautions:	Use cautiously with renal or hepatic disease; hypothyroidism, ulcerative colitis with impending perforation; diverticulitis; active or latent peptic ulcer; inflammatory bowel disease; CHF, hypertension, thromboembolic disorders; osteoporosis; seizure disorders; diabetes mellitus; lactation.
Adverse Effects:	Stomach upset, headache, dizziness
Onset/Duration:	4-8 hours onset 24 -72 hours duration
Classification:	Glucocorticoid.
Action:	Enters target cells and binds to specific receptors, initiating many complex reactions that are responsible for its anti-inflammatory and immunosuppressive effects.



Dextrose / D50W / D25W (DGlucose)

A**P**

Indications:	Hypoglycemia Hyperkalemia with concurrent insulin administration Altered level of consciousness due to suspected or confirmed hypoglycemia
ADULT Dose:	12.5 to 25 g IV / IO repeat dose to maximum of 50 g
Contraindications:	Hyperglycemia
Pediatric Considerations:	DOSE: 0.5gm/kg D25% DILUTE D50% 1:1 to D25% with NS
Precautions:	Causes tissue necrosis if injected into interstitial space May increase cerebral ischemia in CVA Caution with intracranial hemorrhage
Adverse Effects:	Thrombophlebitis Osmotic Diuresis Pulmonary Edema May worsen Wernicke's encephalopathy
Onset/Duration:	30 to 60 seconds onset duration depends on severity of hypoglycemia
Classification:	Hyperglycemic agent Hypotonic solution
Action:	Provide immediate source of glucose for rapid utilization for cellular metabolism
Notes:	Follow with complex carbohydrate if leaving patient at home



Diazepam (Valium)

P

Indications:	Major motor seizures, status epilepticus, premedication for painful procedures, combative patients, anxiety
ADULT Dose:	<u>Sedation and pain management</u> 2-5 mg IV/IO for procedural <u>Seizures</u> 5mg IV over 2 minutes, 10 mg PR, or 2-5 mg IM <u>Eclamptic seizures</u> 2-5 mg IV q5min for effect or 10 mg PR
Contraindications:	Hypotension
Pediatric Considerations:	<u>Sedation and pain management</u> 0.1mg/kg IV/IO <u>Seizures</u> 0.1mg/kg IV over 2 minutes, or 0.5 mg/kg PR MAX DOSES: 5 mg in children and 10 mg in adolescents
Precautions:	Inject slowly, do not use small veins. Use caution in elderly patients.
Adverse Effects:	Hypotension Respiratory depression
Onset/Duration:	IV 1-5 minute onset, 15-60 minute duration IM 15-30 minute onset, 15-60 minute duration
Classification:	Benzodiazepine
Action:	Suppresses spread of seizure activity through the motor cortex, skeletal muscle relaxant, reduces anxiety and causes sedation
Notes:	Intramuscular administration leads to widely variable absorption and should be avoided if possible. Diastat – EMT, AEMT's may administer patients own prescription ONLY with specialized training



Diltiazem (Cardizem)

P

Indications:	A fib	A flutter	PSVT
ADULT Dose:	10-25 mg IV/IO may repeat dos, max dose 0.25 to 0.35 mg/Kg		
Contraindications:	Concurrent use of IV beta-blockers Wide complex tachycardia of unknown etiology Sick Sinus Syndrome WPW High Degree AV Blocks		
Precautions:	May precipitate with use of furosemide Use cautiously in elderly patients Congestive Heart Failure Not recommended in pediatric patients Calcium chloride 200 mg IV prophylactic in elderly dehydrated or drug-induced hypotension		
Adverse Effects:	Arrhythmias Heart Failure	Bradycardia AV block	Hypotension Pulmonary edema
Onset/Duration:	2 to 10 minute onset, 1-3 hour duration		
Classification:	Calcium channel blocker		
Action:	Inhibit calcium ion passage across cell membrane Slows SA and AV node conduction velocity Decreases myocardial contractility Decreases peripheral vascular resistance		
Drug: Drug Interactions	Potentiates with Beta-Blocker, Lithium, Tegretol, cyclosporins		

Diphenhydramine (Benadryl)

E

A

P

Indications:	Anaphylaxis Dystonia Nausea	Allergic reactions Sedation Headache
ADULT Dose:	12.5 to 50 mg IV/IO/IM 12.5 to 50 mg PO (with specialized training) E	
Contraindications:	Known hypersensitivity Acute asthma Relative: narrow angle glaucoma	Newborns COPD exacerbation
Pediatric Considerations:	DOSE: 1 mg/kg IV/IO/IM 1 mg/kg PO (with specialized training) E	
Precautions:	Reduce dose for elderly	
Adverse Effects:	Seizures Thickening of Bronchial Secretions	Sedation
Onset/Duration:	IV administration has immediate onset 6 to 8 hour duration	
Classification:	Antihistamine	
Action:	Prevents but does not reverse histamine mediated responses suppresses cough reflex	
Drug: Drug Interactions	Potentiates CNS depressants	



Epinephrine (Adrenaline)

E A P

Indications:	<p>Cardiopulmonary arrest: ventricular fibrillation pulseless ventricular tachycardia pulseless electrical activity</p> <p>Anaphylaxis Status Asthmaticus Profound Refractory Hypotension asystole</p>				
ADULT Dose:	<p>A P <u>Cardiopulmonary arrest:</u> If EtCO₂ > hold Epinephrine If arrest from BRONCHOSPASM, ANAPHYLAXIS OR HYPOTENSION then 1 mg 1:10,000 IV/IO q 3-5 min. EtCO₂ 10-19, 100 to 300 mcg 1:10,000 IV/IO q3-5 min EtCO₂ 9 or less, 300 to 700 mcg 1:10,000 IV/IO q 3-5 min</p> <p><u>Anaphylaxis:</u> E 0.1-0.3 mg of 1:1,000 IM q 10-20 mins. X 2, R (Auto-Injector)</p> <p><u>Status Asthmaticus:</u> 0.3 mg of 1:1000 SQ q 20 minutes X 2</p> <p><u>Profound Refractory Hypotension:</u> 2-10 mcg/min IV infusion mix one milligram of 1:1,000 epinephrine in 250 cc normal saline for a concentration of 4mcg/cc</p>				
Pediatric Considerations:	<p>Dose 0.01 mg/kg 1:1,000 IM/IV/IO max 0.3mg Nebulized for respiratory emergencies see pediatric protocols</p>				
Precautions:	<p>Use caution when given IV in anaphylactic shock as myocardial ischemia and or cardiac arrest may occur.</p>				
Adverse Effects:	<p>Hypertension Tachycardia Increased myocardial oxygen demand</p>				
Onset/Duration:	<p>Onset: Immediate if given IVP / 5-10 minutes SQ/IM Duration: 3-5 minutes IVP / 20 minutes SQ/IM</p>				
Classification:	<p>Sympathomimetic agent (catecholamine)</p>				
Action:	<p>Beta effect is more profound than Alpha effect</p>				
Notes:	<p>Epinephrine is the pressor of choice in the case of pediatric shock states. Dopamine may be ineffective.</p>				
<p>1 mg epinephrine 1:1,000 in 250 cc = 4 mcg/ cc use 60gtt tubing</p>					
Mcg/ min	2	4	6	8	10
administer	30 gtt/min	60 gtt/min	90 gtt/min	120 gtt/min	150 gtt/min



Etomidate (Amidate)

P

Indications:	Induce sedation to facilitate intubation. Procedural Sedation
ADULT Dose:	0.1-0.3 mg/kg IV over 15-30 seconds
Contraindications:	Hypersensitivity Pregnancy
Pediatric Considerations:	0.1 - 0.3 mg/kg IV over 15-30 seconds
Precautions:	Do not re-dose with etomidate. Long term use can cause decreased corticosteroid production.
Adverse Effects:	Myoclonic skeletal muscle movement, apnea, hyperventilation, laryngospasm, dysrhythmias, nausea, vomiting, eye movement, hiccups, snoring, seizures
Onset/Duration:	15-20 seconds onset 5-10 minutes duration * Half life 75 mins.
Classification:	Hypnotic, non sedative, non narcotic, non analgesic
Action:	Ultra short acting, nonbarbituate hypnotic. Produces rapid induction of anesthesia with minimal cardiorespiratory effects. Rapidly distributed following IV injection/ rapidly metabolized and excreted. (note extremely short duration)
Notes:	MUST Use sedative (ativan/ versed) for intubation maintenance.

Wt in lbs	100	110	120	130	140	150	160	170	180	190	200
WT in kg	45	50	54	59	64	68	73	77	82	86	91
Dose in mg	13 mg	15 mg	16 mg	18 mg	19 mg	20 mg	22 mg	23 mg	25 mg	26 mg	27 mg
Wt in lbs	210	220	230	240	250	260	270	280	290	300	
WT in kg	95	100	104	109	113	118	122	127	132	136	
Dose in mg	28 mg	30 mg	31 mg	33 mg	34 mg	35 mg	37 mg	38 mg	40 mg	41 mg	



Famotidine

P

Indications:	Allergic reaction, anaphylaxis
ADULT Dose:	20 mg IV/IO
Contraindications:	Known allergy to Famotidine or anti-histamines
Pediatric Considerations:	0.25 mg/kg IV/IO
Precautions:	May interact with antivirals, oral antifungals
Adverse Effects:	Headache, dizziness
Onset/Duration:	Onset 20 min, Duration (half-life) 4 hours
Classification:	Histamine-2 blocker, antihistamine
Action:	Blocks Histamine-2 receptors and prevents histamine mediated responses.

Fentanyl (Sublimaze)

P

Indications:	Analgesia, Pulmonary Edema, Acute MI, Palliative Care
ADULT Dose:	1 mcg/Kg IV/IO/IM, max initial dose 100mcg, max accumulative dose 2 mcg/kg 25 mcg in 2 mL NS by SVN
Contraindications:	Known hypersensitivity
Pediatric Considerations:	DOSE: 1 mcg/kg IV/IN/IM, max initial dose 100 mcg, max accumulative dose 2 mcg/kg
Precautions:	Head injuries, COPD, ALOC, Hypotension
Adverse Effects:	CNS depression, resp. depression, hallucinations, hypotension, hypertension, arrhythmias, n/v, constipation, Chest wall rigidity
Onset/Duration:	Onset- 1-2min IV, 7-15min IM Duration- ½ - 1hr IV, 1-2hr IM
Classification:	Opioid agonist/ narcotic analgesic
Action:	Binds to opiate receptors as an agonist to alter pt's perception of painful stimuli.
Notes:	CNS and resp. depressant effects are similar to Morphine. Drug has little hypnotic activity and rarely causes histamine release.



Furosemide (Lasix)

P

Indications:	Pulmonary edema
ADULT Dose:	40mg-80mg (or double pt's daily dose up to 100mg) slowly * can be dosed at 0.5-1.0 mg/kg
Contraindications:	Dehydration/ hypovolemia, hypokalemia, hepatic coma
Pediatric Considerations:	2 mg/kg
Precautions:	Pt's using potassium depleting steroids, hx of lupus, hx of hepatic cirrhosis, increased risk of hypokalemia in pt's taking digoxin, dehydration or pneumonia
Adverse Effects:	Hypotension, electrolyte imbalance, transient hearing loss
Onset/Duration:	Onset 5 min for preload reduction, 30 min for diuresis. Duration ~2 hours.
Classification:	Non-potassium sparing loop diuretic
Action:	Inhibits sodium and chloride re-absorption in the proximal loop of henle promoting excretion of sodium, water, chloride, and potassium. Also reduces cardiac preload by increasing venous capacitance.

Glucagon

P

Indications:	Hypoglycemia, Beta-blocker OD, Calcium channel blocker OD
ADULT Dose:	Hypoglycemia- 1.0mg IM / IN Ca++ and beta-blocker OD- 3-5mg IV/ IM / IN
Contraindications:	None in emergency setting
Pediatric Considerations:	Dose: 0.1mg/kg up to 1mg IM
Precautions:	Do not dilute with saline solutions, will form a precipitate.
Adverse Effects:	Nausea & Vomiting, hyperglycemia, hypersensitivity reactions
Onset/Duration:	Onset is 5-20 minutes, peak effect at 30 minutes. Duration is 1-1.5 hours
Classification:	Polypeptide hormone
Action:	Accelerates liver glycogenolysis and inhibits glycogen synthetase resulting in blood glucose elevation. Stimulates hepatic gluconeogenesis and causes an inotropic myocardial effect. Relaxes GI smooth muscle
Notes:	Reconstitute powdered solution with supplied diluent only If given IV, flush line with D-5% instead of NS solution.



Glucose Oral (Glucose Paste)

R E A P

Indications:	Hypoglycemia in conscious patient that is able to swallow.
ADULT Dose:	One tube PO- between cheek and gum
Contraindications:	Unconsciousness, inability to swallow, hyperglycemia
Pediatric Considerations:	One tube PO
Precautions:	Not tasty, watch for spitting
Adverse Effects:	Choking if not properly administered
Classification:	Carbohydrate
Action:	Rapidly metabolized source of calories in pt's with inadequate oral intake.
Notes:	Perform glucose check before and after administration of Glucose. Follow with complex carbohydrate if leaving patient at home.

Heparin Sodium

P

Indications:	Confirmed STEMI in accordance with STEMI triage procedures.
ADULT Dose:	60U/kg IV bolus to max 4,000U (if >100kg max 5,000U); 12U/kg/hr IV drip to max 1,000U/hr
Contraindications:	Allergy to heparin, thrombocytopenia, hemophilia
Precautions:	Increased risk of bleeding w/ bleeding/clotting disorders (hemophilia), GI ulceration, bacterial endocarditis Recent surgery Derived from porcine intestinal mucosa, avoid if allergic to pork
Adverse Effects:	Bleeding, Heparin induced thrombocytopenia, Hyperkalemia (5-10%)
Onset/Duration:	onset immediate duration 1.5 hours
Classification:	Injectable anticoagulant
Action:	Binds to and activates antithrombin III which binds to and inactivates thrombin. This inhibits further clot formation.
Notes:	Invert infusion solution periodically to prevent pooling Do not mix in same line with droperidol



Ketamine *continued*

P

Pediatric Considerations:	<u>RSI:</u> 0.5 to 1 mg/kg IV over one minute; 4-5 mg IM <u>Sedation:</u> Infusion 0.5 to 2 mg/kg/hr <u>Pain:</u> 0.1 mg/kg IV/IO max cumulative dose 1.5 mg/kg
Precautions:	<u>RSI:</u> Increased blood pressure due to catecholamine release. Reemergence phenomenon. As with any intubated patient, continued sedation must be provided before the induction agent has worn off. Increased intracranial pressure (ICP) has been a theoretical concern, however studies have not shown a significant increase in ICP with the use of ketamine and therefore it is felt to be an appropriate induction agent for patients with possible increased ICP, unless they have markedly elevated blood pressure.
Adverse Effects:	<u>Excited Delirium:</u> Laryngospasm, hyper salivation, nausea/vomiting, arrhythmias, emergence delirium, hallucinations, elevated BP, hypotension, documentation or observation of worsening hyperthermia
Onset/Duration:	<u>Excited Delirium:</u> Adults: IV 30 sec; duration 5-10 min for 2 mg/kg; IM 3-4min, duration 12-25 min; Pediatrics: IV 30-120 sec; duration 20-60 min; IM 5-10 min, duration 30-90 min
Classification:	General dissociative anesthetic
Action:	Dissociative anesthetic agent, structurally similar to phencyclidine (PCP), which interrupts the connection between the thalamo-neocortical tracts and the limbic system. In addition, it stimulates many different receptors, including the opioid and catecholamine receptors. It is unique among sedative agents in that it also provides analgesia in addition to the amnestic and sedative effects. The sympathomimetic effects cause an increase in heart rate, blood pressure, and cardiac output. It is also a bronchodilator, and thus may be beneficial in patients with bronchospasm requiring intubation.
Notes:	When elevated ICP is suspected, consider using a lower dose along with midazolam. Avoid in patients with severely elevated blood pressure; May increase respiratory secretions. Consider adjuvant use of anti-sialagogue such as atropine minimum dose 0.1mg



Ketorolac (Toradol)

P

Indications:	Renal colic/calculi (abdominal/flank pain) Muscular skeletal pain
ADULT Dose:	Renal colic/calculi 30 mg IM, 15 mg IV ½ dose for >65 years old
Contraindications:	Documented hypersensitivity to ASA or other NSAID's, bleeding disorders, renal impairment, active peptic ulcer, nursing mothers, labor & delivery. Suspected or possible dissecting AAA. On any anti-coagulant.
Pediatric considerations:	Pain 1 mg/kg IM or 0.5 mg/kg IV to maximum dose of 30 mg IM or 15 mg IV
Precautions:	Patients that are > 65 y/o or < 50 kg should receive ½ dose. Use extreme caution in elderly and hepatic dysfunction pts.
Adverse Effects:	Possible anticoagulation effects, anaphylaxis, drowsiness, sweating/diaphoresis, nausea, pain at injection site.
Onset/Duration:	IM: 45-60 minutes onset 4-6 hours duration
Classification:	NSAID, analgesic, antipyretic
Action:	Inhibits synthesis of prostaglandins



Labetalol (Trandate, Normodyne)

P

Indications:	Hypertension (SBP > 180 or DBP > 105 atraumatic neurologic deficits. If treating hypertension must call for Medical Control MD approval prior to admin unless in another specific protocol.
ADULT Dose:	10 mg slow IV, may repeat 10-20 mg q 10mins IV slow bolus over 2 mins until desired supine blood pressure obtained; or 200mg placed in 500ml D5W to deliver at 2mg/min IV drip rate. Max total 300mg.
Contraindications:	COPD, asthma, CHF, 2 nd & 3 rd heart block, bradycardia, cardiogenic shock
Precautions:	Pt placed in supine position. BP, HR & EKG monitored. Atropine and TCP available.
Adverse Effects:	Bronchospasm, CHF, heart block, bradycardia, postural hypotension, nausea
Onset/Duration:	5 mins onset duration dose dependent
Classification:	Sympathetic Alpha-1, non-selective Beta Blocker
Action:	Blocks adrenergic receptors which decreases peripheral vascular resistance without significantly altering heart rate or cardiac output: non-selective beta blocker with intrinsic anti-sympathomimetic activity, plus alpha blockade.
Drug:Drug Interactions:	Beta-receptor agonists, verapamil, cimetidine, precipitate forms with furosemide.
Notes:	Reduce BP ≤20% first hr then toward 160/100mmHg within next 2–6hrs. Pt with chronic HTN may not tolerate "normal" BP. Excessive rapid BP reduction may precipitate coronary, cerebral, or renal ischemia. Maintain supine position x 3hrs min. Pregnancy Cat C use only if potential benefits justify potential risk to fetus/nursing infant.



Lidocaine (Xylocaine)

P

Indications:	First line antiarrhythmic in pregnancy VT/VF VT with pulse Symptomatic PVCs
ADULT Dose:	VF/VT- 1 mg/kg IV / IO q 5-10 min. Max 3 mg/kg. VT w/ pulse- 1 mg/kg IV/ IO, then 0.5-0.75mg/kg q 5-10 min. up to 3 mg/kg Run of 6 or more Symptomatic PVC's- 0.5-1 mg/kg IV/IO then 0.5-0.75mg/kg q 5-10min up to 3 mg/kg.
Contraindications:	High degree heart blocks Stokes-Adams syndrome hypotension WPW SVT Bradycardias
Pediatric Considerations:	VF/VT- 1mg/kg IV / IO q 10 min. Max 3 mg/kg VT w/ pulse- 1mg/kg IV/ IO, q 10 min. up to 3 mg/kg Drip 2-4mg/min following conversion
Precautions:	Caution in use with pts >70 y/o or with liver or renal disease, CHF, resp depression, shock. Reduce maintenance infusion by 50%
Adverse Effects:	Seizures, slurred speech, altered mental status
Onset/Duration:	Onset- 45-90 seconds Duration- 10-20 minutes
Classification:	Amide derivative, antiarrhythmic
Action:	As an antiarrhythmic, it suppresses automaticity and shortens the effective refractory period and action potential duration of His-Purkinje fibers and suppresses spontaneous ventricular depolarization during diastole by altering sodium permeability through cellular fast channel membranes. The drug acts preferentially on diseased or ischemic myocardial tissue, exerting its effect on the conduction system by inhibiting re-entry mechanisms and halts ventricular arrhythmias.

Drip – mix 1G/250ml D5W using 60gtt set

4mg/ml:	1mg	2mg	3mg	4mg
gtts/min:	15gtt	30gtt	45gtt	60gtt



Lorazepam (Ativan)

P

Indications:	Seizures Sedation Anxiety Intubation maintenance
ADULT Dose:	0.5 - 2 mg IV/IO/IN/IM. May repeat PRN
Contraindications:	Narrow angle glaucoma, pregnancy (except for eclamptic seizures)
Pediatric Considerations:	0.1 mg/kg IV/IO/N/IM
Precautions:	Caution in use with pt's with renal or hepatic impairment. Increased CNS depression in pts intoxicated or on other depressant type drugs.
Adverse Effects:	Orthostatic hypotension, drowsiness, respiratory depression, Tachycardia, confusion
Onset/Duration:	Onset 1-5 minutes IV, 15-30 minutes IM Duration 12-24 hours
Classification:	Benzodiazepine hypnotic
Action:	CNS depressant via facilitation of inhibitory neurotransmitter gamma-aminobutyric acid (GABA) at benzodiazepine receptor sites in the ascending reticular activating system. Effects include muscle relaxation, anticonvulsant activity and emotional behavior anxiolytic effects.
Notes:	EA , may assist caregiver with rectal administration of patient's own prescription Lorazepam – EMT, AEMT's may administer patients own prescription ONLY with specialized training



Magnesium Sulfate (MgSO₄)

P

Indications:	Eclamptic seizures Torsades de Pointes refractory VF/VT refractory bronchospasm
ADULT Dose:	TdP/VF/VT: 2g IVP Breathing diff/RAD: 2g/100cc NS/D5W Eclamptic SZ: 4g IVP
Contraindications:	Renal disease, heart block, hypermagnesemia
Pediatric Considerations:	25-50 mg/kg IV/IO for V-fib/VT or difficulty breathing. SVN 300 mg under 20 Kg and 600 mg over 20 Kg.
Precautions:	Caution should be used in patients receiving digitalis as it may cause severe hypotension or cardiac arrest. Calcium chloride should be readily available as an antidote if respiratory depression results from treatment.
Adverse Effects:	hypotension, respiratory depression, bradycardia, dysrhythmias, cardiac arrest, CNS depression, flushing, sweating
Onset/Duration:	1-5 min onset approximately 30 min duration
Classification:	Electrolyte, anticonvulsant, antidysrhythmic
Action:	Decreases acetylcholine at neuromuscular junction (motor end plate), which is responsible for anticonvulsant properties; reduces SA node impulse formation and prolongs conduction time in the myocardium; Attracts and retains water in the intestinal lumen which distends the bowel to promote mass movement and relieve constipation
Drug : Drug interaction	Potentiates neuromuscular blockade produced by nondepolarizing paralytics (rocuronium/Zemuron, vecuronium/ Norcuron)



Methylprednisolone (Solu-Medrol/Amethapred)

P

Indications:	Allergic reaction Upper airway burns COPD exacerbations History of adrenal insufficiency associated with either serious trauma/illness or shock unresponsive to conventional therapy	Anaphylaxis Reactive airway disease
ADULT Dose:	125 mg IV / IO / IM	
Contraindications:	Preterm infants, Newborn, systemic fungal infections	
Pediatric Considerations:	2 mg/kg IV / IO / IM	
Precautions:	Use with caution in patients with G.I. bleeding, diabetes mellitus & severe infection	
Adverse Effects:	Alkalosis, CHF, headache, hypertension, hypokalemia, seizures, nausea and vomiting	
Onset/Duration:	Onset: 20 minutes-2 hours Duration: 18-36 hours	
Classification:	Corticosteroid, glucocorticoid steroid, anti-inflammatory	
Action:	Decreases inflammation by depressing migration of polymorphonuclear leukocytes and activity of endogenous mediators of inflammation. Potentiates vascular smooth muscle relaxation by beta adrenergic agonists.	
Notes:	Hypoglycemic responses to insulin and oral hypoglycemic agents may be blunted. Potassium depleting agents may potentiate hypokalemia induced by corticosteroids.	



Metoprolol (Lopressor)

P

Indications:	Hyperdynamic ACS/STEMI tachycardia
ADULT Dose:	2.5 - 5mg slow IV q 5min; to a maximum dose of 15 mg
Contraindications:	Documented hypersensitivity Uncompensated congestive heart Failure cardiogenic shock AV conduction abnormalities Asthma Bradycardia Pediatric
Precautions:	During IV administration, carefully monitor blood pressure, heart rate, and ECG. Goal of treatment is to reduce heart rate to 60-90 beats/min.
Adverse Effects:	Hypotension, CHF, Dizziness, chest pain, headache, Bronchospasm, Bradycardia
Onset/Duration:	Onset immediate, peaks in 20 minutes IV / Duration 5-8 hours
Classification:	Beta-blocker
Action:	Selective beta-1-adrenergic receptor blocker that decreases the automaticity of contractions (and thus heart rate). Negative inotropic and chronotropic effects are manifested by slowed AV conduction, antidysrhythmic effects, and decreased myocardial oxygen demand.
Notes:	Use of Calcium channel blockers may potentiate side effects/adverse effects; toxicity of metoprolol may increase with coadministration of phenothiazines and calcium channel blockers; metoprolol may increase toxicity of digoxin, flecainide, clonidine, epinephrine, nifedipine, prazosin, verapamil, and lidocaine



Midazolam (Versed)

P

Indications:	Sedation Seizure chemical restraint Nerve agent or organophosphate poisoning
ADULT Dose:	RSI: 2.5-10mg IV/IO over 2 minutes Chemical restraint: 2.5-5mg IM/IV/IN over 2 min, repeat PRN Seizure: 2.5-5mg IV/IO/IN/IM
Contraindications:	Hypersensitivity, OD of alcohol or other CNS depressants, depressed vital signs / hypoperfusion, acute narrow angle glaucoma, Pregnancy (except for eclamptic seizures)
Pediatric Considerations:	6 months to 5 years of age: Initial dose 0.05 to 0.1 mg/kg IV/IO/IN/IM. A total dose up to 0.6 mg/kg 6 to 12 years of age: Initial dose 0.025 to 0.05 mg/kg IV/IO/IN/IM; total dose up to 0.4 mg/kg may be needed to reach the desired endpoint but usually does not exceed 10 mg total.
Precautions:	Use caution in patients with renal impairment, history of COPD; may wish to double the IV dose when administering IM
Adverse Effects:	Respiratory depression or arrest, Hypotension, bradycardia, HA, N/V, pain at injection site, hiccups
Onset/Duration:	Onset IV/ IO: 1-3 min IM: approx 10-20 min duration of action is dose dependent
Classification:	Benzodiazepine, CNS depressant, anticonvulsant, amnestic, muscle relaxant
Action:	Potential of gamma aminobutyric acid (GABA) by binding to specific benzodiazepine receptors in the CNS; may act on limbic system and on the reticular formation
Notes:	Sedative effect potentiated by barbiturates, alcohol, and narcotics



Morphine		P
Indications:	Pain management, Pulmonary edema, Procedural sedation, Analgesia, ACS	
ADULT Dose:	0.1 mg/Kg IV/IM/IO max initial dose 10 mg IV, and 15 mg IM	
Contraindications:	Head injury, exacerbated COPD, depressed respiratory drive, hypotension, ALOC	
Pediatric Considerations:	0.1 mg/kg IV/IM/IO, max initial dose 3 mg, max cumulative dose 0.3 mg/kg	
Precautions:	Patients with acute bronchial asthma, chronic pulmonary diseases, severe respiratory depression, and pulmonary edema induced by chemical irritants.	
Adverse Effects:	Respiratory depression, hypotension, ALOC, nausea & vomiting	
Onset/Duration:	IV immediate onset, peak effect 20 min. IM/SQ 15-30 min. , peak effect 30-60 min. Duration 2-7 hours	
Classification:	Narcotic analgesic	
Action:	Narcotic agonist with activity at u-receptors (supraspinal analgesia, euphoria, respiratory and physical depression), K-receptors (sedation and miosis), and delta-receptors (dysphonia, hallucinations, respiratory and vasomotor stimulation)	
Notes:	Naloxone and respiratory equipment should be immediately accessible.	
Naloxone (Narcan)		R E A P
Indications:	Suspected or Known opiate overdose Altered level of consciousness	
ADULT Dose:	0.4 - 4mg IV/IO/IN/IM A P , prn 0.4 - 4mg IN R E , prn	
Contraindications:	None in the emergent setting	
Pediatric considerations:	Dose : 0.1 mg/kg Max dose 2 mg Use caution in newborns (Physician order needed)	
Precautions:	Rapid reversal of narcotic effects may lead to combative behavior and vomiting May not reverse hypotension For patients with chronic pain issues administer 0.4 mg increments until respirations improve	
Adverse Effects:	Hypertension , Nausea, Vomiting, Tremors, Dysrhythmias	
Onset/Duration:	IV/IO immediate SQ/ IM 5-10 minutes 20-30 minute duration IN onset 2-3 minutes	
Classification:	Narcotic Antagonist	
Action:	Competitively binds with opiate receptor sites in the CNS	
Notes:	Synthetic opioids may need higher and repeated doses for clinical effect. Airway management and ventilatory support cannot be replaced with Naloxone therapy.	



Nitroglycerin (NitroStat /NitroQuick)

E A P

Indications:	ACS, Acute angina, MI, CHF with pulmonary edema
ADULT Dose:	0.4 mg SL q 3-5 minutes SBP >100 and patient is symptomatic Drip: Start at 10mcg/min increase q 4-5 min titrate to effect to max 100 mcg/min Paste; 1-2 inches PRN
Contraindications:	SBP <100, Intracranial bleeding/head trauma <u>Within 24 hours</u> of erectile dysfunction or pulmonary hypertension medication Sildenafil (Viagra/Revation) or Vardenafil (Levitra) <u>Within 48 hours</u> of erectile dysfunction medication Tadalafil (Cialis)
Precautions:	Will cause severe loss of blood pressure if administered to a patient experiencing an inferior MI
Adverse Effects:	Hypotension, HA, syncope, reflex tachycardia, skin flushing
Onset/Duration:	Onset immediate, 0-3 minutes duration up to 30 minutes
Classification:	Nitrate
Action:	Causes relaxation of the vascular smooth muscle via stimulation of intracellular cyclic guanosine monophosphate production. This results in decreased preload, afterload, blood pressure, left ventricular workload and myocardial oxygen demand. Relaxes esophageal smooth muscle.
Notes:	Aspirin may increase nitrate serum concentrations; marked symptomatic hypotension may occur with coadministration of calcium channel blockers or beta-blockers (dose adjustment of either agent may be necessary)

Nitroglycerin Drip Chart
50 mg in 250 mL D5W

mcg/min	gtt/min (mL/hr)		mcg/min	gtt/min (mL/hr)		mcg/min	gtt/min (mL/hr)
5	1.5 gtt/min		64	19.5 gtt/min		125	37.5 gtt/min
10	3.0 gtt/min		70	21.0 gtt/min		130	39.0 gtt/min
15	4.5 gtt/min		75	22.5 gtt/min		135	40.5 gtt/min
20	6.0 gtt/min		80	24.0 gtt/min		140	42.0 gtt/min
25	7.5 gtt/min		85	25.5 gtt/min		145	43.5 gtt/min
30	9.0 gtt/min		90	27.0 gtt/min		150	45.0 gtt/min
35	10.5 gtt/min		95	28.5 gtt/min		155	46.5 gtt/min
40	12.0 gtt/min		100	30.0 gtt/min		160	48.0 gtt/min
45	13.5 gtt/min		105	31.5 gtt/min		170	51.0 gtt/min
50	15.0 gtt/min		110	33.0 gtt/min		180	54.0 gtt/min
55	16.5 gtt/min		115	34.5 gtt/min		190	57.0 gtt/min
60	18.0 gtt/min		120	36.0 gtt/min		200	60.0 gtt/min



Nitrous Oxide (Nitronox)

P

Indications:	Acute pain due to orthopedic trauma (i.e. soft tissue injury or suspected fracture), renal colic, burns, abdominal pain, moderate to severe pain, anxiety, apprehension
ADULT Dose:	Instruct the patient to inhale deeply through the demand valve and mask or mouth piece
Contraindications:	Head injury, Chest injury, EtOH and drug intoxication (relative) COPD, potential bowel obstruction, pregnancy
Pediatric Considerations:	Instruct the patient to inhale deeply through the demand valve and mask or mouth piece
Precautions:	Pregnancy safety: nitrous oxide increases the incidence of spontaneous abortion, ventilate patient area during use, nitrous oxide is a non-flammable and non-explosive gas, nitrous oxide is ineffective in 20% of the population, Oxygen flush after discontinuation of nitrous oxide. Use of nitrous oxide with patients who have been using cannabis can lead to potentiated effect of dysphoria and paranoia
Adverse Effects:	Drowsiness, Dizziness , Nausea/Vomiting
Onset/Duration:	onset: 2 - 5 minutes duration: 2 – 5 minutes
Classification:	Inhaled gaseous analgesic and general anesthetic



Norepinephrine Bitartrate (Levophed)

P

Indications:	BP control in certain acute hypotensive states (MI, septicemia, blood transfusion, drug reaction). As an adjunct in treatment of cardiac arrest and profound hypotension not related to volume loss. Hypotensive refractory to other sympathomimetics. Neuogenic shock.								
ADULT Dose:	4 mg in 250cc of D5W then titrate 2-20 mcg/min IV/IO. Adjust rate of flow to establish and maintain low normal BP (80-100mmHg systolic) sufficient to maintain vital organ circulation. In previously HTN pt, recommend BP rise no higher than 40mmHg below preexisting systolic BP. Turn drip off if blood pressure maintains at normal levels. Monitor BP q 2min until reach desired BP, then q 5 min with continued infusion. Rate of flow watched constantly; pt never left unattended.								
Contraindications:	Sulfite allergy. Hypotensive states due to hypovolemia from blood volume deficits except emergency measure to maintain coronary and cerebral artery perfusion until blood volume replacement therapy completed. Mesenteric or peripheral vascular thrombosis.								
Pediatric Considerations:	0.01-0.5mcg/kg/minute IV drip only (rarely used).								
Precautions:	Can be deactivated by alkaline solutions. Infusion site in upper extremity large vein, AC if possible. Extravasation can cause tissue necrosis. Caution with occlusive vascular disease, elderly. Infusion site checked frequently for free flow. Blanching along course of infused vein, sometimes without obvious extravasation, attributed to vasa vasorum constriction with increased permeability of vein wall, permitting leakage. Extreme caution with MAOI or antidepressant triptyline or imipramine types per severe, prolonged hypertension. If continuous admin to maintain BP in absence of blood volume replacement, following may occur: severe peripheral, visceral vasoconstriction; decreased renal perfusion, urine output; poor systemic blood flow despite "normal" BP; tissue hypoxia; lactate acidosis. Avoid abrupt withdrawal.								
Adverse Effects:	Anxiety, palpitations, hypertension, reflex bradycardia. VT/VF in pts with profound hypoxia or hypercarbia. Conventional dose with hypersensitive pt (hyperthyroid) or overdose may cause severe HTN, violent HA, photophobia, stabbing retrosternal px, pallor, intense sweating, vomiting.								
Onset/Duration:	Rapid/1-2min following discontinuation of infusion.								
Classification:	Sympathomimetic								
Action:	Peripheral vasoconstrictor (alpha-adrenergic). Inotropic stimulator of heart and coronary artery dilator (beta-adrenergic).								
Notes:	Elderly pt dose start at lower end, reflecting greater frequency of decreased hepatic, renal, and cardiac function. Admin in saline solution alone not recommended.								
	Mix 4mg into 250mLD5W Usual dose range 2-20mcg/min				Final Concentration 16mcg/mL Maximum dose 20mcg/min				
Desired Dose (mcg/min)	4 mcg/min	8 mcg/min	12 mcg/min	16 mcg/min	20 mcg/min	24 mcg/min	28 mcg/min	30 mcg/min	
Drip Rate (drops/min)	15 gtts/min	30 gtts/min	45 gtts/min	60 gtts/min	75 gtts/min	90 gtts/min	105 gtts/min	113 gtts/min	



Ofirmev (IV Acetaminophen)

P

Indications:	Fever and analgesia
ADULT Dose:	1,000 mg IV over 15 min (greater than/equal to 50 kg)
Contraindications:	Allergy to acetaminophen
Pediatric Considerations:	15 mg/kg IV over 15 min
Precautions:	Severe liver disease, long term alcohol use, many OTC products contain acetaminophen.
Adverse Effects:	Hypoglycemia, allergic reaction, headache, nausea/vomiting
Onset/Duration:	Onset 15 min analgesia, 30 min antipyresis. Duration is 4 to 6 hours
Classification:	Analgesic and antipyretic
Action:	Analgesia, antipyresis

Ondansetron (Zofran)

E A P

Indications:	Nausea/ vomiting
ADULT Dose:	4-8mg IV/IM/PO/SL 4 mg SL (with specialized training) E
Contraindications:	Hypersensitivity, liver disease (reduce dose)
Pediatric Considerations:	0.15 mg/kg IV/IM/PO Recommended for use in children greater than 2 years of age
Precautions:	Maintain lower dose with amiodarone Maintain lower dose with liver disease Antiemetic of last choice in pregnancy
Adverse Effects:	Rare hypersensitivity, fatigue, pyrexia, dizziness, headache, constipation, urinary retention.
Onset/Duration:	Rapid onset duration 5 hours
Classification:	Antiemetic
Action:	Selective serotonin blocking agent
Notes:	May precipitate with Sodium bicarbonate.



Oxymetazoline (Afrin)

E A P

Indications:	Pre-medication for nasal intubation, Epistaxis
ADULT Dose:	2-3 puffs each nostril (on inhalation)
Contraindications:	Known hypersensitivity
Pediatric Considerations:	Children under 12 require diluted concentration
Precautions:	Hyperthyroidism, Cardiac Disease Hypertension, Diabetes mellitus, Simultaneous use of MAOI and ephedrine may result in Hypertensive crisis
Adverse Effects:	Cardiovascular collapse Hypertension palpitations
Onset/Duration:	Immediate onset 30min-4hour duration
Classification:	vasoconstrictor
Action:	Local vasoconstriction of dilated arterioles causing reduction of blood flow and reduction of nasal congestion

Oxytocin (Pitocin)

P

Indications:	Control of postpartum hemorrhage
ADULT Dose:	10 units IM then mix 20 units in 1000cc NS administered IV at 50-1000cc/hr to control postpartum hemorrhage
Contraindications:	Hypersensitivity Toxemia of pregnancy Undelivered placenta Undelivered baby
Precautions:	Status post cervical or uterine surgery, uterine sepsis, primipara after age 35
Adverse Effects:	HTN, subarachnoid hemorrhage, anxiety, dysrhythmias, tetany, uterine rupture, hyponatremia
Onset/Duration:	Onset IV: 1 min IM: 3-7 min Duration IV: 30 min with half-life of 12-17 min IM: 60 min with half-life of 12-17min
Classification:	Hormone
Action:	A synthetic water-soluble protein pharmacologically identical to the naturally-occurring oxytocin secreted by the posterior pituitary. Directly produces phasic uterine contractions characteristic of normal labor and delivery and to treat uterine atony.
Notes:	Additive effects with other vasopressors and ephedra, amphetamine or methamphetamines resulting in severe hypertension; rule out multiple fetuses.



Prednisone

P

Indications:	Reactive airway disease
ADULT Dose:	60 mg PO
Contraindications:	Systemic fungal infections
Pediatric Considerations:	1 – 2 mg/kg PO
Adverse Effects:	Prolonged wound healing, nausea & vomiting
Classification:	Glucocorticoid
Action:	Decreases inflammation by depressing migration of polymorphonuclear leukocytes and activity of endogenous mediators of inflammation.
Notes:	Attempt to administer medication with pudding or other palatable substance

Procainamide (Pronestyl)

P

Indications:	Suppressing PVCs refractory to Lidocaine Suppressing ventricular tachycardia (with a pulse) refractory to Lidocaine Suppressing ventricular fibrillation refractory to Lidocaine PSVT with wide-complex tachycardia of unknown origin (drug of choice when associated with WPW)
ADULT Dose:	Perfusing rhythm: loading dose 20mg/min IV infusion up to 17mg/kg followed by drip of 1-4mg/min (mix 2Grams/250cc NS for 8mg/cc). Stop if hypotension occurs or if QRS widens by 50%
Contraindications:	2 nd & 3 rd AV block Bradycardias Torsades Prolonged QT Lupus
Pediatric Considerations:	2-6mg/kg slow IV at 25 to 50mg/min
Precautions:	May exacerbate arrhythmias or produce paradoxical VT in Afib/Aflutter patients
Adverse Effects:	Anxiety, nausea, seizures, widening QRS, hypotension, CNS toxicity
Onset/Duration:	10-30 min onset 3-6 hours duration
Classification:	Anti-arrhythmic
Action:	Class 1A membrane stabilizer inhibits recovery after repolarization resulting in decreasing myocardial excitability and conduction velocity.
Notes:	Caution with concomitant use of other class 1A antiarrhythmics (Quinidine, TCA's), digoxin



Promethazine (Phenergan)

P

Indications:	Nausea /vomiting Analgesic potentiation
ADULT Dose:	6.25-12.5 mg slow IV/IO/deep IM (if ≥ 60 y/o 12.5 mg IV/IO/IM) start at 6.25 mg and titrate dose to desired effect Must be diluted approx 1 : 10
Contraindications:	Documented hypersensitivity Comatose patients Debilitated patients (signs of dehydration and weakness) Glaucoma Concomitant CNS depressant use/administration Children under age 2
Precautions:	Avoid SQ administration Give slowly -rapid administration can cause vein irritation, phlebitis and sclerosis Avoid concomitant use with epinephrine as it may result in hypotension Watch for signs/symptoms of excessive sedation. Dystonic reaction (treat with Diphenhydramine)
Adverse Effects:	Reduces seizure threshold May reduce seizure threshold in heatstroke patients. Drowsiness, sedation, ALOC, allergic reaction, dysrhythmia, nausea and vomiting, hyperexcitability, dystonic (extrapyramidal) reaction and hypertension. Use in children may cause hallucinations, convulsions and sudden death.
Onset/Duration:	Onset: IV, 5 minutes; IM, 20 minutes Duration: 4-6 hours
Classification:	Anti-emetic, phenothiazine, antihistamine, H ₁ receptor antagonist, antivertigo agent and antitussive
Action:	Blocks cholinergic receptors in the vomiting center, which mediate nausea and vomiting; competes with histamine for the H ₁ receptor site.
Notes:	In case of dystonic reaction, treat with diphenhydramine. Promethazine decreases the effects of anticoagulation therapy.



<p>Indications:</p>	<p><u>FOR INTERFACILITY TRANSPORT</u> The infusion must be initiated by transferring hospital, Verify infusion rate prior to departing hospital. Insure that drip chart comes with medication, verify CXR, verify arterial blood gas and VS are within norms</p> <p><u>PATIENTS IN CRISIS (EXCITED DELIRIUM CONDITION)</u>- After initial control obtained, i.e. by police use of tasers or other means to include droperidol, midazolam or Ketamine, intubate the patient and then start an IV infusion with maintenance doses. See doses below. Do not discontinue until the EMERGENCY DEPARTMENT PHYSICIAN TAKES OVER. Decrease the infusion if hypotension, respiratory depression occur.</p>
<p>ADULT Dose:</p>	<p>20-50mg IV q 10 seconds until onset. (1-2.5mcg/kg/min) to desired sedation level. Maintenance BP >90 Normal maintenance range: 10-20mg incremental IV bolus Avoid rapid bolus. Do not abruptly stop drug Use dedicated line. Dilute only with normal saline to a concentration not less than 2mg/ml. Rate of administration-slow IVP</p>
<p>Contraindications:</p>	<p>Known hypersensitivity, known allergy to eggs or soy or propofol or peanuts</p>
<p>Pediatric Considerations:</p>	<p>2 mg/kg IV/IO additional doses of 1 mg/kg may be administered at two minute intervals</p>
<p>Adverse Effects:</p>	<p>Hypotension, respiratory depression, respiratory acidosis Most common adverse reaction: hypotension. If SBP< 90, give 500cc NS bolus (provided patient does not have pulmonary compromise) and turn drip rate down by 50%. Call Medical Control. Bradycardia, hypertension, Torsades de Pointes all respond to MgSO4. Other potential side effects include: Injection site pain, involuntary muscle movement, nausea and vomiting, anaphylaxis (rare) to soy and peanuts</p>
<p>Classification:</p>	<p>Sedative/hypnotic/anesthetic adjunct</p>
<p>Action:</p>	<p>CNS Depressant</p>
<p>Notes:</p>	<p>Monitoring: Continuous cardiac and pulse oximetry monitoring and ETCO2 with blood pressure every 15 minutes; watch for hypotension, apnea, airway obstruction, oxygen desaturation, document ETCO2 wave form</p>



Rocuronium (Zemuron)

P

Indications:	Need for aggressive airway control and maintenance using RSI
ADULT Dose:	0.6-1.2 mg/kg IV
Contraindications:	Muscular disorders Known hypersensitivity
Pediatric Considerations:	1 mg/kg IV
Precautions:	Not recommended for RSI in Caesarean patients or those over 65 years of age.
Adverse Effects:	Hypotension Altered mental status Increases pulmonary resistance
Onset/Duration:	Onset: 60-70 seconds Duration: 20+ minutes
Classification:	Nondepolarizing neuromuscular blocker
Action:	Neuromuscular blockade (Paralysis)
Notes:	Airway control equipment must be readily available. Intubation conditions expected in 1-2 minutes after injection. Consider lower doses in extremely debilitated patients.

Sodium Bicarbonate

P

Indications:	Cardiac arrest 2 ^o to preexisting hyperkalemia or TCA OD with ECG changes of prolonged QT or QRS, or with seizures with VF/VT arrest in setting of meth/cocaine overdose. Consider in prolonged arrest.
ADULT Dose:	8.4% - 1 mEq/kg IV, then 25 mEq in 250ml NS and run 250 ml/hr
Pediatric Considerations:	4.2% - 1 mEq/kg IV/IO May achieve 4.2% solution with equal volumes of 8.4% solution and sterile water, mix well.
Precautions:	Do not administer in the same IV with calcium chloride Prepare to ventilate patient.
Adverse Effects:	Metabolic alkalosis, electrolyte imbalance, fluid overload
Onset/Duration:	Immediate if IV, onset is less than 15 min Duration 1-2 hours
Classification:	Alkalizing agent
Action:	Agent that dissociates to provide bicarbonate ion to buffer hydrogen ions in order to raise the pH level to reverse acidosis. It has also been found beneficial in the event of drug overdose in order to force urine alkalinization/divresis, membrane stabilization of cardiac cells as well, and electrolyte balance restoration.
Notes:	Most catecholamines and vasopressors (dopamine, epinephrine) can be deactivated by alkaline solutions like sodium bicarbonate. When administered with calcium chloride, a precipitate may form that will clog the IV line.



Succinylcholine (Anectine)

P

Indications:	An adjunct to general anesthesia, to facilitate tracheal intubation, and to provide skeletal muscle relaxation.
ADULT Dose:	1.5 mg/kg IV
Contraindications:	Hyperkalemia
Pediatric Considerations:	1-2 mg/kg IV/IM
Precautions:	Caution should be observed if succinylcholine is administered to patients during the acute phase of injury following major burns, multiple trauma, extensive denervation of skeletal muscle or upper motor neuron injury.
Adverse Effects:	Respiratory depression Apnea Anaphylaxis Hypertension Hypotension Renal Failure Hyperkalemia Increased intraocular pressure Dysrhythmias Malignant hyperthermia
Onset/Duration:	Onset: 1 minute Duration: 4-6 minutes
Classification:	Depolarizing neuromuscular blocking agent
Action:	Short-acting depolarizing-type, skeletal muscle relaxant
Notes:	Should not be mixed with alkaline solutions.

Tenecteplase (TNKase)

P

Indications:	STEMI confirmed with Medical Control authorization required
ADULT Dose:	Single IV bolus over 5sec; if <60kg/132lbs then 30mg; if 60-70kg/132-154lbs then 35mg; if 70-80kg/154-176lbs then 40mg; if 80-90kg/176-198lbs then 45mg; and, if >90kg/198lbs then 50mg
Contraindications:	Active internal bleeding History of CVA, intracranial/intraspinal surgery or trauma past 2 months, intracranial neoplasm/arteriovenous malformation or aneurysm Severe uncontrolled HTN
Precautions:	Blood vessel punctures should be minimized, especially non-compressible sites.
Adverse Effects:	Bleeding
Onset/Duration:	Rapid/90-130min half-life
Classification:	Thrombolytic, tissue plasminogen activator
Action:	Binds to fibrin and converts plasminogen to plasmin; decreases systemic activation of plasminogen and the resulting degradation of circulating fibrinogen.
Notes:	Do not give with glucose-containing solution as may precipitate. Do not use in-line filter.



Thiamine (Betalin, Biamine, Vitamin B1)

P

Indications:	Coma and seizures of unknown origin especially if alcohol use is suspected. Concurrent use with D50 for patients with history of alcohol abuse. Malnutrition or thiamine deficiency Suspected Wernicke or Korsakoff Syndrome.
ADULT Dose:	100 mg IM/IV (slow)
Contraindications:	Known hypersensitivity
Adverse Effects:	Anaphylaxis (rare), Nausea/Vomiting, Hypotension (from rapid administration or excessive dose), Anxiety/Agitation
Onset/Duration:	ONSET: rapid DURATION: variable
Classification:	B complex vitamin
Action:	Allows and is required for normal metabolism of glucose. Combines with ATP to form thiamine pyrophosphate coenzyme, a necessary component for carbohydrate metabolism. Provides the appropriate thiamine levels to allow glucose to be utilized in sufficient amounts, thus reversing cellular hypoglycemia secondary to thiamine deficiency

Ticagrelor (Brilinta)

P

Indications:	Confirmed STEMI in accordance with county STEMI triage procedure.
ADULT Dose:	180 mg PO
Contraindications:	Active pathological bleeding, bleeding conditions/disorders (hemophilia), peptic ulcer. Intracranial hemorrhage. Recent surgery, recent serious surgery (physical trauma)
Precautions:	Avoid use with CYP3A and P450 inhibitors (Azithromycin, oral antifungals, antivirals). Opioids delay and reduce absorption of Ticagrelor.
Adverse Effects:	Bleeding and dyspnea
Onset/Duration:	2 hours onset, duration (half-life) 8 hours
Classification:	Inhibitor of platelet activation and aggregation
Action:	Blocks the P2Y12P ADP receptor inhibiting platelet activation and aggregation



Tranexamic Acid (TXA, Cyclokapron)

P

<p>Indications:</p>	<p>TXA is approved for use in patients with known or suspected hemorrhage/internal bleeding. Blunt or penetrating trauma (multi-system, major pelvic fractures, solid organ injuries...) with evidence of marked blood loss. Evidence of injury consistent with non-compressible hemorrhage (e.g., penetrating thoraco-abdominal trauma or unstable pelvis fractures) along with heart rate >120 bpm and systolic blood pressure (SBP) <90 mmHg are suggested criteria. Consider vital sign adjustments for the geriatric population (> 65 years of age with systolic BP < 110 mm Hg). Sustained tachycardia HR>120/minute with signs of hypo-perfusion (ALOC, cool extremities...) or if the provider determines the patient to be a high risk for significant hemorrhage Traumatic injury occurs within the immediately preceding 3 hours (preferably within the 1st hour) Traumatic amputation or major arterial bleeding requiring tourniquet Patients with suspected significant bleeding, regardless of cause Espistaxis and Post-partum Hemorrhage <i>*Pregnant patients and patients on anti-coagulation medications are eligible</i></p>
<p>ADULT Dose:</p>	<p>1 gram in 100ml NS/LR IV over 10 minutes. 1 gm in 100 ml LR/NS = 10 mg/ml, followed by 1gm in 250ml NS/LR IV over 1 hour 100-200 mg topical via cotton or gauze</p>
<p>Pediatric Considerations:</p>	<p>15mg/kg (max 1gm) in 100ml NS/LR IV over 10 minutes, followed by 2mg/kg in 250ml NS/LR IV over 1 hour.</p>
<p>Contraindications:</p>	<p>Greater than three hours since traumatic event Non-hemorrhagic shock Evidence of Disseminated Intravascular Coagulation Isolated head injury Neurogenic Shock (no evidence of hemorrhage) Known history of severe renal failure Known history of thromboembolism (relative) Known hypersensitivity (allergy) to TXA Hemorrhagic shock controlled with other hemostatic agents/measure.</p>
<p>Precautions:</p>	<p>Begin infusion as soon as possible after injury, but no later than 3 hours after injury. Do not give through the same IV as Hextend or blood products. Patients taking oral tretinoin for treatment of leukemia may have enhanced effects Do not give IV push – will cause hypotension. Must be given over 10 minutes Use with caution with patients with a history of DVT, PE, known clotting disorders or severe renal failure</p>



Tranexamic Acid (TXA, Cyclokapron)

P

continued

Adverse Effects:	<p>TXA has not been shown to cause significant increase in deep vein thrombosis (DVT), pulmonary embolus, myocardial infarction, or stroke in published trials to date.</p> <p>Dizziness Headache Nausea Vomiting Diarrhea Orthostasis Hypotension (with rapid administration) Seizures (seen mainly in the pediatric cardiac surgery population) Female patients taking or using any form of birth control containing estrogen and progestin are at increased risk for blood clots (enhanced thrombogenic effects) and TXA increases that risk.</p>
Onset/Duration:	<p>Onset of action within 4 hours after IV administration, exact time of onset unclear and variable. Delayed effects up to 48 hours are consistent with anti-inflammatory actions.</p>
Classification:	<p>Anti-Fibrinolytic</p>
Action:	<p>Tranexamic acid (TXA) is a synthetic lysine analog that competitively inhibits the activation of plasminogen to plasmin. TXA may help stabilize clot formation and decrease extravascular bleeding.</p>



Vecuronium (Norcuron)

P

Indications:	Paralysis to facilitate intubation
ADULT Dose:	0.1mg/kg IV/IO defasciculating dose 0.01 mg/kg
Contraindications:	Newborn infants, myasthenia gravis
Pediatric Considerations:	0.1mg/kg IV/IO
Precautions:	Patient must be sedated
Adverse Effects:	Apnea
Onset/Duration:	Onset 1-2 minutes/ Duration 30 minutes
Classification:	Nondepolarizing neuromuscular blocking agent
Action:	Prevents acetylcholine from binding to receptors on the motor end plate, thus blocking depolarization.

Verapamil

P

Indications:	Narrow complex tachycardia
ADULT Dose:	5 mg IV/IO
Contraindications:	Heart failure, AV block, Sick sinus syndrome, WPW, LGL syndrome
Precautions:	Digoxin, avoid polypharmacy with other rate related medications
Adverse Effects:	bradycardia, hypotension
Onset/Duration:	Onset 3-5 min, Duration up to 6 hours
Classification:	Calcium channel blocker, class IV antiarrhythmic
Action:	Inhibits calcium ion from entering the “slow channels” or select voltage sensitive areas, slow automaticity and conduction of AV node.



Drug Reference

Equivalents:

1kg = 2.2lb	1 ml = 60 mcgtts (micro tubing)	1 gm = 1000 mg
1kg = 1000 gm	1 ml = 10,15,20 gtts (macro tubing)	1 mg = 1000 mcg
	1 L = 1000 ml	
	1 ml and 1 cc are interchangeable	

Conversions:

MULTIPLY to convert a larger unit into a smaller unit using the above table.

DIVIDE to convert a smaller unit into a larger unit using the above table.

Dosage Calculations:

To calculate the amount of drug to be drawn up or administered, use the following formula:

WHAT (type and amount of drug ordered) multiplied by the **QUANTITY** (volume of fluid in the container) divided by **HAVE** (amount of drug in the container) = the amount to be administered.

$$\frac{\text{WHAT} \times \text{QUANTITY}}{\text{HAVE}} = \text{Amount to be administered}$$

IV Rate:

To calculate an IV drip rate based on the volume of fluid to be infused over time. (Make sure the unit measurement of the concentration and the dosage are the same. [e.g. both in milligrams])

$$\text{Drops per minute} = \frac{\text{VOLUME to be infused in cc} \times \text{Drop factor of IV set}}{\text{Time in minutes}}$$

To calculate an IV drip rate for a medication that is administered based on a specified dosage to be infused per minute.

$$\text{Drops per minute} = \frac{\text{Dosage per minute to be administered} \times \text{Drop factor (60)}}{\text{Concentration of medication per ml}}$$

To calculate an IV drip rate for a medication that is administered based on a specified dosage per kilogram of body weight per minute.

$$\text{Drops per minute} = \frac{\text{Desired dosage per minute} \times \text{Weight in Kg} \times \text{Drop factor of IV set}}{\text{Concentration of medication per ml}}$$



Air Ambulance Transports

An air ambulance will be activated based on the Washington State Trauma Triage Procedures by the on scene EMS provider or Incident Commander. Whenever possible, providers will contact Medical Control prior to activating an air ambulance. The decision process as to when to mobilize an air ambulance should take into consideration: site resuscitation, stabilization capabilities and ground transport time. Dispatch may assist in contacting an air ambulance service for activation as soon as the need for air transport is identified.

Every attempt should be made to stabilize the patient prior to transport, including IV, airway, chest decompression or stabilization, control of external hemorrhage, and spine immobilization. Trauma associated cardiac arrest patients should not be transferred by air ambulance. Transfer of care to air ambulance personnel will optimally occur at designated landing sites. Deviation from designated landing sites should be briefly discussed with Medical Control.

Information to have available regarding airlift transport:

- Map coordinates - township, range and section
- Location of nearest landing zone
- Capability to transport to landing zone
- How landing zone is marked
- Any obstructions near landing zone
- Relevant weather information

Provider Present at the Scene

The prehospital care provider functions under the direction of the on-duty Medical Control physician. With Medical Control permission, a physician, physician's assistant or nurse practitioner on scene may participate in the care of a patient at the scene of any emergency in one of the following ways:

1. Take total responsibility for management of the patient(s). If so he/she must accompany the patient(s) to the hospital. The physician, physician's assistant or nurse practitioner on scene must supply proof of credentials prior to initiation of any patient care direction or treatment.
2. Offer assistance in caring for the patient(s), allowing the prehospital care provider to remain under the control of the Medical Control Physician and within the prehospital provider's scope of practice.

In all cases, the Medical Control Physician must be contacted to specifically delegate authority to any on-scene physician. Access to communication with the Medical Control should be provided to any on-scene physician on request. Notation of Physician's identification and directive from Medical Control must be documented on the Medical Incident Report.



Emergency at a Physician's office

At a private Physician's, physician's assistant or nurse practitioner's office, the individual physician maintains the responsibility for the treatment and management decisions for the patient. During transport, treatment rendered by the prehospital provider must remain within the provider's scope of practice.

Patient Care Reports (PCR)

A copy of the ECG tracing **MUST** be attached to all copies of the PCR when **ANY** dysrhythmia or ischemic ST segment changes are encountered in the field. Per WAC requirements all PCR must be available at the Emergency Department within 24 hours of patient arrival.

The prehospital contact report is to include:

- a. Unit identification
- b. Age and sex of patient
- c. Severity
- d. Chief complaint
- e. Relevant medical history
- f. Vital signs
- g. Treatment given, and response to treatment
- h. ETA
- i. Request for additional information or treatment



Ten Critical Steps for Handling Possible Bioterrorism Events

1 – Maintain an index of suspicion.	In an otherwise healthy population, some associations are very suggestive, especially when seen in clusters, high numbers, or unusual presentations.	
	“Clustered” Symptoms	Potential Bioagents
	Hemoptysis	Plague
	Flaccid Paralysis	Botulism
	Purpura	Viral Hemorrhagic Fevers (VHF)
	Wide mediastinum	Anthrax
	Centripetal rash	Smallpox
2 – Protect yourself and your patients.	Use appropriate personal protection equipment (PPE). Prophylaxis; vaccines, if available; or antibiotics, if risks are known.	
3 – Adequately assess the patient.	<p>Review and assess the patient’s history. Also, ask:</p> <ul style="list-style-type: none"> • Are others ill? • Were there any unusual events? • Was there an uncontrolled food source or other environmental factor? • Was there vector exposure? • Has the patient been traveling? • What is the patient’s immunization record? <p>Perform a physical examination with special attention to the respiratory system, nervous system, skin condition and hematologic and vascular status.</p>	
4 – Decontaminate as appropriate.	Do not use bleach on exposed people. Soap, water and shampoo are perfectly adequate for all biological and most chemical agents. Chemically contaminated clothes should be removed and discarded safely. Biologically contaminated clothes can be laundered with soap, water and perhaps, bleach.	
5 – Establish a diagnosis.	Think clinically and epidemiologically; always send specimens for culture.	
	Symptom (individuals)	Possible Diagnosis
	Pulmonary	Tularemia, plague, staph enterotoxin B (SEB)
	Neuromuscular	Botulism, Venezuelan equine encephalitis (VEE)
	Bleeding/purpura	VHF, ricin, plague (late)
	Rash (various types)	VHF, T2 mycotoxin, smallpox, plague
	Flu-like symptoms	Varies
	Immediate Symptoms (large numbers)	Possible Diagnosis
	Pulmonary	SEB, mustard, Lewisite, phosgene, cyanide
	Neurologic	Nerve gases, cyanide
Delayed Symptoms (large numbers)	Possible Diagnosis	



	Pulmonary	Biologic agents, mustard, phosgene
	Neurologic	Botulism, VEE, other encephalitis
6 – Render prompt treatment.	<u>A</u> irway, <u>B</u> reathing, <u>C</u> irculation.	
7 – Provide good infection control.	<ul style="list-style-type: none"> Gown, gloves, mask and hand washing, and eyewear if necessary, are sufficient. Recommended isolation precautions for biologic agents include: <ul style="list-style-type: none"> Standard Precautions – for all individuals/patients Contact Precautions – Viral Hemorrhagic Fevers Droplet Precautions – Pneumonic Plague and Tularemia Airborne Precautions - Smallpox 	
8 – Alert the proper authorities.	<p>CALL FIRST: Your local law enforcement agency; call either 911 or your local phone number for law enforcement.</p> <p>CALL SECOND: Your area FBI office Western WA: 206-622-0460 Eastern WA: 509-747-5196 After hours statewide in WA: 206-622-0460</p> <p>CALL THIRD: Your local emergency management agency, or if unavailable, the WA state EM Duty Officer at: 1-800-258-5990</p>	
9 – Assist in the epidemiologic investigations.	<p>Steps in an epidemiologic investigation so as to determine who may be at risk</p> <ul style="list-style-type: none"> Count cases; Relate to the at-risk population; Make comparisons; Develop hypotheses; Test hypotheses; Make inferences; Conduct studies; Interpret and evaluate. 	
10 – Know and spread this information.		

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Medical Spanish

Initial questioning

Is there someone with you who speaks English?

¿Hay alguien con usted que hable inglés?

Ah-ee ahl-gee-ehn hohn oss-tehd keh ah-bleh enn-glehs?

I speak a little Spanish. Please answer yes or no to the following questions.

Hablo un poco de español. Por favor conteste si o no a las siguientes preguntas.

Ah-bloh oon pohr-fah-borg kokn-tehs-the see oh noh ah lahs see-gee-ehn-tehs preh-goon tahs.

Speak slowly, please.

Hable despacia, por favor.

Ah-bleh dehs-pah-see-oh, pohr fah-bohr.

What is your name?

¿Cómo se llama?

Koh-moh she yah-mah?

When did the problem start?

¿Cuándo empezó el problema?

Kwahn-doh ehm-peh-soh ehl prog-bleh-mah?

How old are you?

¿Cuántos años tiene?

Kwahn-tohs ah-nyohs tee-eh-neh?

What medicine do you take?

¿Qué medicina toma?

Keh meh-dee-see-nah toh-mah?

Numbers

1. uno	11. once	21. veintiuno
2. dos	12. doce	22. veintidós
3. tres	13. trece	23. veintitrés
4. cuatro	14. catorce	24. veinticuatro
5. cinco	15. quince	25. veinticinco
6. seis	16. dieciséis	26. veintiséis
7. siete	17. diecisiete	27. veintisiete
8. ocho	18. dieciocho	28. veintiocho
9. nueve	19. diecinueve	29. veintinueve
10. diez	20. veinte	30. treinta

Days of the week

Lunes: Monday

Martes: Tuesday

Miércoles: Wednesday

Jueves: Thursday

Viernes: Friday

Sábado: Saturday

Domingo: Sunday

Common Medical Questions/Terms

How do you feel?

¿Cómo se siente?

Koh-moh she see-ehn-the?

Don't move

No se meuva

Noh she mweh-bah

What is the problem?

¿Cuál es el problema?

Kwahl ehs ehl proh-bleh-mah?

We are going to give you an IV

Vamos a ponerle suero intravenoso.

Bah-mohs ah poh-nehr-leg soo-eh-roh enn-trah-beh-noh-soh.

Have you had this problem before?

¿Ha tenido este problema antes?

Ah the-nee-doh ehs-the proh-bleh-mah ahn-tehs?

Do you have a fever?

¿Tiene fiebre?

Tee-eh-neh fee-eh-breh?

Do you have nausea or vomiting?

¿Tiene náusea o vómito?

Tee-eh-neh nah-oo-she-ah oh boh-meh-toh?

Calm down

Cálmese

Kahl-meh-sah



Common Medical Questions/Terms (continued)

Where does it hurt?

¿Donde le duele?
Dohn-deh leh dweh-leh?

Show me

Enseñeme
Ehn-she-nyeh-meh.

When?

¿Cuándo?
Kwahn-doh?

How?

¿Cómo?
Koh-moh?

For how long?

¿Por cuánto tiempo?
Pohr kwahn-toh tee-ehm-poh?

Why?

¿Por qué?
Pohr keh?

Relax, please

Por favor, relájese
Pohr fah-bohr, reh-lah-heh-she.

High Blood Pressure?

Alta presion de la sangre?
Ahl-tah preh-see-ohn deh lah sahn-greh?

Diabetes?

Diabetes?
Dee-ah-beh-tehs?

Asthma?

Asma?
Ahs-mah?

Epilepsy?

Epilepsia?
Eh-pee-lep-see-ah?

Heart disease?

Ehfermedad del corazón?
Ehn-fehr-meh-dad dehl koh-rah-sohn?

Stomach ulcers?

Ulceras del estomago?
Ool-she-rahs dehl ehs-toh-mah-goh?

Do you take medicine?

¿Tomas usted medicina?
Toh-mah oos-tehd lah meh-dee-see-nah?

Pain

When did the pain start?

¿Cuándo empezó el dolor?
Kwahn-doh ehm-peh-soh ehl doh-lohr?

Where did the pain start?

¿Donde empezó el dolor?
Dohn-deh ehm-peh-soh ehl doh-lohr?

Does the pain travel to another place?

¿Le viaja el dolor a otro lugar?
Leh vee-ah-hah ehl doh-lohr ah oh-troh loo-gahr?

How long does the pain last?

¿Cuánto tiempo le dura el dolor?
Kwahn-toh tee-ehm-poh leg doo-rah ehl doh-lohr?

Is it severe?

¿Es severo?
Ehs she-beh-roh?

Does it ache?

¿Es adolorido?
Ehs ah-doh-loh-ree-doh?

Is it like pressure?

¿Es opresivo?
Ehs oh-preh-see-boh?

Is the pain the same since it started?

¿Es el dolor igual desde que empezó?
Ehs ehl doh-lor ee-gwahl dehs-deh keh ehm-peh-soh?

Chest Pain

Pain in the chest?

¿Dolor del Pecho?
Doh-lohr dehl peh-choh?

Point to where the pain is, please.

Apunte dónde tiene el dolor, por favor.
Ah-poon-the dohn-deh tee-eh-neh ehl doh-lohr.

Does the pain travel to your left shoulder (arm)?

¿Le viaja el dolor al hombre (brazo) izquierdo?
Leh bee-ah-hah ehl doh-lohr ahl ohm-broh (brah-soh) ees-kee-her-doh?

Is it piercing?

¿Es punzante?
Ehs poon-sahn-the?

OB / GYN

Are you having contractions?

¿Tiene contracciones?
Tee-eh-neh kohn-track-see-ohn-ehs?

(Don't) push.

(No) Empuje.
(Noh) Ehm-poo-heh

How many minutes do the contractions last?

¿Cuántos minutos le duran las contracciones?
Kwahn-tohs mee-noo-tohs leh doo-rah lah kohn-trahk-see-ohn-ehs?



MNEMONIC'S

Patient Assessment:	Newborn Assessment:	Medical:
A: Airway	A: Appearance	M: Morphine
B: Breathing	P: Pulse Rate	O: Oxygen
C: Circulation	G: Grimace (facial actions)	N: Nitrates
D: Disability	A: Activity	A: Aspirin
E: Expose	R: Respirations	

History:	
S: Signs and symptoms	P: Progression of symptoms
A: Allergies	A: Associated chest pain
M: Medications	S: Sputum productions, speech, word sentences
P: Pertinent past medical history	T: Temperature, tiredness
L: Last oral intake	M: Medications the patient is currently taking
E: Events leading to injury or illness	E: Exercise/Exertion normally tolerated
	D: Diagnosis (previous)

Trauma Assessment:	Trauma:	
Scene safety	V: Vitals	T: Tracks, Tags, Tattoos
Spinal Stabilization	O: Oxygen	I: Instability
LOC	M: Monitor	C: Crepitus
Airway	I: IV/Information	S: Scars
Breathing	T: Transport decision	
Oxygen	H: History	
Circulation	A: Allergies	
Arterial Bleeds	M: Medications	
Bare the Body		

Trauma or Pain Questions:	Trauma:
O: Onset	D: Deformities
P: Provocation, progression	C: Contusions
Q: Quality, pain type?	A: Abrasions
R: Radiation	P: Punctures
S: Severity	
T: Time, duration	B: Burns
	T: Tenderness
	L: Lacerations
	S: Swelling



Causes of Pulseless electrical Activity (PEA) – “5” H’s and T’s:

- | | |
|-----------------------------------|---|
| H: Hypovolemia | T: Toxins |
| H: Hypoxia | T: Tamponade, cardiac |
| H: Hydrogen ion – acidosis | T: Tension Pneumothorax |
| H: Hypo- / Hypokalemia | T: Thrombosis, (Coronary or Pulmonary) |
| H: Hypoglycemia | T: Thrombosis, (hypovolemia increased ICP) |
| H: Hypothermia | |

Altered Mental Status (ALOC):

- | | |
|--|-----------------------|
| A: Alcohol, Drugs | T: Trauma |
| E: Endocrine (glands) | I: Infection |
| I: Insulin, Infection | P: Pyschiatric |
| O: Overdose | S: Shock |
| U: Uremia (2 ^o kidney insufficiency) | |

Triage:

- A:** Alert
- P:** Responsive to Pain
- V:** Responsive to Verbal
- U:** Unresponsive

Charting:

- S:** Subjective
- O:** Objective
- A:** Assessment
- P:** Plan



Phone Numbers

HOSPITALS	
Bremerton Naval Hospital	(360) 475-5678 Medical Reports (360) 475-4286 ED
Children's Hospital Medical Center	(206) 987-2222 Medical Reports (206) 987-2000 Main
Forks Community Hospital	(360) 374-6271 Main (ER ext. 190)
Harborview Medical Center	(206) 731-3074 Medical Reports (206) 731-3000 Main
Harrison Medical Center – Bremerton	(360) 377-9111 Medical Reports (360) 377-3911
Harrison Medical Center – Silverdale	(360) 744-8800 Main
Jefferson Healthcare	(360) 385-7617 Medical Reports (360) 385-2200 Main
Madigan Army Medical Center	(253) 968-1396 Medical Reports (253) 968-1390 Main (ER)
Mary Bridge Children's Hospital	(253) 403-1476 Medical Reports (253) 403-1418 Main (ER)
Mason General Hospital	(360) 426-8171 Medical Reports (360) 426-1611 Main
Olympic Medical Center	(360) 417-7381 Medical Reports (360) 417-7000 Main
St. Anthony's	(253) 530-2100 Medical Reports (253) 530-2000 Main
St. Peters Hospital	(360) 493-7289 (ER)
St. Josephs	(253) 426-6769 Medical Reports (253) 627-4101 Main
Swedish 1st Hill	(206) 386-2573 Medical Reports (206) 386-6000
Swedish Cherry Hill	(206) 320-2111 Medical Reports (206) 320-2000
Tacoma General Hospital	(253) 627-8500 Medical Reports (253) 403-1050 Main (ER)
University of Washington Medical Center	(206) 598-3300 Main (206) 598-2000 Report line (206) 598-4000 ER
Virginia Mason Seattle	(206) 583-6433 ED (206) 624-1144 Main
COMMUNICATION CENTERS	
Airlift Northwest	(800) 426-2430
Life Flight	(800) 452-7434
Clallam County (PENCOM)	(360) 452-4545
Jefferson County	(360) 385-3831
Kitsap County (CENCOM)	(360) 308-5400
Mason County	(360) 426-5533 or (360) 426-4441 (Shel-com)
Olympic Ambulance	(800) 445-2257
INFORMATION	
Chem Trek	(800) 424-9300
Coast Guard Group Seattle	(206) 217-6001
Diver's Alert network (DAN)	(877) 595-0625
Department of Ecology	(425) 649-7000
National response & Terrorist Hotline	(800) 424-8802
Poison Control	(800) 222-1222
WA State Ferries Office-Operations	(206) 515-3456 (watch officer)
WA State Patrol Dispatch	(360) 405-6650 (not for public use)



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Personal Information:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Home: _____

Cell: _____

Work: _____

Agency: _____

Medical Information:

