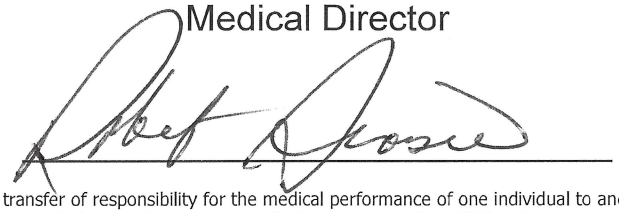
CareFlite®

Making precious minutes count since 1979

2015-2016
Clinical Protocols for Emergency Medical Services

JOHNSON CO. CAREFLITE GROUND EMS

Robert Simonson, DO
Medical Director



Delegation of practice is defined as "the transfer of responsibility for the medical performance of one individual to another, while retaining accountability for the outcome". A physician that provides the medical delegation to, and medical supervision of, an EMS system or program, is referred to as a Medical Director.

As per Texas Administrative Code, Texas Department of State Health Services regulations, Texas Health and Safety Code, Texas State Board of Medical Examiners Rules and the Texas Medical Practice Act, all emergency medical care is performed under the auspices of the CareFlite Medical Director. All rights and privileges granted to pre-hospital medical providers operating within the CareFlite system are granted with the requirement that each individual provider maintain all mandated National, State, and CareFlite system standards, certifications, and licenses.

These protocols were developed and approved by the CareFlite Medical Director in accordance with the statutes outlined within the Texas Health and Safety Code and Emergency Medical Services Act. These protocols may be amended only with the written approvals of the CareFlite Medical Director

Effective date: 10/01/2015 through 11/30/2016

Medical Control (MDMC)

214-947-8486

CareFlite Transport

800-442-6260

Emergency Medical Services Clinical Protocols
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PROTOCOLS

MODE OF TRANSPORT DETERMINANTS

The following examples are not meant to be exhaustive, and depending on the situation there are exceptions. When in doubt, contact CareFlite Medical Control for guidance.

ALS/MICU TRANSPORT:

Care may be provided by CF under standard clinical protocol

- Patients who otherwise require ALS interventions as outlined in the Clinical Protocols for Emergency Medical Services.
- Patient requires 02 and cannot self-administer. i.e. non-rebreather, venturi mask, requires nebulizer treatments during transport.
- Patient has altered mental status, or is a psych patient that requires monitoring due to possible danger to self.
- Patient is non-ambulatory, or cannot maintain sitting position.
- Patients who are on mechanical ventilation.
- Patients who are on mechanical ventilation **and** are on maintenance IV Fluids such as LR, D5W, blood/blood products **and/or 1 medication infusion.** IV infusions may contain electrolytes such as Potassium, Calcium etc. and are not considered medications for the purposes of this decision model.)
- Patient receiving blood product infusions (See TRANSPORT OF THE PATIENT RECEIVING BLOOD PRODUCTS SOG pg 8.6)
- Patients with transcutaneous cardiac pacing.

CRITICAL CARE (Ground / Air) TRANSPORT:

Paramedic to consider transport by Critical Care Transport provider

- Patients who are on mechanical ventilation **and** are on maintenance IV Fluids such as LR, D5W, and/or **> 1 vasoactive medication infusion.** (IV infusions may contain electrolytes such as Potassium, Calcium etc. and are not considered medications for the purposes of this decision model.)
- Patients with transvenous/epicardial cardiac pacing.
- Patients with *monitored* art-lines.
- Patients on an Intra-Aortic Balloon Pump.
- Patients with a Swan-Ganz / Pulmonary Artery Catheter.
- Patients with a ventriculostomy.
- Patients who are evaluated by CFD ALS/MICU for transport where the crew requests a higher level of care for transport.

OVERVIEW

GEOGRAPHIC RESPONSE AREA

These Patient Care Protocols / Suggested Operating Guidelines / Appendices are to be utilized by EMS providers and response agencies/organizations functioning under the Medical Direction of CareFlite; and only within the agencies' primary 911, mutual aid, or transfer service area as defined by local statute, contract, or any combination thereof.

DISASTER RESPONSE

Whether natural or manmade/terrorism related, a disaster is present when an incident overwhelms local, regional, or state response capabilities. Because a disaster can severely disrupt resources across multiple agencies/jurisdictions, agencies/providers under CareFlite Medical Direction/Control may be requested for immediate mutual aid assistance.

Due to the urgency of care needed during disasters, CareFlite providers; as part of an organized response by the State Operations Center (SOC), Texas Department of State Health Services (TDSHS), or agency-specific mutual aid agreements; are allowed to function under CareFlite Medical Direction and CareFlite Treatment Protocols outside of their primary service area, without first having to obtain written approval. However, only Nationally Registered personnel may cross a State line and function in other States. TDSHS certified or licensed providers are allowed to function within the State of Texas as needed.

It is important to note that all disaster response/relief/recovery operations in jurisdictions outside of your immediate service area are being performed under the command/control of the respective public safety agency in that jurisdiction/region. It is therefore inappropriate to deploy local resources to another jurisdiction without those resources first being requested by/from either the State Operations Center (SOC) or Texas Department of State Health Services (DSHS), and/or previously established agency-specific mutual aid agreements.

LEVELS OF PROVIDERS FUNCTIONING UNDER CAREFLITE

The specific duties of an individual EMS provider outlined within this document are based on Texas Department of State Health Services (TDSHS) certification/licensure and CareFlite authorization to function at a given level of care. All CareFlite Emergency Medical Services (EMS) personnel are required to be familiar with the contents of this document as it relates to their specific level of certification and skill authorization.

Texas Department of State Health Services levels of individual provider certification/licensure:

ECA	EMT-BASIC	EMT-INTERMEDIATE	PARAMEDIC
			
May utilize any procedure or medication as outlined under the ECA section of "Summary of Approved Medications and Procedures by Certification Level".	May utilize any procedure or medication as outlined under the ECA and EMT-B section "Summary of Approved Medications and Procedures by Certification Level".	May utilize any procedure or medication as outlined under the ECA, EMT-B, and EMT-Intermediate section of "Summary of Approved Medications and Procedures by Certification Level".	May utilize any procedure or medication as outlined under all sections of "Summary of Approved Medications and Procedures by Certification Level".

Texas EMS rules require any licensed EMS Provider and registered First Responder Organization to ensure that all of its employees wear proper identification while providing patient care. Identification must include the individual personnel's (a.) first name, (b.) middle initial, (c.) last name, (d.) certification/license level, and (e.) name of EMS Provider or First Responder Organization.

OVERVIEW

SUMMARY OF APPROVED MEDICATIONS AND PROCEDURES BY CERTIFICATION LEVEL				
INTERVENTION, PROCEDURE, THERAPY	**ECA**	**EMT-B**	**EMT-I**	**PARAMEDIC**
ADVANCED CARDIAC LIFE SUPPORT				X
AUTOMATED EXTERNAL DEFIBRILLATOR (AED)	X	X	X	X
AIRWAY MANAGEMENT and BOUGIE	X	X	X	X
ALTERNATE VASCULAR ACCESS (CENTRAL LINE, PORT)				X
BAG-VALVE MASK VENTILATION	X	X	X	X
BLOOD GLUCOSE ASSESSMENT	X	X	X	X
CARDIOVERSION AND/OR MANUAL DEFIBRILLATION				X
CONTINUOUS POSITIVE AIRWAY PRESSURE DEVICE (CPAP)			X	X
IV PUMP			X	X
DEEP TRACHEAL SUCTIONING			X	X
ECG INTERPRETATION (INCLUDING 12-LEAD)				X
EMERGENCY CHILDBIRTH	X	X	X	X
END-TIDAL CO2 DETECTION			X	X
EXTERNAL JUGULAR VEIN CANNULATION			X	X
INTRAOSSEOUS ACCESS (Tibial & Humeral Head*)			X	X
IV ACCESS (PERIPHERAL)			X	X
INTUBATION (OROTRACHEAL, NASAL, STOMAL)			X	X
KING AIRWAY DEVICE			X	X
KING AIRWAY NG/OG TUBE INSERTION/UTILIZATION			X	X
MAGILL FORCEPS			X	X
MANUAL AIRWAY MANEUVERS (CHIN LIFT, JAW THRUST, BURP, ETC.)	X	X	X	X
NPA AND/OR OPA AIRWAY INSERTION	X	X	X	X
MECONIUM ASPIRATION VIA ENDOTRACHEAL TUBE			X	X
MEDICATION ADMINISTRATION: IM, SQ, IV/IO, IN ♦Exception: Epinephrine 1:1000 IM & auto-injector		♦	X	X
NEBULIZER: SET-UP AND USE		X	X	X
NEBULIZER: ADMINISTRATION OF EPINEPHRINE				X
OROPHARYNGEAL SUCTIONING (INCLUDING TRACH/STOMA)	X	X	X	X
PHARMACOLOGICALLY ASSISTED INTUBATION (PAI)				X
PLEURAL DECOMPRESSION (NEEDLE CHEST DECOMPRESSION)				X
PULSE OXIMETRY	X	X	X	X
RAPID SEQUENCE INTUBATION (RSI) - *only if credentialed*				* X *
SPINAL MOTION RESTRICTION	X	X	X	X
TOURNIQUETS	X	X	X	X
TRANSPORT VENTILATORS				X
TRANSCUTANEOUS PACING				X
MEDICATION	**ECA**	**EMT-B**	**EMT-I**	**PARAMEDIC**
ADENOSINE				X
ALBUTEROL		X	X	X
AMIODARONE				X
ASPIRIN	X	X	X	X
ATROPINE SULFATE				X
CALCIUM CHLORIDE/GLUCONATE				X
CAPTOPRIL/ENAPRILAT				X
DEXTROSE			X	X
DIPHENHYDRAMINE				X
IV EPINEPHRINE (1:1000) & (1:10,000)				X
IM EPINEPHRINE (1:1000) or IM EPINEPHRINE AUTO-INJECTOR		♦ (BLS Units Only)	X	X
FENTANYL		X	X	X
GLUCAGON				X
HALOPERIDOL				X
IPRATROPIUM BROMIDE				X
KETAMINE				X
LIDOCAINE		X	X	X
MAGNESIUM SULFATE				X
METHYLPREDNISOLONE				X
MIDAZOLAM				X
MORPHINE			X	X
NALOXONE (NARCAN)				X
NITROGLYCERIN (NTG)				X
ONDANSETRON				X
ORAL GLUCOSE	X	X	X	X
SODIUM BICARBONATE				X
RAPID SEQUENCE INTUBATION (RSI) - *only if credentialed*				* X *
TERBUTALINE				X
RAPID SEQUENCE INTUBATION (RSI) - only if credentialed				* X *

OVERVIEW

ALLIED HEALTH PROVIDERS (OTHER THAN CAREFLITE EMS PERSONNEL)

Allied healthcare providers (CNA, LVN, RN, NP, PA, etc.) may assist CareFlite EMS personnel/providers in accordance with CareFlite Treatment Protocols up to their respective skill level and competency, only at the discretion of the in-charge Paramedic. Should no CareFlite Advanced Life Support (ALS) providers be on-scene, non-EMS certified health care professionals must first contact CareFlite Medical Control prior to initiating any ALS interventions.

ON-SCENE DISPUTE BETWEEN EMS PROVIDERS

Disagreements about patient care are to always be handled in a professional manner, away from the patient when possible, and should not detract from or reduce the quality of patient care.

CareFlite Treatment Protocols, Suggested Operating Guidelines, and/or Appendices can/should be consulted first in order to help resolve disputes; however, should a dispute remain unresolved, or if a protocol/guideline/appendix does not specifically address an issue, then CareFlite Medical Control **MUST** be contacted for dispute resolution.

Disputes should not be mentioned in patient care reports. A separate written report is to be completed for any unresolved dispute arising at the scene which requires physician intervention. This written report is to be faxed to CareFlite within 24 hours of the incident. Please remember to include your full name, certification/licensure level, name of your organization/agency, and a detailed description of the incident.

PATIENT DEFINITION(S)

A patient can be defined as "any person who, upon contact with an EMS system, presents with a complaint, circumstance, and/or condition that might require further assessment or treatment".

The American Heart Association and CareFlite recognize four specific patient age-categories:

(a) **Newborn**: from birth until 28 days old.
(b) **Infant**: from 28 days old until 1 year of age.
(c) **Child**: from 1 year of age until the onset of adolescence/puberty (with a total body weight less than 40 kg/88 lbs). Puberty may be defined as the presence of secondary sex characteristics; such as the development of breasts or pubic hair in females; or the development of pubic, armpit, and/or facial hair in males.
(d) **Adult**: Post adolescence/puberty and/or a total body weight of greater than 40 kg (88 lbs).

The legal age for medical consent and/or to refuse treatment and/or transport is 18 years of age unless legally considered emancipated (refer to "Appendix I: Standard Operating Guidelines" for further detail/explanation/guidance).

PROTOCOL OUTLINE

ADULT Treatment Protocols are located on the left side of a protocol page and encompass the "Adult" age-category.

PEDIATRIC Treatment Protocols are located on the right side of a protocol page and encompass the "Newborn/Infant/Child" age-categories. Pediatric drug doses should be calculated based on the patient's ideal weight or Broselow tape, not actual weight. No single pediatric dose shall exceed the adult dosage.

CareFlite Treatment Protocols are guidelines to be used for facilitating treatment when situations arise. They are not meant as a "cook book" or as a list of procedures that MUST be done. Each situation is different and treatment should be performed accordingly; however, all patient encounters should follow the core principles of Universal Patient Care (UPC), located on pages 1.1-1.2 of the CareFlite Treatment Protocols.

Each specific protocol outlines important patient care. Specific levels of care that are not delineated within a specific protocol are based on a CareFlite provider knowing his/her level of authorization for use of an intervention/procedure and/or medication, as outlined in the "Summary of Approved Medications and Procedures by Certification Level", located on page III.

Each CareFlite provider is authorized - *at their approved level of care* - to utilize any intervention, procedure, medication, and/or therapy listed within a CareFlite Treatment Protocol, Suggested Operating Guideline, and/or Appendix in order to access, assess, treat, and/or stabilize a patient. Example: a patient in anaphylaxis requires a definitive airway but intubation is not specifically listed within the protocol - the provider (intermediate or paramedic) may intubate based on the Universal Patient Care protocol (UPC). However, CareFlite Treatment Protocols do **not** allow EMS providers discretionary authority to administer an intervention, procedure, medication, and/or therapy that they are not approved and/or authorized to carry or use. This includes the administration of a patient's medication if/when requested by a patient.

This document cannot anticipate or address every emergency condition encountered in the field; therefore, provider education, experience, and judgment must be a part of the clinical decision making process. As always, you should use every available resource to help guide you in patient care. In some cases that resource may be a CareFlite Medical Control Physician.

UNIVERSAL PATIENT CARE GUIDELINES

- **Scene Size-Up:** As you approach the scene, assure safety for yourself and the patient. Consult/follow your department-specific Incident Management System as needed.
- **Universal Precautions/Body Substance Isolation:** Prior to patient assessment, employ precautions to prevent contact with potentially infectious body fluids and/or hazardous materials. Wear appropriate protective gear to protect eyes, mucous membranes, and skin. Wear other appropriate specialized protective gear when the potential exists for contact with biological and hazardous materials.

PATIENT ASSESSMENT:

- **Primary Assessment/Survey:** Perform this assessment on every patient to form a general impression of needs and priorities. Determine if the patient has a life-threatening condition that warrants immediate intervention.
  - ◊ Assess the patient's mental status.
    - ➢ Responsive Patient: Assess for quality of pulse and adequacy of airway/breathing. - Treat Accordingly.
    - ➢ Unresponsive Patient: Check for a pulse.
      - If present, assess for quality of pulse and adequacy of airway/breathing - Treat Accordingly.
      - If absent, initiate chest compressions and treat according to appropriate CareFlite "Cardiac Arrest" Treatment Protocol (if/when appropriate).
  - ◊ Utilize appropriate interventions to manage life-threats.
- **Secondary Assessment/Survey:** Perform this assessment when circumstance allows; after the management of life-threats identified during the Primary Assessment/Survey.
  - ◊ Utilize appropriate assessment and/or diagnostic-based processes to determine information and/or to conduct physical examinations.
  - ◊ Obtain a 12-lead ECG on any patient whom you suspect to have a cardiac cause for their complaint, unless doing so might cause a significant delay in emergent intervention (cardioversion, pacing, urgent airway or perfusion issues, etc.).

TREATMENT:

- Follow specific CareFlite Treatment Protocols, Suggested Operating Guidelines, and/or Appendices.
- Performing procedures should not delay transport in critical situations unless the intervention is necessary to correct a life-threat.
- Perform advanced airway management if indicated (tracheal intubation, single/multi-lumen lumen airway).
  - If attempting endotracheal intubation, a bougie device must be readily available in addition to other equipment.
  - Verification of successful placement of airway devices must be determined by: observation of chest movement, auscultation of breath sounds, absence of epigastric sounds, end-tidal carbon dioxide monitoring, and pulse oximetry.
- Obtain vascular access if indicated (Intravenous/Intraosseous).
  - Preexisting vascular access points may be used in patients who are unstable or in cardiac arrest.
  - IV: for routine administration of fluids and medications.
  - IO: for administration of fluids and as a medication route in adult/pediatric cardiac arrest patients, or whenever vascular access is critical and peripheral venous sites are unavailable.
  - Saline Lock: only for patients who have stable vital signs and do not require volume replacement.
- Administer appropriate volumes of 0.9% Sodium Chloride (Normal Saline) or Lactated Ringers (LR) if indicated.
- Blood alcohol specimens may be drawn at the request of a police agency when, in the judgment of the CareFlite provider, patient condition will not be compromised and/or transport significantly delayed.

TRANSPORT:

- CareFlite provider agencies reserve the right to create their own transport policies with CareFlite OMD approval.
- Transport destination for trauma patients should be determined according to the NCTTRAC/HOTTRAC Trauma Transport Criteria found in the References section of this document.
  - Major burns should be transported to a "Burn Center" unless life-saving measures are needed.
- Unstable medical patients should be transported to the closest appropriate facility.
  - *"Unstable" is evidenced by inability to establish and/or maintain an airway, inability to ventilate, and/or unremitting shock*.
- **In any situation, if you are unsure of the appropriate hospital destination for your patient, contact CareFlite Medical Control for further guidance.**

Universal Patient Care, Adult & Pediatric

HISTORY

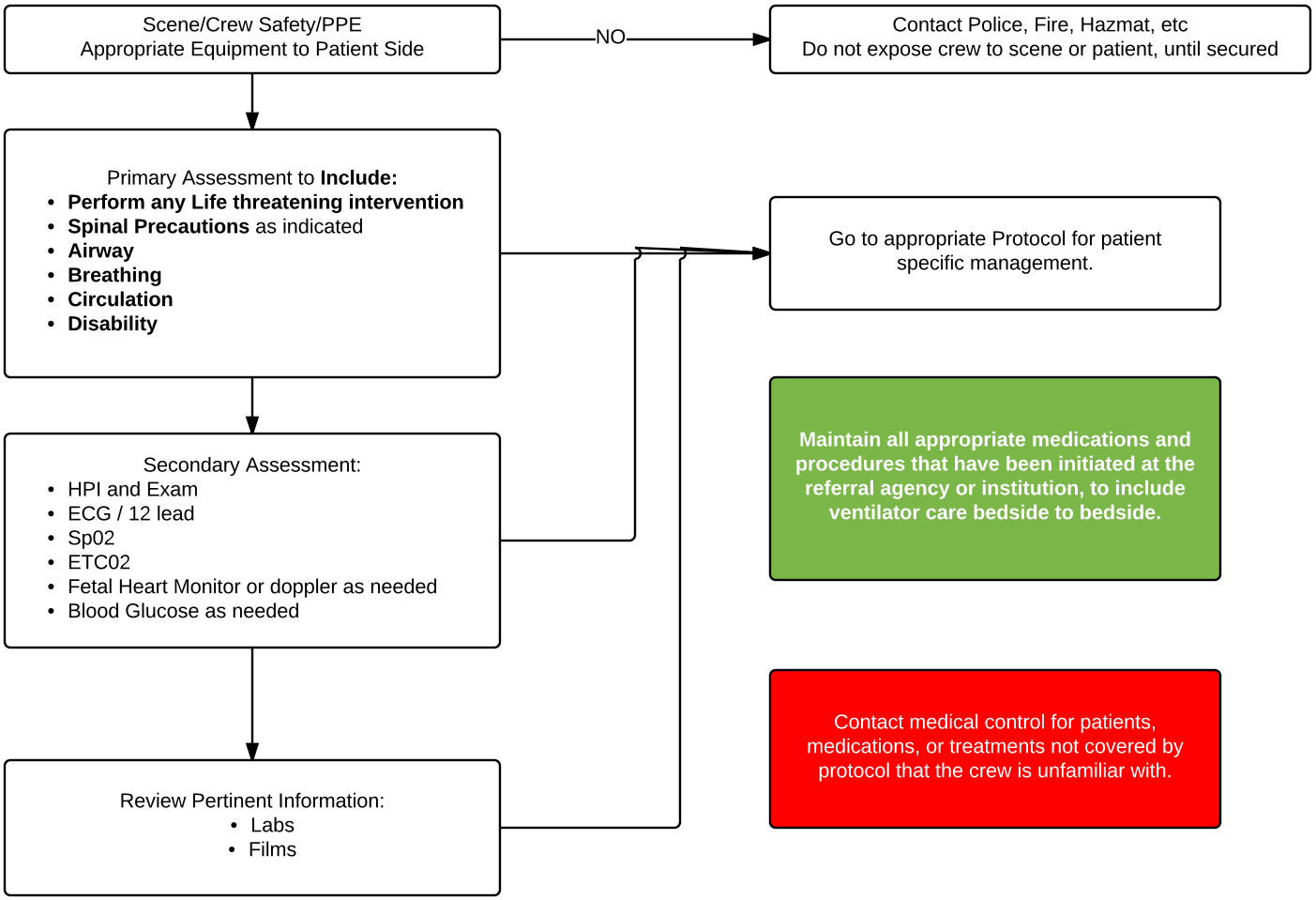
- Location
- Onset
- Precipitating Event
- Quality
- Radiation
- Severity
- Modifying Factors
- Associated Factors
- Prior Hx
- S-A-M-P-L-E

EXAM

- Airway
- Breathing
- Circulation
- Disability
- Expose
- HEENT
- Respiratory
- Cardiovascular
- Abdomen
- Extremities
- Neuro

DIFFERENTIAL

- Vascular
- Infectious/Inflammatory
- Trauma/Toxins
- Autoimmune
- Metabolic
- Idiopathic
- Neoplastic
- Congenital



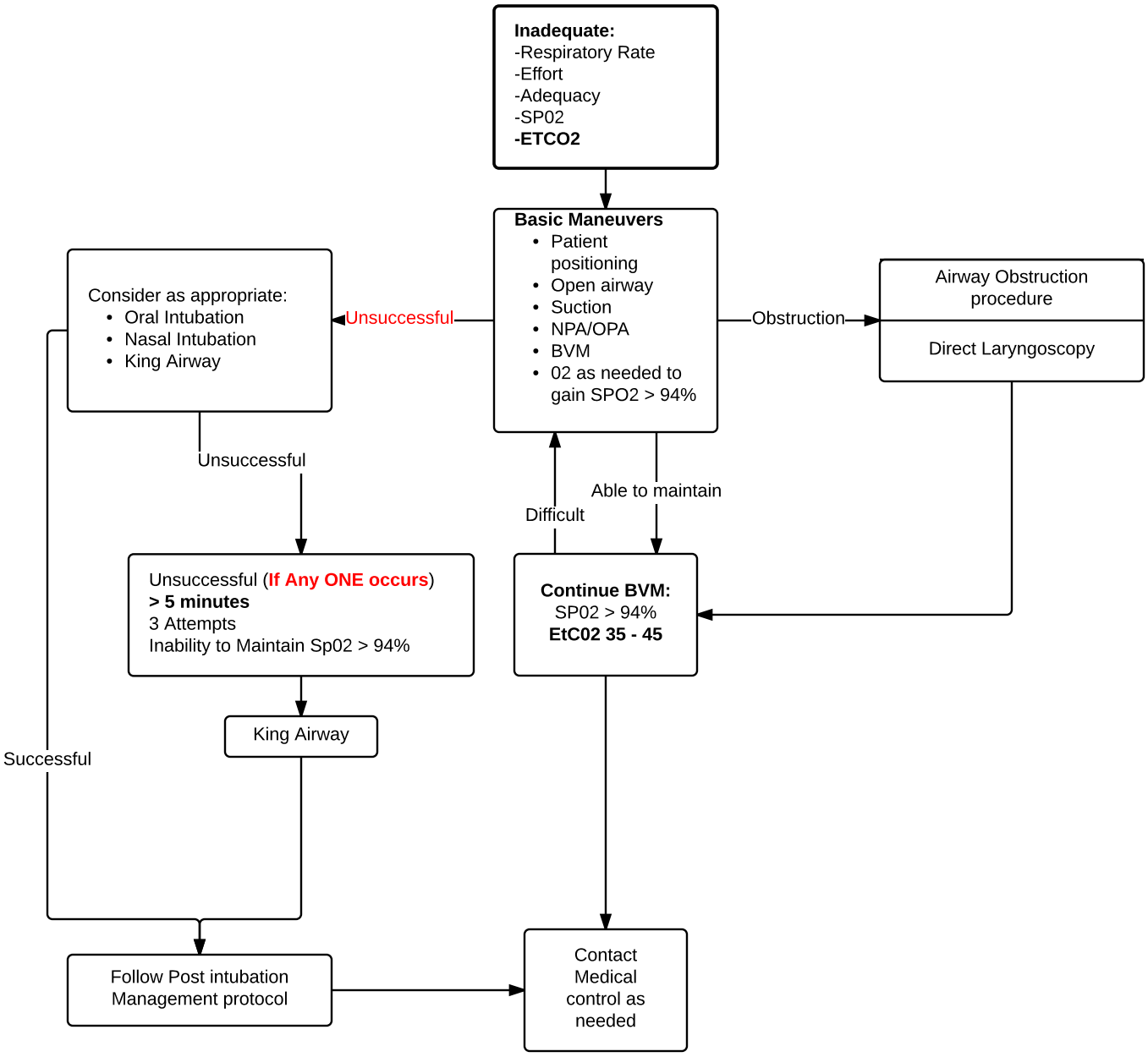
PEARLS:

- **Recommended Exam: Minimal exam if not indicated by specific protocol is vital signs, mental status with GCS, and location of injury or complaint.**
- Required vital signs on every patient include blood pressure, pulse, respirations, pain/severity
- Pulse Oximetry/ETC02 is dependent upon the specific complaint.
- Any patient contact which does not result in transport must have a completed PCR
- A pediatric patient is defined by the Broselow-Luten tape. If the patient does not fit on the tape, they are considered an adult.
  - Childrens Medical center Cooks
- Timing of transport should be based on patient condition and specific protocol/policy.

Protocol

Version 9/25/2015

Airway, Adult



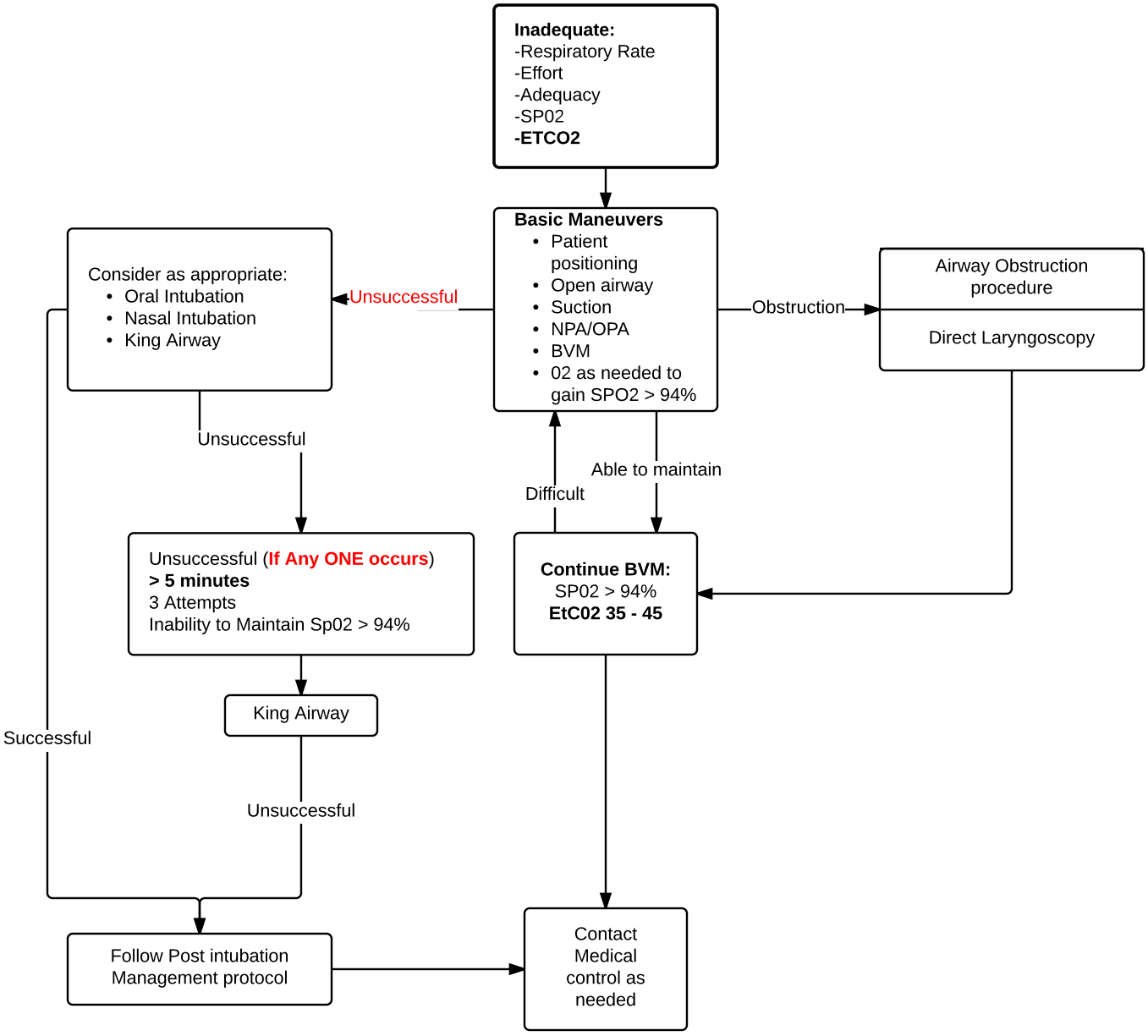
PEARLS:

- Capnometry and pulse oximetry is MANDATORY with ALL methods of intubations.
- If an airway is being maintained by BVM with an Sp02 of > 94%, an advanced airway is not required.
- If a difficult airway is expected, consider early use of BIAD, or assisted intubation with Bougie, Sellicks/BURP.
- **An intubation attempt is when the largynoscope blade passes the plane of the teeth, or the tube is inserted into the mouth.**
- Ventilatory rate should be set to maintain an ETCO2 of 35-45, or as appropriate.
- ETT placement **MUST** be confirmed by at least two indicators - ETCO2, Breath Sounds, CXR, tube contents, positive pt. physiological response, etc.
  - Waveform capnography is the GOLD STANDARD.
- Maintain C-spine immobilization for patients with a suspected spinal injury.
- BURP maneuver should be used to assist with difficult intubations.
- Hyperventilation in deteriorating head trauma patients should only be done to maintain ETCO2 of 30-35.

Protocol

Version 9/25/2015

Airway, Pediatric



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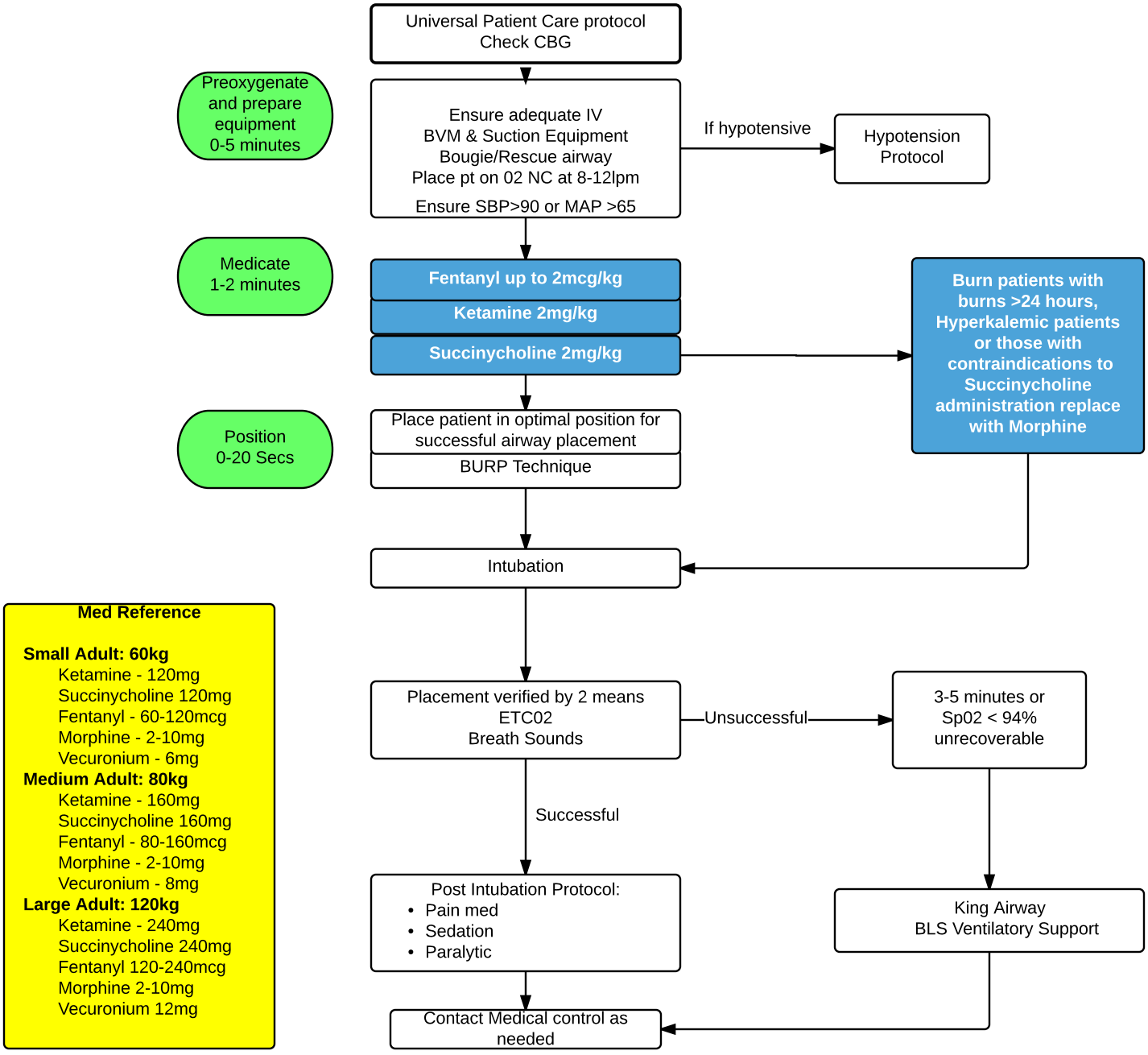
Airway, Adult-RSI



PEARLS:

- Once a Patient has been given a paralytic drug, YOU ARE RESPONSIBLE FOR VENTILATIONS.
- Continuous waveform capnometry and pulse oximetry are required for intubation verification and on-going patient monitoring.
- Have all equipment prepared and in place prior to beginning procedure.
- **NOTIFY SUPERVISOR OF RSI AND FORWARD COPY OF COMPLETED CHART TO CareFlite OMD PRIOR TO END OF SHIFT.**

Protocol

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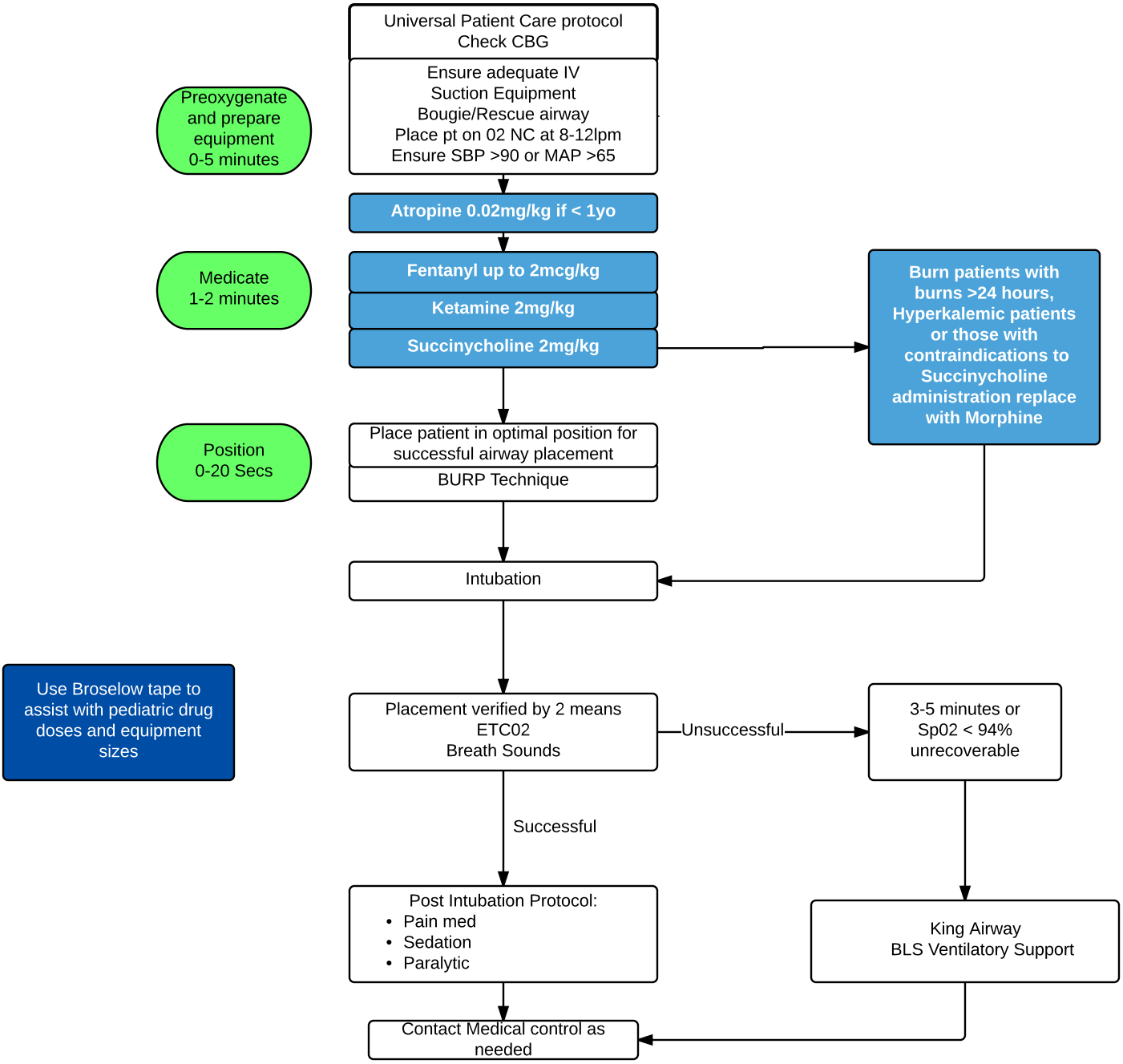
Airway, Pediatric-RSI



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- Have all equipment prepared and in place prior to beginning procedure.

Protocol

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Airway, Post-Intubation Management - Adult & Pediatric

Continuous Assessment:
- Continue to assess chest for equal and bilateral lung sounds.
- Use continuous waveform capnography.
- Use continuous Sp02 monitoring.
- Use continuous ECG monitoring

Universal Patient Care Protocol

Pain Control is an imperative for intubated patients.
Also consider continued sedation and paralysis

Tachycardia is considered an early sign that the patient is waking up.

Consider Fluid Bolus of NS or LR

If Hypotensive repeat pain and sedation medications in small doses.

Consider Fentanyl in small doses
25 mcg for adults
&
0.25 mcg/kg for pedi

Continued Sedation
Repeat Ketamine
0.5-1.5mg/kg

Continually Reassess Patients for Pain and sedation needs

Fentanyl Push 1-2mcg/kg prn for pain

Follow with Fentanyl infusion
Adults 25-200mcg/hr
Pedi 0.5-2 mcg/kg/hr

Fentanyl infusion is 1:1 mix 100 mcg/100 mL

Continued Paralysis
if needed
Rocuronium 1mg/kg

Contact Medical Control as Necessary

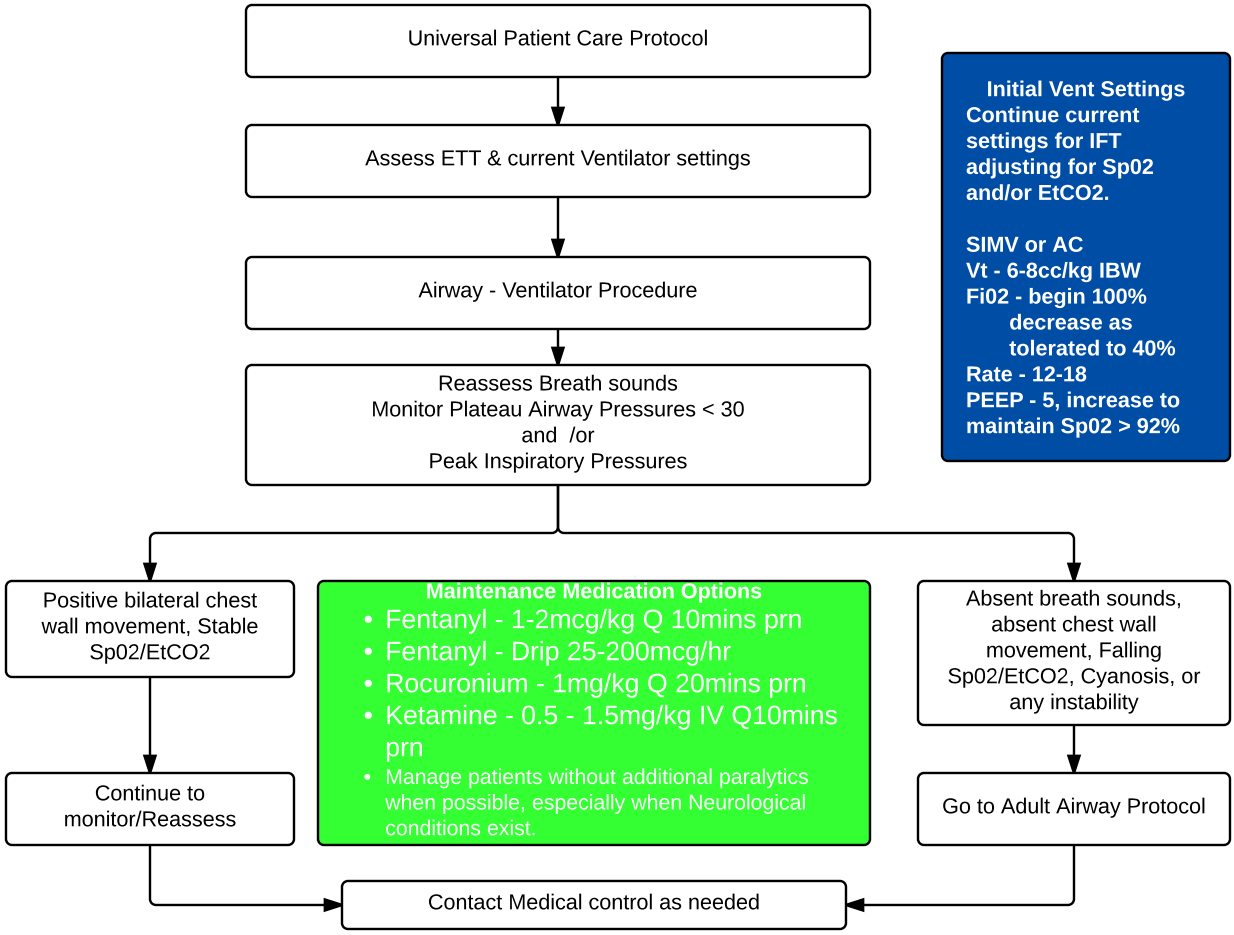
PEARL:
- Continuous monitoring of EtCO2 is mandatory in intubated patients.
- If patient is on ventilator monitor PIP and pPlat pressures.
- Be cautious when using Benzo/Opiate combinations.

Airway, Ventilator Support Adult

HISTORY:
- Age
- Drug Allergies
- Past medical history.
- Medications.
- Events leading to status.
- DNR code status

Signs and Symptoms:
- ETT secured with commercial tube holder.
- Intubation verification by two (2) means.
- Airway pressures monitored.

Differential:
- Determine mechanism of injury vs nature of illness.



PEARL:
- Keep BVM device close to the patient. In case of **DOPE.**
- **D -** Displaced tube.
- **O -** Obstruction.
- **P -** Pneumothorax.
- **E -** Esophagel Intubation/Equipment failure.
- In the event of hypotension with obstructive disease states, consider auto PEEP. Disconnect the ventilator and allow full expiration. If symptoms resolve, resume ventilation with reduced PEEP.
- EtC02 and Sp02 is MANDATORY on all intubated patients.
- Acidotic patients are dependent on hyperventilation to correct acid-base Look at baseline EtCO2.
- In the presence of Benzos attempt to discontinue and administer Opiates. Make an effort to limit Bezo and Opiate combinations.

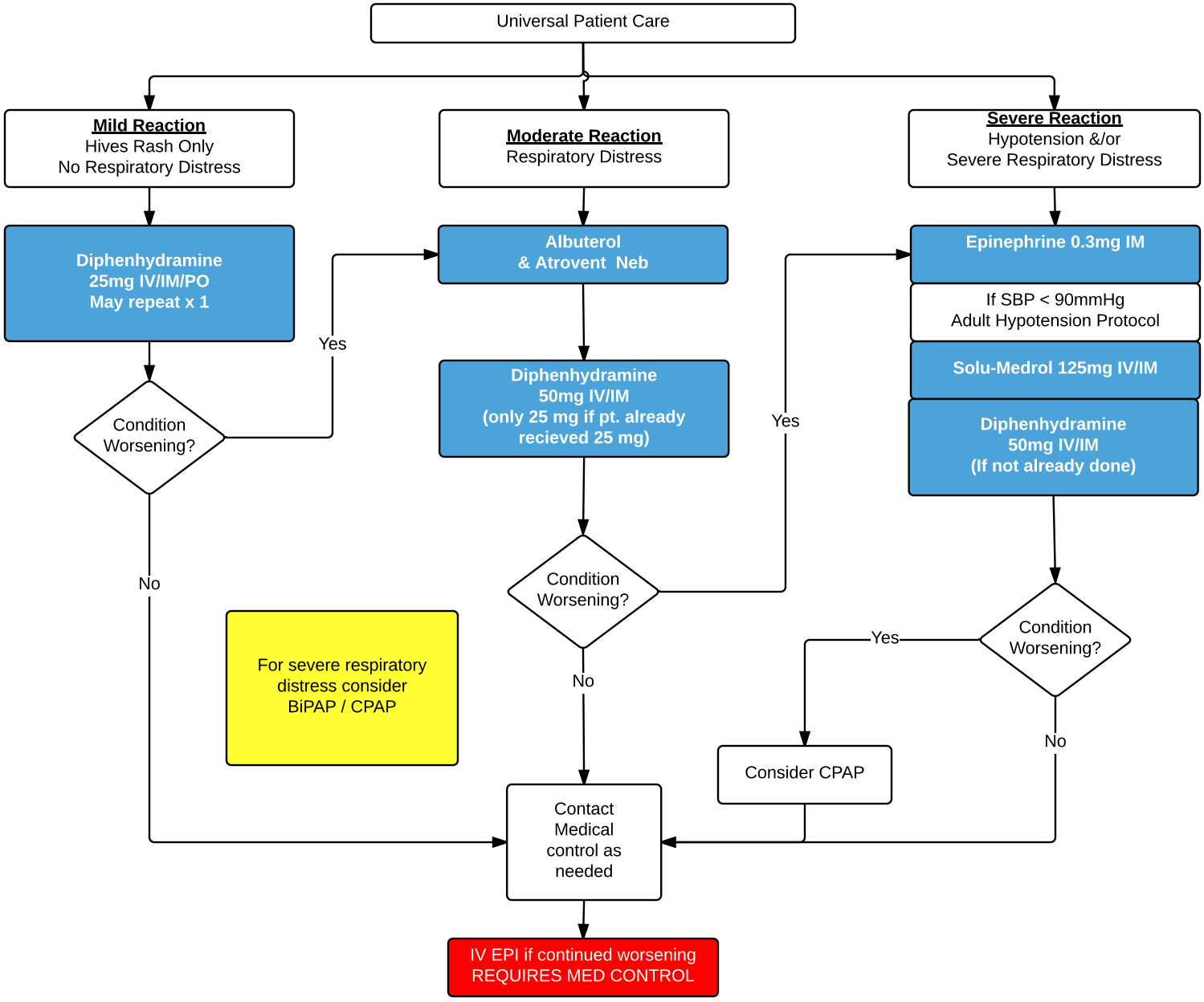
- Should this be an IFT protocol with a yellow title?
- Match up the post-intubation medication options and the vent-support medication options?

Allergic Reaction Adult

HISTORY:
- Medication History
- Onset and location
- Past Medical History
- Past reaction History
- New Clothing, Soap, Detergent
- Medication Allergy / Exposure
- Food allergy / Exposure
- Insect sting / Bite

Signs and Symptoms:
- Edema / Voice Changes
- Itching / Hives
- Coughing / Wheezing or Respiratory distress
- Chest / Throat constriction
- Difficulty Swallowing
- Hypotension / Shock

Differential:
- Urtcaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angio-edema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal Event
- CHF
- Asthma / COPD



PEARLS:
- These Patients should receive a 12 lead ECG.
- Any patient with respiratory symptoms or extensive reaction should receive Diphenhydramine IV/IM.
- The faster the onset from exposure to symptoms, the more severe the reaction.
- Consider Ice packs to the sting site.
- Use caution in administering Epinephrine to patients > 60yrs old; have a history of cardiac disease; hypertension; or a heart rate > 150.

Protocol

Version
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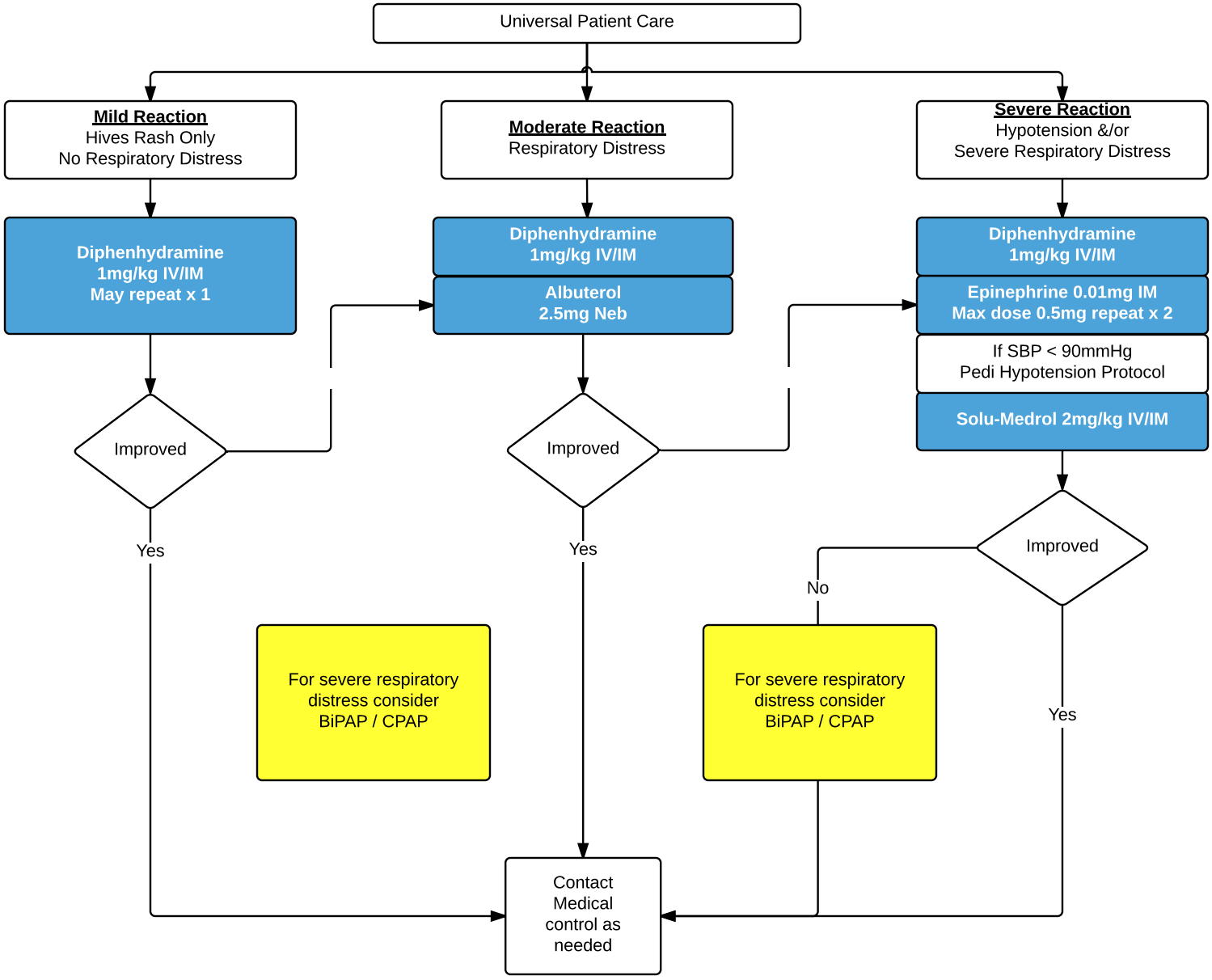
Allergic Reaction Pediatric

HISTORY:
- Medication History
- Onset and location
- Past Medical History
- Past reaction History
- New Clothing, Soap, Detergent
- Medication Allergy / Exposure
- Food allergy / Exposure
- Insect sting / Bite

Signs and Symptoms:
- Edema / Voice Changes
- Itching / Hives
- Coughing / Wheezing or Respiratory distress
- Chest / Throat constriction
- Difficulty Swallowing
- Hypotension / Shock

Differential:
- Urtcaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angio-edema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal Event
- CHF
- Asthma / COPD



PEARLS:
- These Patients should receive a 12 lead ECG.
- Any patient with respiratory symptoms or extensive reaction should receive Diphenhydramine IV/IM.
- The faster the onset from exposure to symptoms, the more severe the reaction.
- Consider Ice packs to the sting site.
- Fluids and medications should be titrated to maintain a SBP > 70 + (age in yrs x 2)

Altered Mental Status Adult

HISTORY:

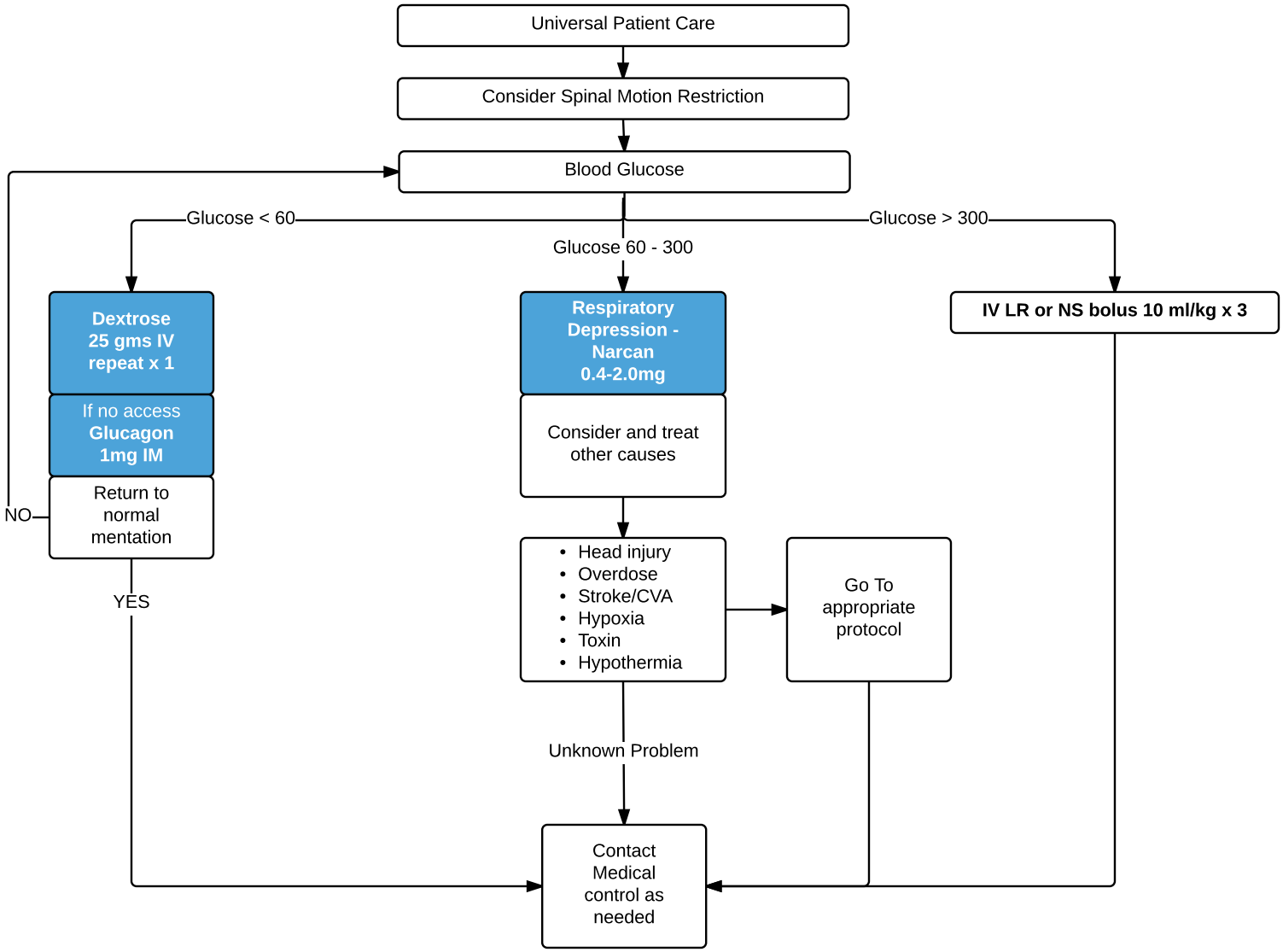
- Known Diabetic, Medic alert tag
- Drugs, Drug paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition

Signs and Symptoms:

- Decreased Mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin, fruity breath, Kussmaul breathing, Signs of dehydration)
- Irritability

Differential:

- Head trauma
- CNS (Stroke, Tumor, Seizure, Infection)
- Cardiac (MI, CHF)
- Thyroid (hyper / hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper / hypoglycemia)
- Toxicologic
- Acidosis / Alkalosis
- Environmental Exposure
- Pulmonary (hypoxia)
- Electrolyte abnormality



PEARLS:

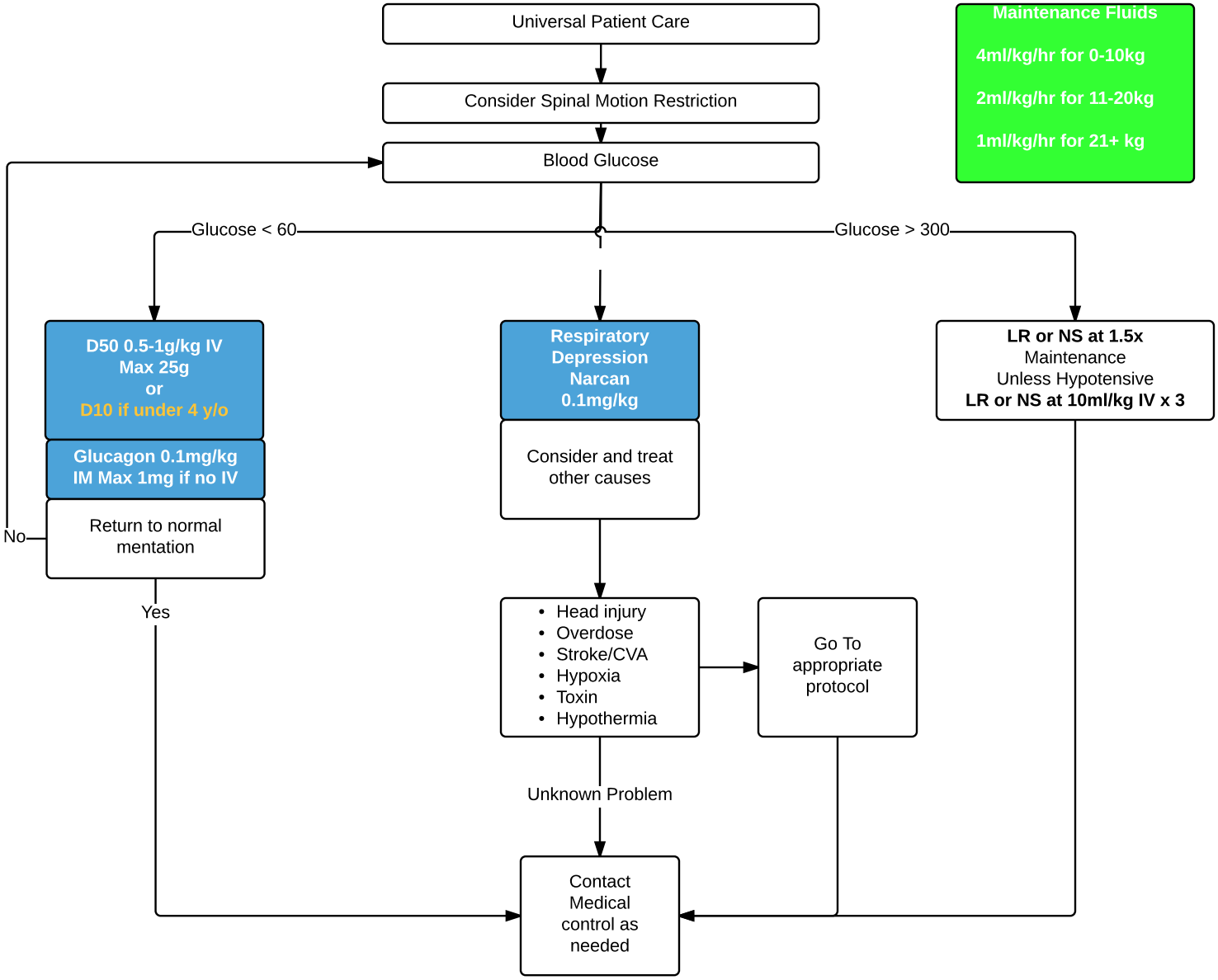
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after D50 or Glucagon administration.
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia.
- Hyperglycemia is treated with fluids. These patients are volume depleted. Glucose will begin to clear with adequate hydration.

Altered Mental Status Pediatric

HISTORY:
- Known Diabetic, Medic alert tag
- Drugs, Drug paraphernalia
- Toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Sick Contacts

Signs and Symptoms:
- Decreased Mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin, fruity breath, Kussmaul breathing, Signs of dehydration)
- Irritability

Differential:
- Head trauma
- CNS (Stroke, Tumor, Seizure, Infection)
- Cardiac (MI, CHF)
- Thyroid (hyper / hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper / hypoglycemia)
- Toxicologic
- Acidosis / Alkalosis
- Environmental Exposure
- Pulmonary (hypoxia)
- Electrolyte abnormality



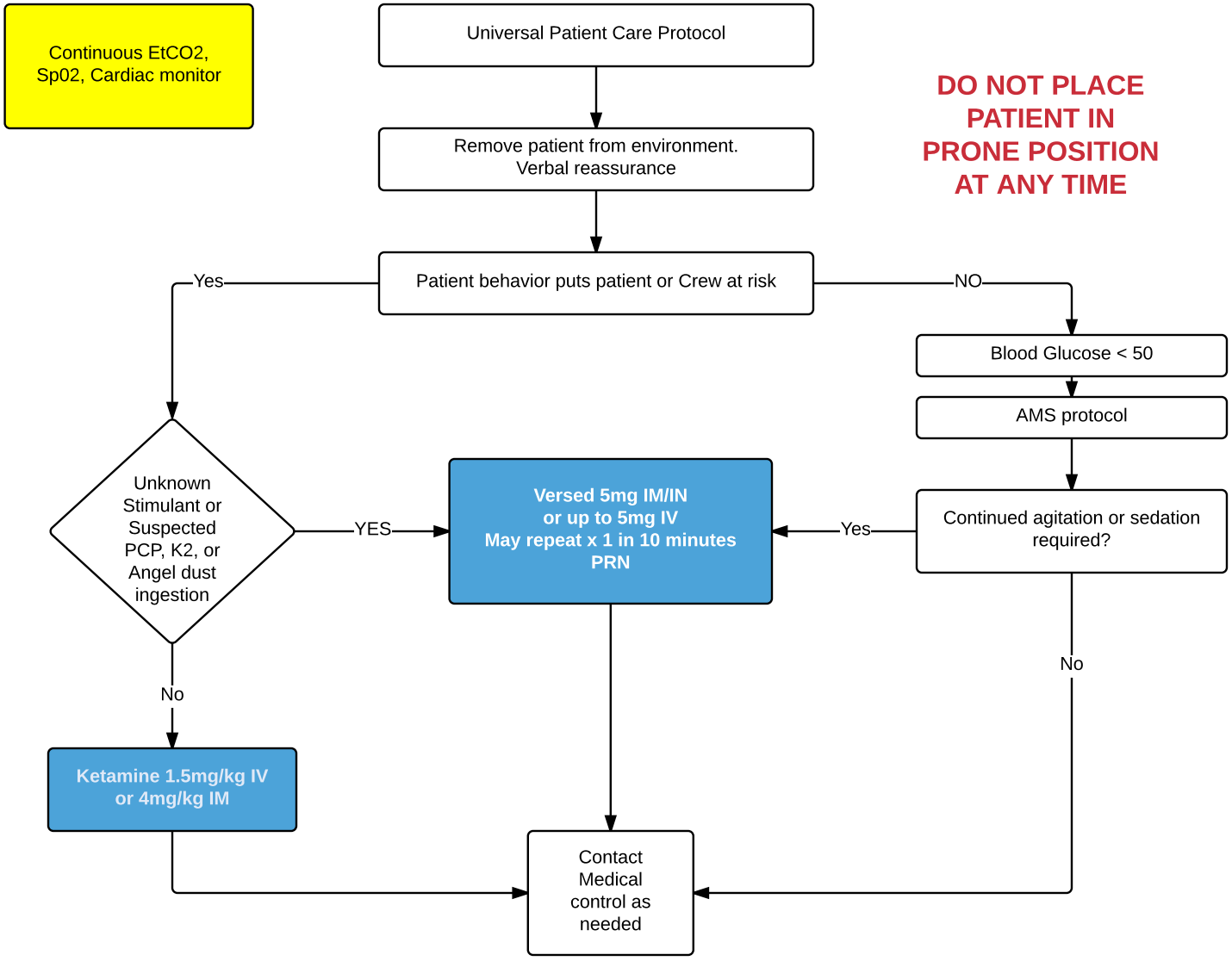
PEARLS:
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after D50 or Glucagon administration.
- Hyperglycemia is treated with fluids. These patients are volume depleted. Glucose will begin to clear with adequate hydration.

Behavioral / Psychiatric

HISTORY:
- Situational crisis
- Psychiatric illness/medication
- Injury to self or threats to others
- Substance abuse/overdose
- Diabetic

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

Differential:
- Hypoxia
- Alcohol Intoxication
- Toxin/Substance abuse
- Medication effects/overdose
- Withdrawl symptoms
- Depression
- Bi-polar
- Anxiety disorder/schizophrenia



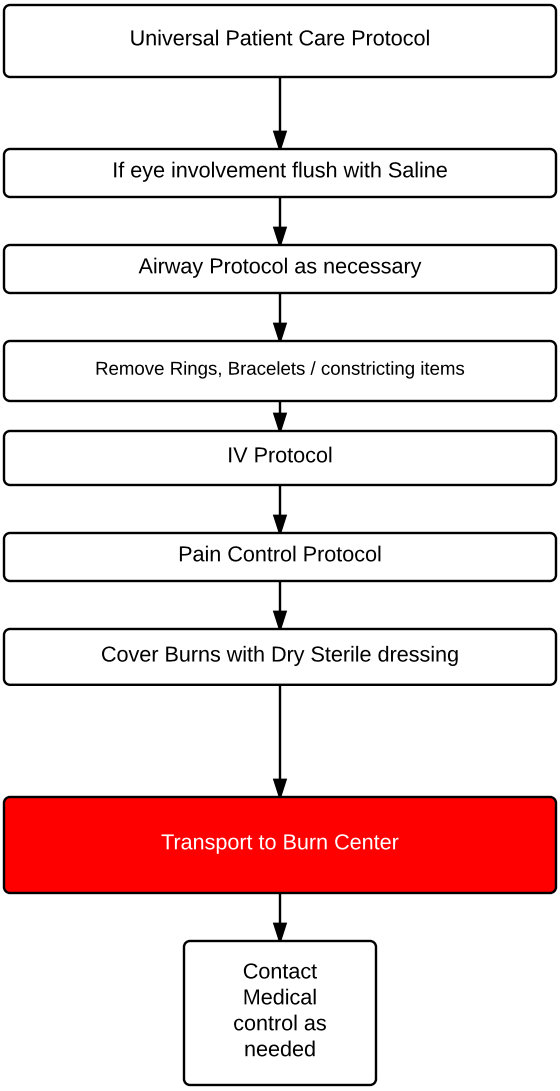
PEARL:
- **Crew Safety is Priority One.**
- Be sure and consider all possible causes for behavioral problems and treat as appropriate.
- If the patient is suspected of agitated delirium and suffers cardiac arrest, consider fluid bolus and early sodium bicarbonate administration.
- Do not overlook the possibility of associated domestic violence or child abuse.
- All patients who receive physical or chemical restraint must be continuously monitored.
- Any patient who is handcuffed must be accompanied by Law Enforcement whenever possible.
- **Versed should be titrated to effect with SBP > 100mmHg**.
- When using a MAD device you may not administer more than 1cc per nostril.
- If a patient has received Haldol PTA and exhibits signs of dystonic reaction administer benadryl 25mg and contact Medical Control.
- Do not administer Ketamine with suspected PCP/Angel Dust OD as Ketamine is a PCP analog.

Burns Chemical - Adult & Pediatric

HISTORY:
- Type of exposure - heat, gas, chemical
- Inhalation injury
- Time of injury
- Past Medical History
- Medications
- Other Trauma
- Loss of Consciousness

Signs and Symptoms:
- Burns, Pain, swelling
- Dizziness
- Loss of Consciousness
- Hypotension / Shock
- Airway compromise / distress
- Singed facial or nasal hair
- Hoarseness / wheezing

Differential:
- Superficial - red and painful
- Partial Thickness - blistering
- Full Thickness - painless charred or leathery skin
- Chemical - Type
- Thermal
- Electrical
- Radiation



PEARLS:
- Certain chemicals react with Water and should not be flushed.
- Ensure patients are completely Decontaminated and discuss transport with the Pilot prior to loading the patient

Protocol

Version 9/25/2015

Burns Electrical

HISTORY:
- Type of exposure - heat, gas, chemical
- Inhalation injury
- Time of injury
- Past Medical History
- Medications
- Other Trauma
- Loss of Consciousness

Signs and Symptoms:
- Burns, Pain, swelling
- Dizziness
- Loss of Consciousness
- Hypotension / Shock
- Airway compromise / distress
- Singed facial or nasal hair
- Hoarseness / wheezing

Differential:
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- Chemical - Type
- Thermal
- Electrical
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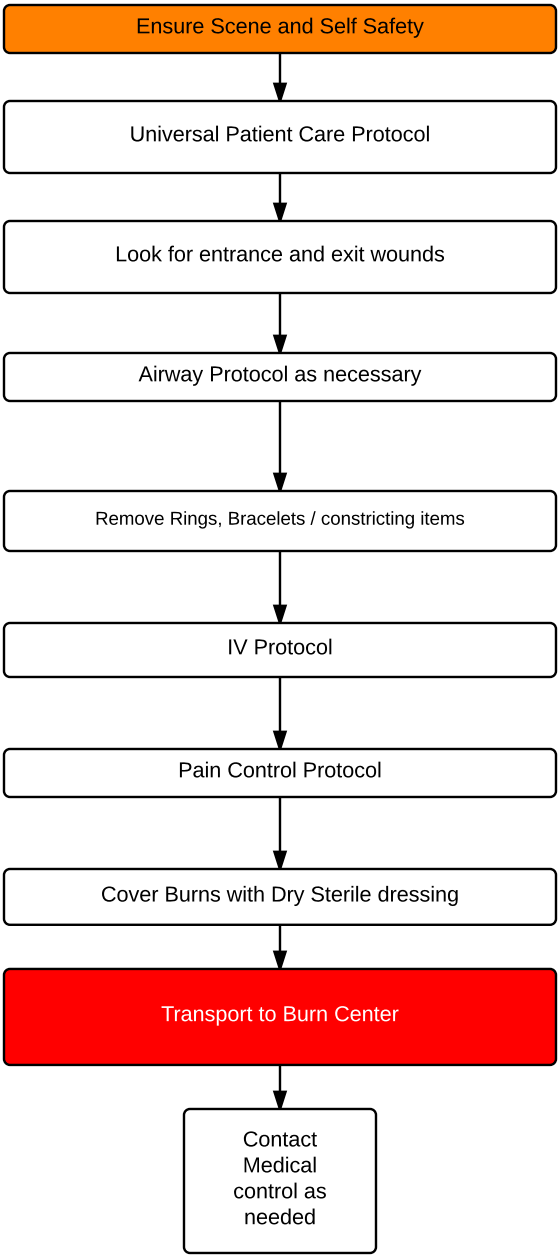


PEARL:
- Do NOT contact the patient until you are sure they are no longer in contact with electrical source.
- Attempt to locate contact points - entry / exit wounds.
- Assure whatever caused the burn is no longer in contact with the patient.
- Cardiac Monitor, 12-lead ECG, anticipate ventricular or atrial irregularity, to include V-Tach, V-Fib, Heart blocks.
- Attempt to identify the nature of the electrical source (AC or DC). The voltage and the amperage.

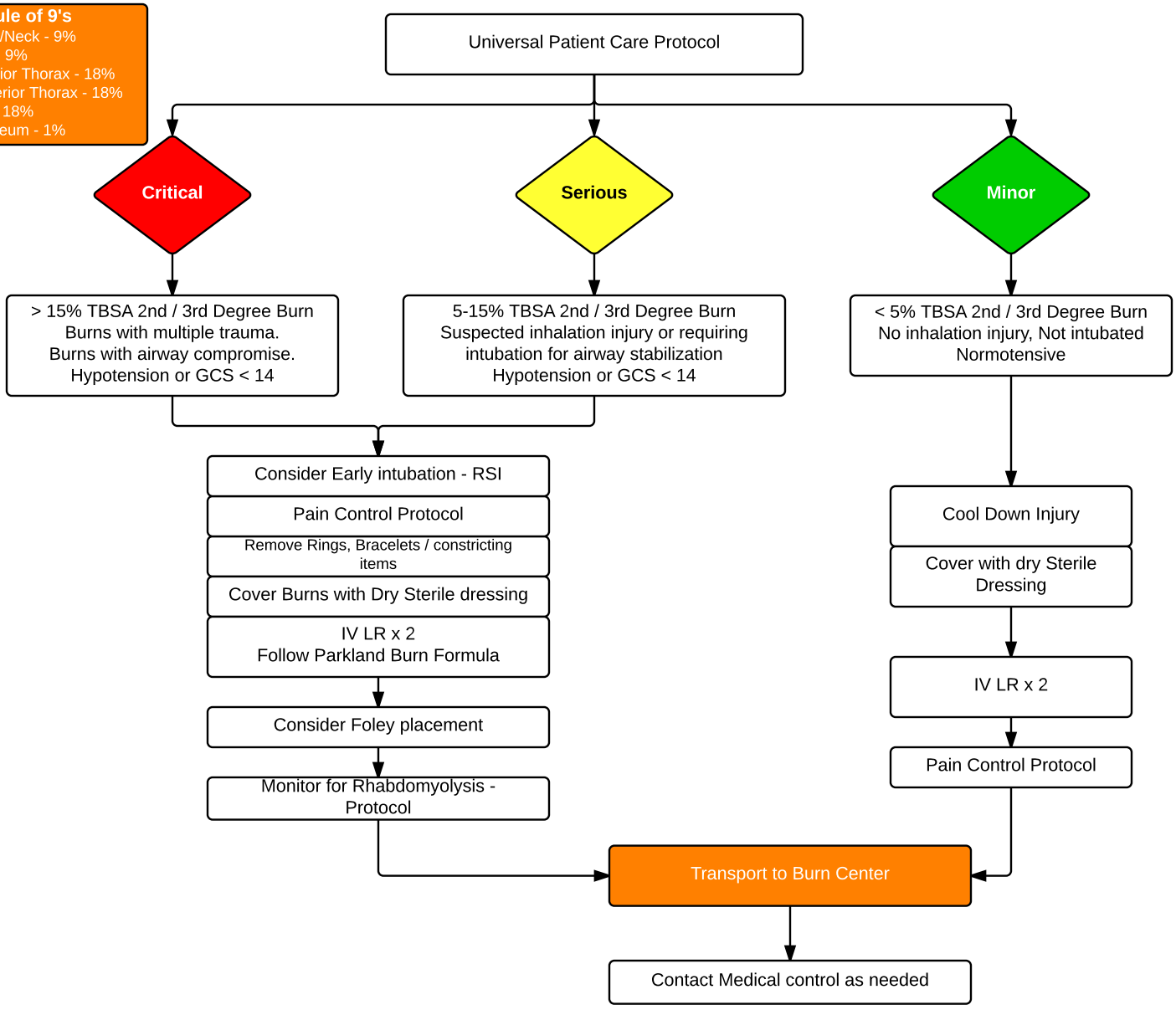
Burns Thermal - Adult

HISTORY:
- Type of exposure - heat, gas, chemical
- Inhalation injury
- Time of injury
- Past Medical History
- Medications
- Other Trauma
- Loss of Consciousness

Signs and Symptoms:
- Burns, Pain, swelling
- Dizziness
- Loss of Consciousness
- Hypotension / Shock
- Airway compromise / distress, singed facial or nasal hair, hoarseness / wheezing

Differential:
- Superficial - red and painful
- Partial Thickness - blistering
- Full Thickness - painless charred or leathery skin
- Chemical - Type
- Thermal
- Electrical
- Radiation.

Rule of 9's
- Head/Neck - 9%
- Arm - 9%
- Anterior Thorax - 18%
- Posterior Thorax - 18%
- Leg - 18%
- Perineum - 1%



PEARL:
- Assure whatever caused the burn is no longer in contact with the patient.
- Early intubation is required when the patient experiences severe inhalation injury.
- Potential CO exposure should be treated with continuous 100% Oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue injury.
- Burn patients are prone to hypothermia - Never apply ice and use caution cooling burns that involve > 10% BSA.
- Do not overlook the possibility of multiple system trauma or child abuse with burn injuries.
- Parkland Burn Formula - 2mL x kg x %TBSA over 8 hours.

Protocol

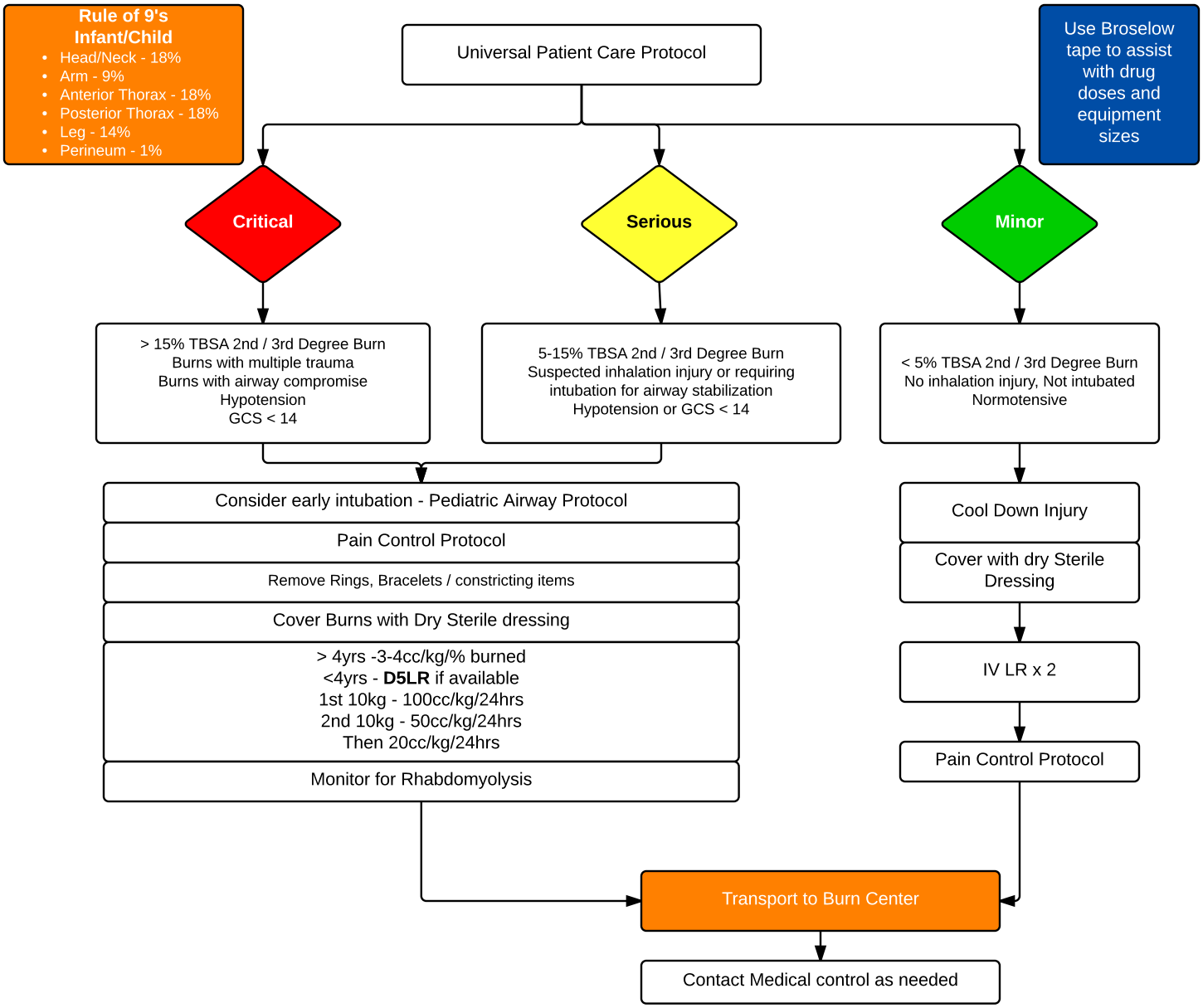
Version 9/25/2015

Burns Thermal - Pediatric

HISTORY:
- Type of exposure - heat, gas, chemical
- Inhalation injury
- Time of injury
- Past Medical History
- Medications
- Other Trauma
- Loss of Consciousness

Signs and Symptoms:
- Burns, Pain, swelling
- Dizziness
- Loss of Consciousness
- Hypotension / Shock
- Airway compromise / distress, singed facial or nasal hair, hoarseness / wheezing

Differential:
- Superficial - red and painful
- Partial Thickness - blistering
- Full Thickness - painless charred or leathery skin
- Chemical - Type
- Thermal
- Electrical
- Radiation.



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- Early intubation is required when the patient experiences severe inhalation injury.
- Potential CO exposure should be treated with continuous 100% Oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue injury.
- Burn patients are prone to hypothermia - Never apply ice and use caution cooling burns that involve > 10& BSA.
- Do not overlook the possibility of multiple system trauma or child abuse with burn injuries.
- For Non-Thermal burns of the pediatric patient review the appropriate protocol and refer to above fluid replacement.

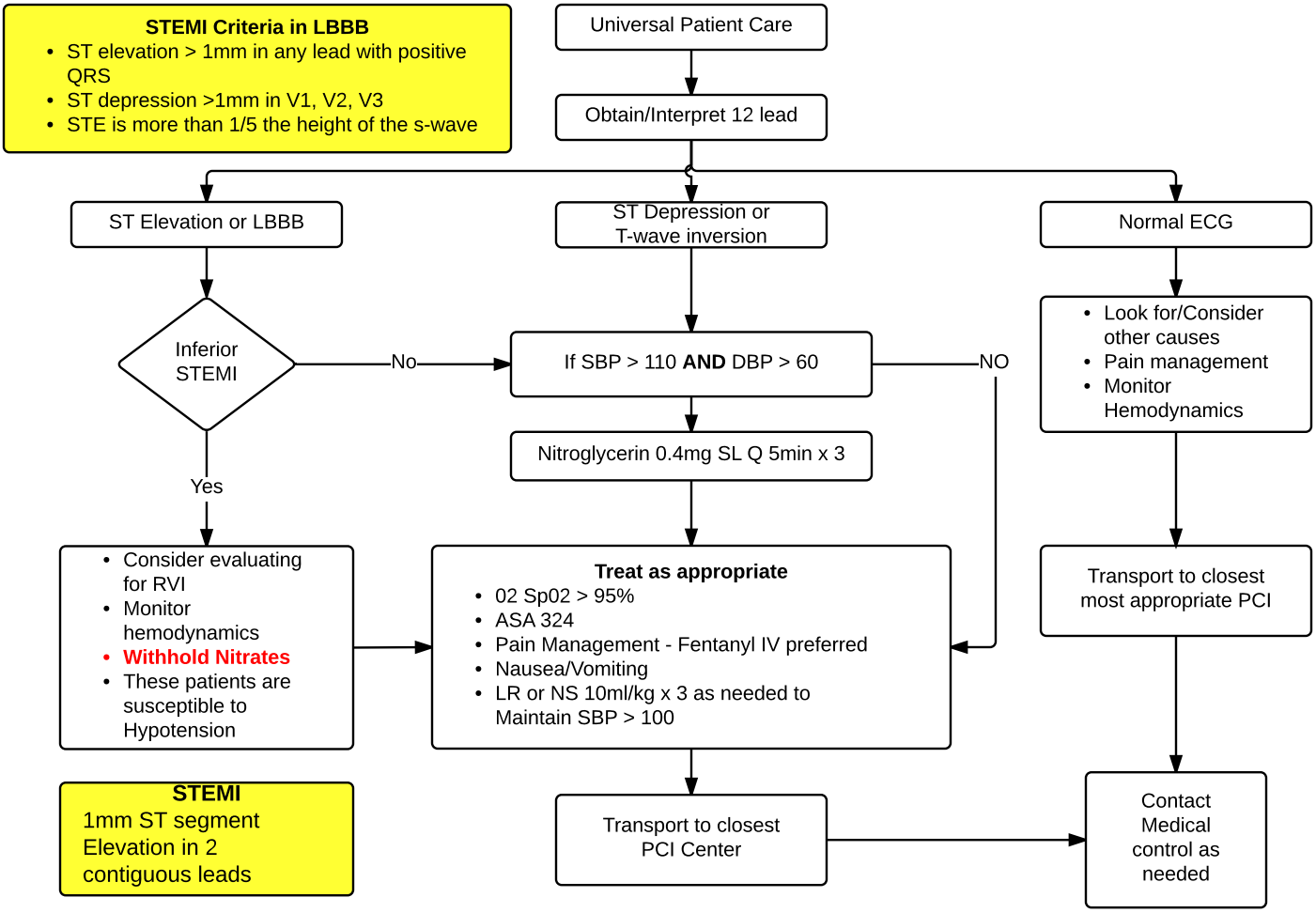
Cardiac, Acute Coronary Syndromes

HISTORY:
- Age
- Medications
  - Viagra, Levitra, Cialis
- Past History
  - MI, Angina, Diabetes, Hyperlipidemia, Post menopausal
- Allergies
  - ASA, Morphine, Lidocaine.
- Recent physical exertion
- Smoker
- Stimulant use
- Palliation/Provocation
- Quality
  - Cramping, Constant, Sharp
- Region/Radiaton/Referred
- Severity 1-10
- Time of Onset

Signs and Symptoms:
- Chest Pain
- Location
  - Arm, jaw, neck, substernal, epigastric
- Radiaton
- Pale/Diaphoretic
- Shortness of breath
- Nausea, vomiting, dizziness
- TIME OF ONSET

Differential:
- Trauma vs Medical
- Angina vs MI
- Pericarditis
- Pulmonary embolism
- Astham/COPD
- Pneumothorax
- Aortic dissection or aneurysm
- GERD
- Esophageal spasm
- Chest wall injury or pain
- Pleural Pain
- Overdose - Stimulant or Methamphetamine

STEMI Criteria in LBBB
- ST elevation > 1mm in any lead with positive QRS
- ST depression >1mm in V1, V2, V3
- STE is more than 1/5 the height of the s-wave



PEARLS:
- Avoid Nitroglycerin in any patient who has used Viagra or Levitra within the last 24 hours, or Cialis within 36 hours.
- If inferior (II, III, aVF) or posterior (large R wave or ST depression in V1-V3) consider right side ECG.
- In new LBBB, treat as MI.
- Diabetes, geriatric, females, or cardiac transplant patients may present with atypical pain or generalized complaints.
- Declare STEMI alert, and notify the appropriate ER to activate the Cath Lab if symptomatic ST Elevation of >1mm in two contiguous leads.
- Attempt 2nd IV for any patient going direct to cath lab, but do not delay transport.
- Apply Defib pads to any patient going direct to Cath Lab.
- Monitor patients who have received Nitroglycerin and/or Morphine for hypotension/respiratory depression.

Protocol

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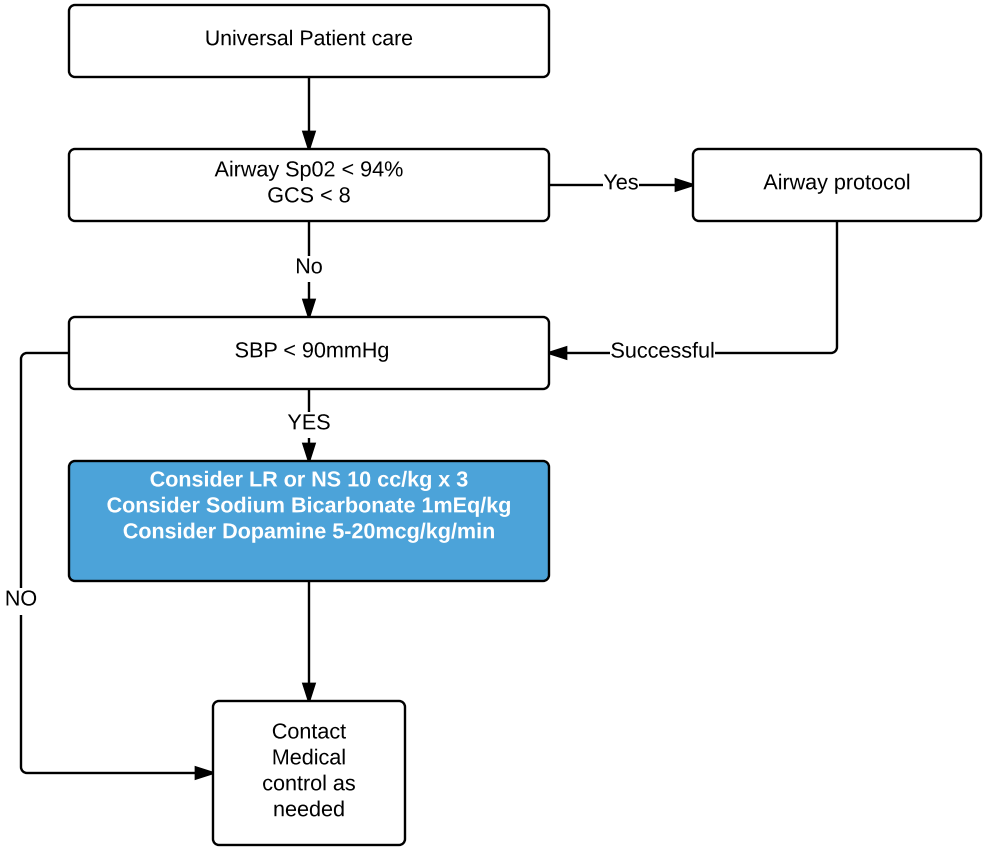
Cardiac, Cardiogenic Shock - Adult

HISTORY:
- Age
- Past History

Signs and Symptoms:
- Respiratory Distress
- Hypotension

Differential:
- Address Patient specific complaints.
- Sepsis
- Pulmonary Edema



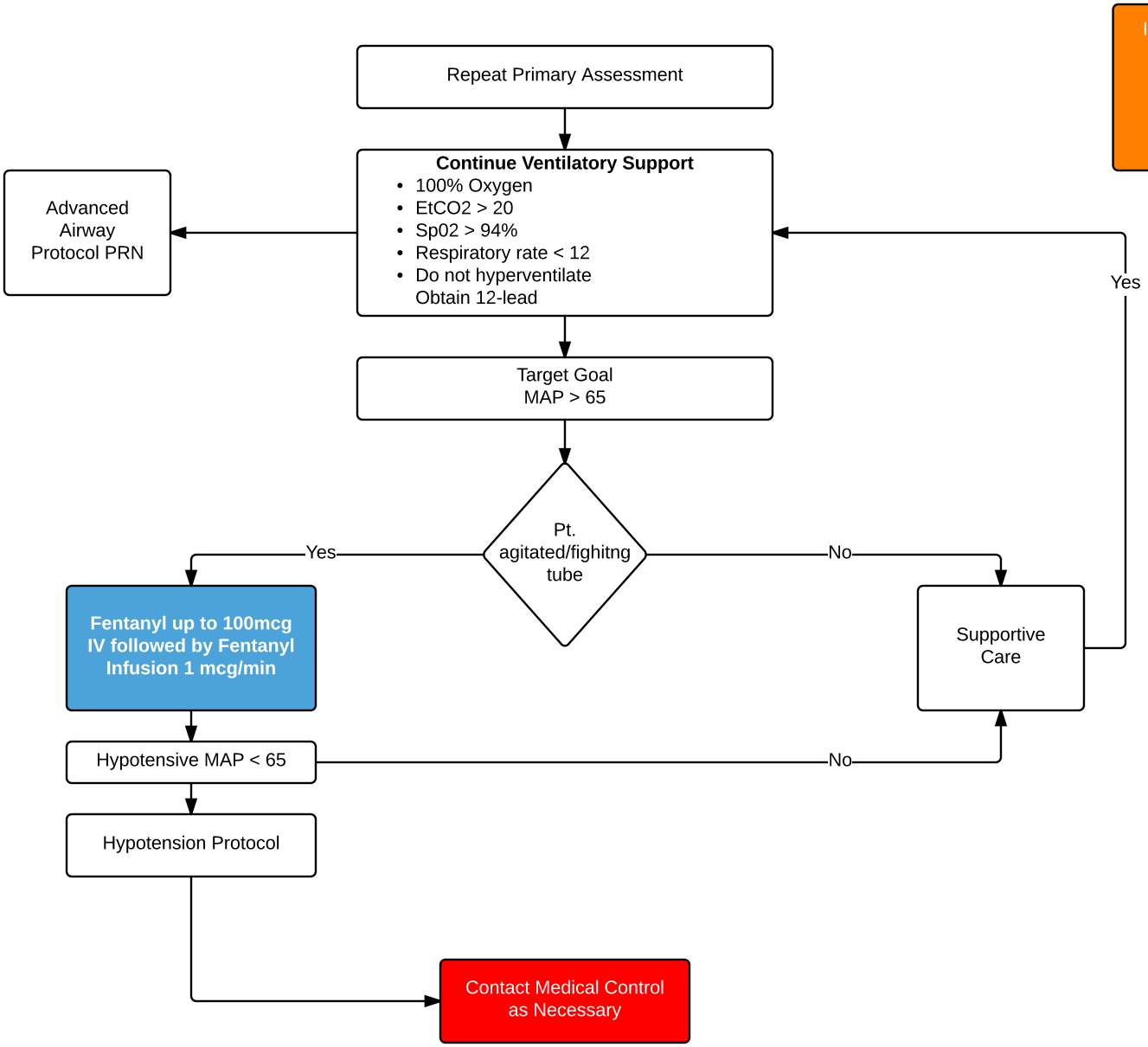
PEARLS:
- Patients may present with severe shortness of breath and pink frothy sputum.
- Judicious use of fluids with severe shortness of breath.

Cardiac, Post-Resuscitation ADULT

HISTORY:
- Respiratory Arrest
- Cardiac Arrest

Signs and Symptoms:
- Return of Pulse

Differential:
- Continue to address specific differentials associated with the original dysrhythmia



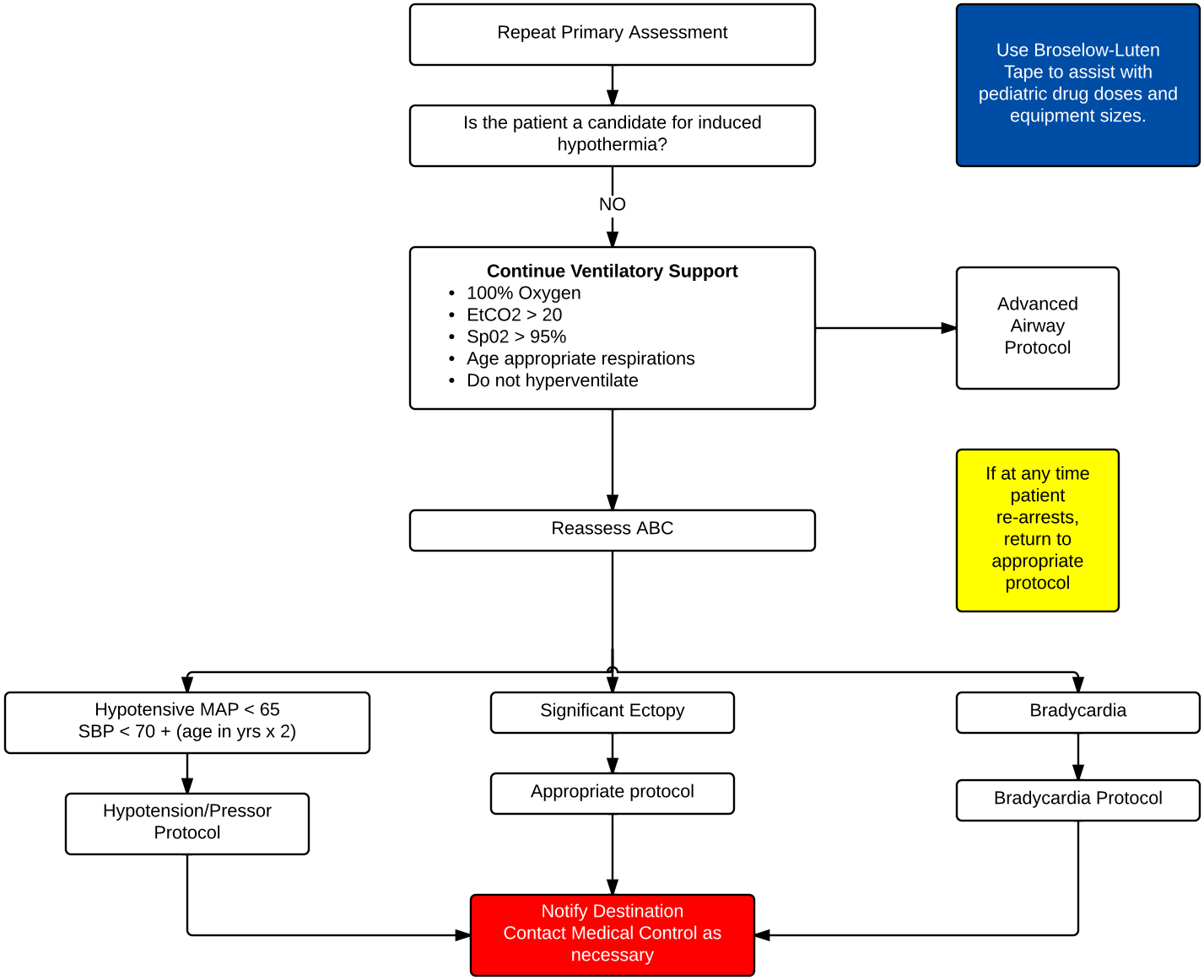
PEARLS:
- Hyperventilation is a significant cause of hypotension and cardiac arrest in the post resuscitation phase, and should be avoided.
- Most patients immediately post resuscitation will require ventilatory assistance. Oxygen should be titrated to Sp02 of > 94%, Hyper-oxemia may worsen patient outcome.
- The condition of post resuscitation patients fluctuates rapidly and continually, they require close monitoring. Appropriate post resuscitation management can best be planned in consultation with medical control.
- Common causes of post resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction to ALS drugs.
- Titrate Pressors to MAP > 90mmHg. Ensure adequate fluid resuscitation is on-going.

Cardiac, Post-Resuscitation Pediatric

HISTORY:
- Respiratory Arrest
- Cardiac Arrest

Signs and Symptoms:
- Return of Pulse

Differential:
- Continue to address specific differentials associated with the original dysrhythmia



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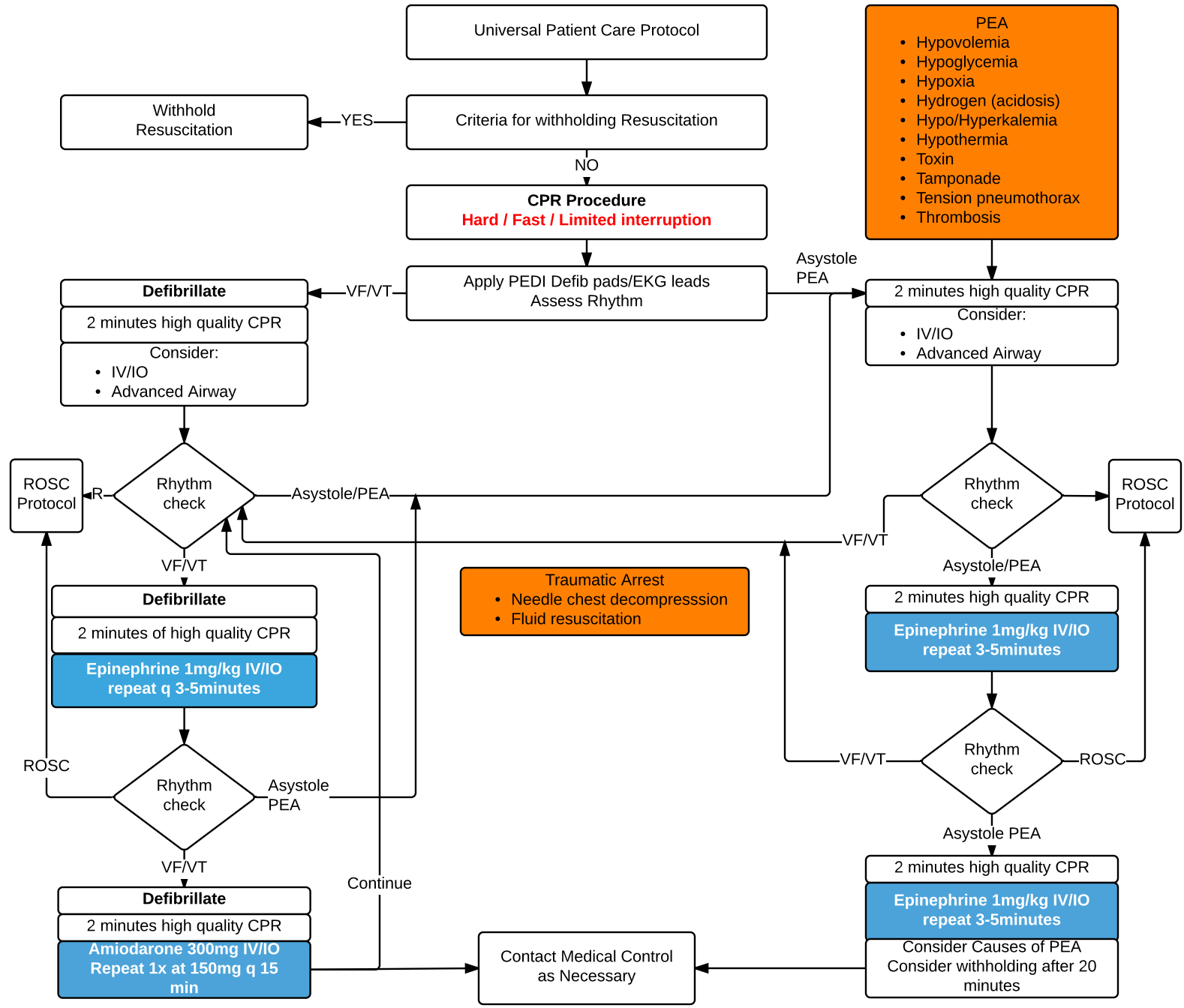
- Common causes of post resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction to ALS drugs.
- Titrate Pressors to MAP > 90mmHg. Ensure adequate fluid resuscitation is on-going.

Cardiac, Arrest - Adult

HISTORY:
- Events leading upto arrest
- Estimated Downtime
- Past Medical history
- Medications
- Existemce of Terminal Illness
- Signs of Lividity or rigor mortis
- DNR

Signs and Symptoms:
- Unresponsive
- Abnormal breathing
- Apneic
- Pulseless

Differential:
- Medical vs Trauma
- VF vs Pulseless VT
- Asystole
- PEA



PEARL:
- Monitor and follow EtCO2 for signs of ROSC
- Do NOT STOP compressions to check for a pulse if there is no increase in EtCO2
- Reassess airway frequently and after every move.
- Immediate and adequate compressions with limited interruption is key to success.
- Do NOT interrupt compressions for airway, ventilation, or medication administration

PROTOCOL

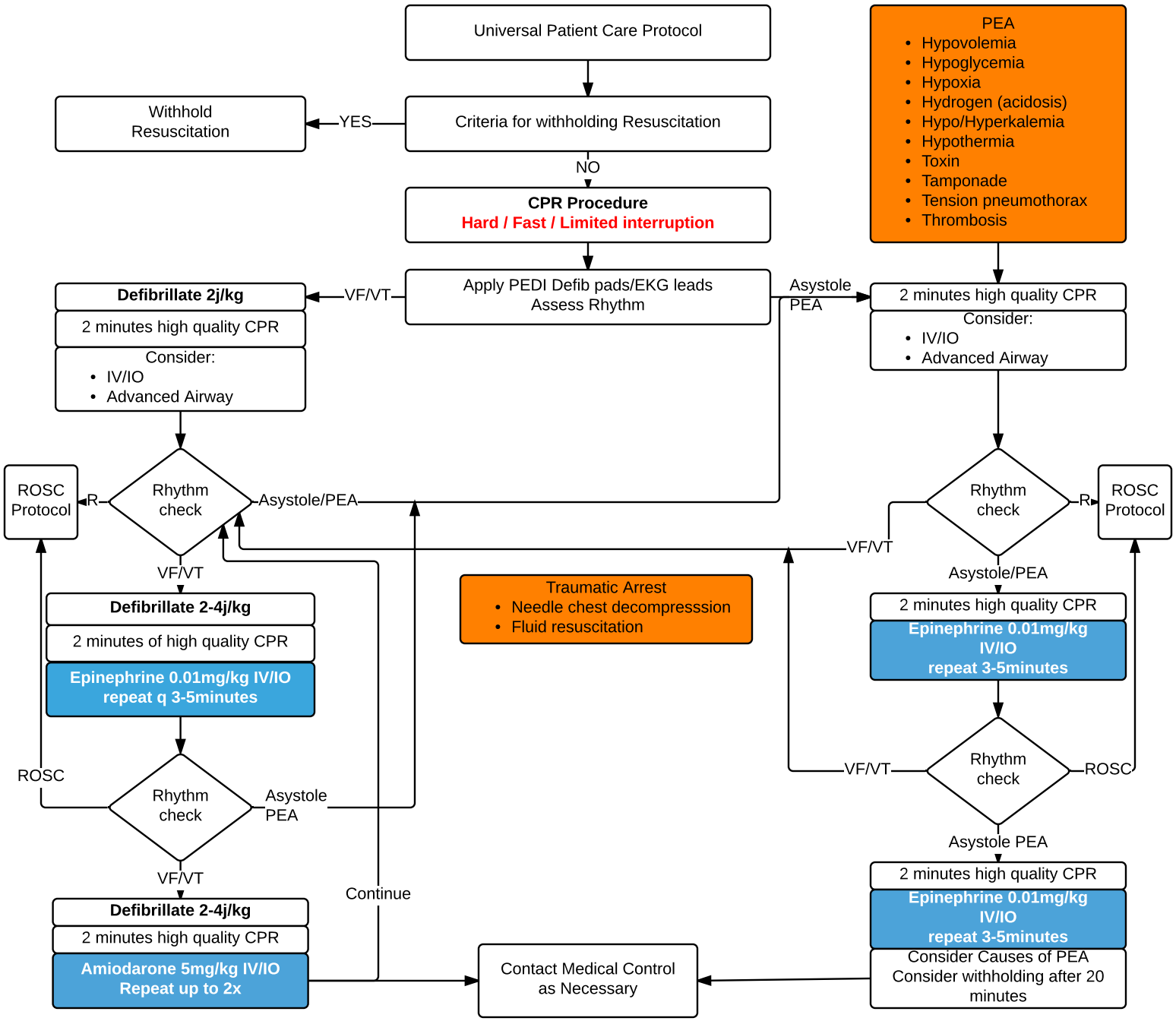
Version 9/25/2015

Cardiac, Arrest - Pediatric

HISTORY:
- Events leading upto arrest
- Estimated Downtime
- Past Medical history
- Medications
- Existemce of Terminal Illness
- Signs of Lividity or rigor mortis
- DNR

Signs and Symptoms:
- Unresponsive
- Abnormal breathing
- Apneic
- Pulseless

Differential:
- Medical vs Trauma
- VF vs Pulseless VT
- Asystole
- PEA



PEARL:
- This protocol is for < 12 yrs of age. Use Broselow-Luten tape to assist with treatment and correct equipment sizes.
- Monitor and follow EtCO2 for signs of ROSC
- Do NOT STOP compressions to check for a pulse if there is no increase in EtCO2
- Reassess airway frequently and after every move.
- Immediate and adequate compressions with limited interruption is key to success.
- Do NOT interrupt compressions for airway, ventilation, or medication administration

PROTOCOL

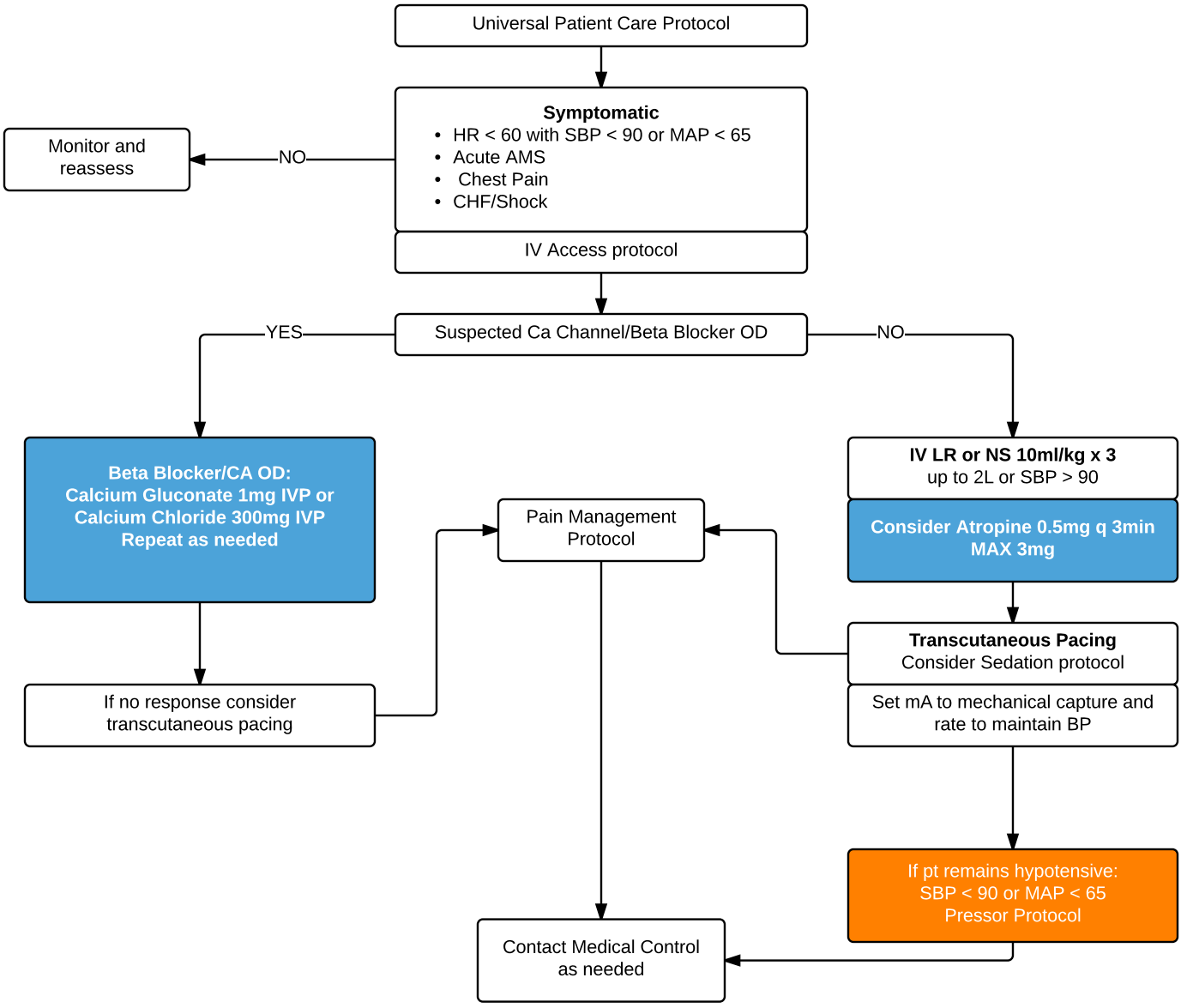
Version 9/25/2015

Cardiac, Bradycardia Adult

HISTORY:
- Past medical history
- Medications - BB, CCB, Digoxin, Cholinergics, Clonidine.
- Pacemaker
- Events leading up to condition.

Signs and Symptoms:
- HR < 60/min **With:**
  - SBP < 90
  - Acute AMS
  - Chest Pain
  - CHF
  - Seizures
  - Syncope
  - Shock

Differential:
- Acute MI
- Hypoxia
- Pacemaker Failuer
- Hypothermia
- Sinus Bradycardia
- Electrolyte Abnormality
- CVA, Elevated ICP, Head Injury
- Spinal cord lesion
- Sick Sinus syndrome
- AV Block
- OD



PEARLS:
- **Treatment of Bradycardia is based on the presence of symptoms. If asymptomatic, monitor only.**
- The use of Atropine for bradycardia in the presence of an AMI may worsen the ischemia.
- Consider treatable causes.
- Be sure to aggressively oxygenate the patient and support respiratory effort as needed.
- If wide complex bradycardia, consider hyperkalemia.
  - See Hyperkalemia protocol.

Protocol

Version 9/25/2015

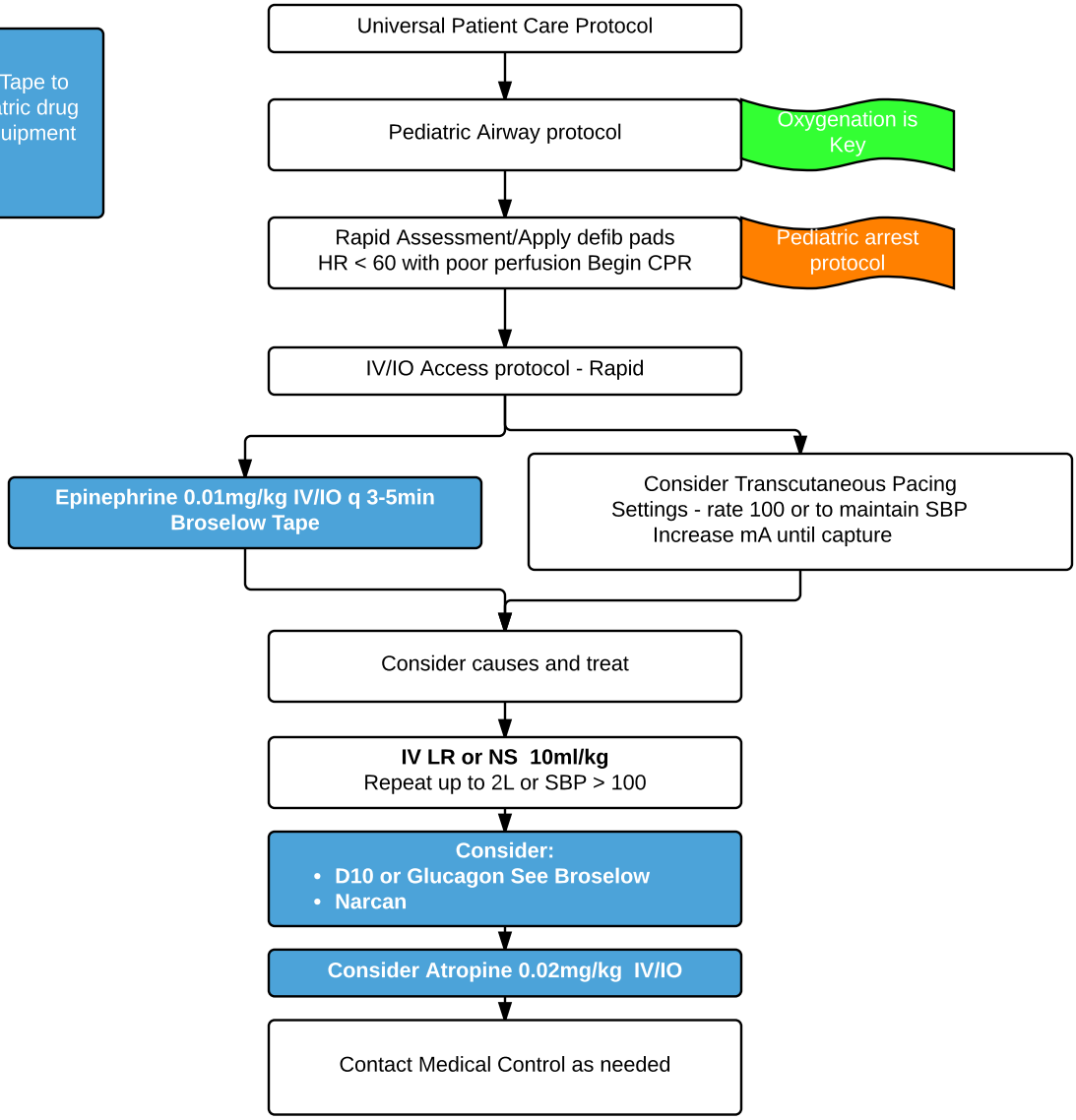
Cardiac, Bradycardia Pediatric

HISTORY:
- Past Medical History
- Foreign Body Obstruction
- Respiratory distress or arrest
- Toxin or poison
- Congenital Disease
- Medications

Signs and Symptoms:
- Decreased HR
- Decreased Capillary refill or cyanosis
- Mottled cool skin
- Hypotension
- AMS

Differential:
- Respiratory Failure
- Hypovolemia
- Congenital
- Trauma
- Tension Pneumothorax
- Hypothermia
- Toxin
- Hypoglycemia
- Acidosis

Use **Broselow** Tape to Assist with pediatric drug dosages and Equipment Sizes



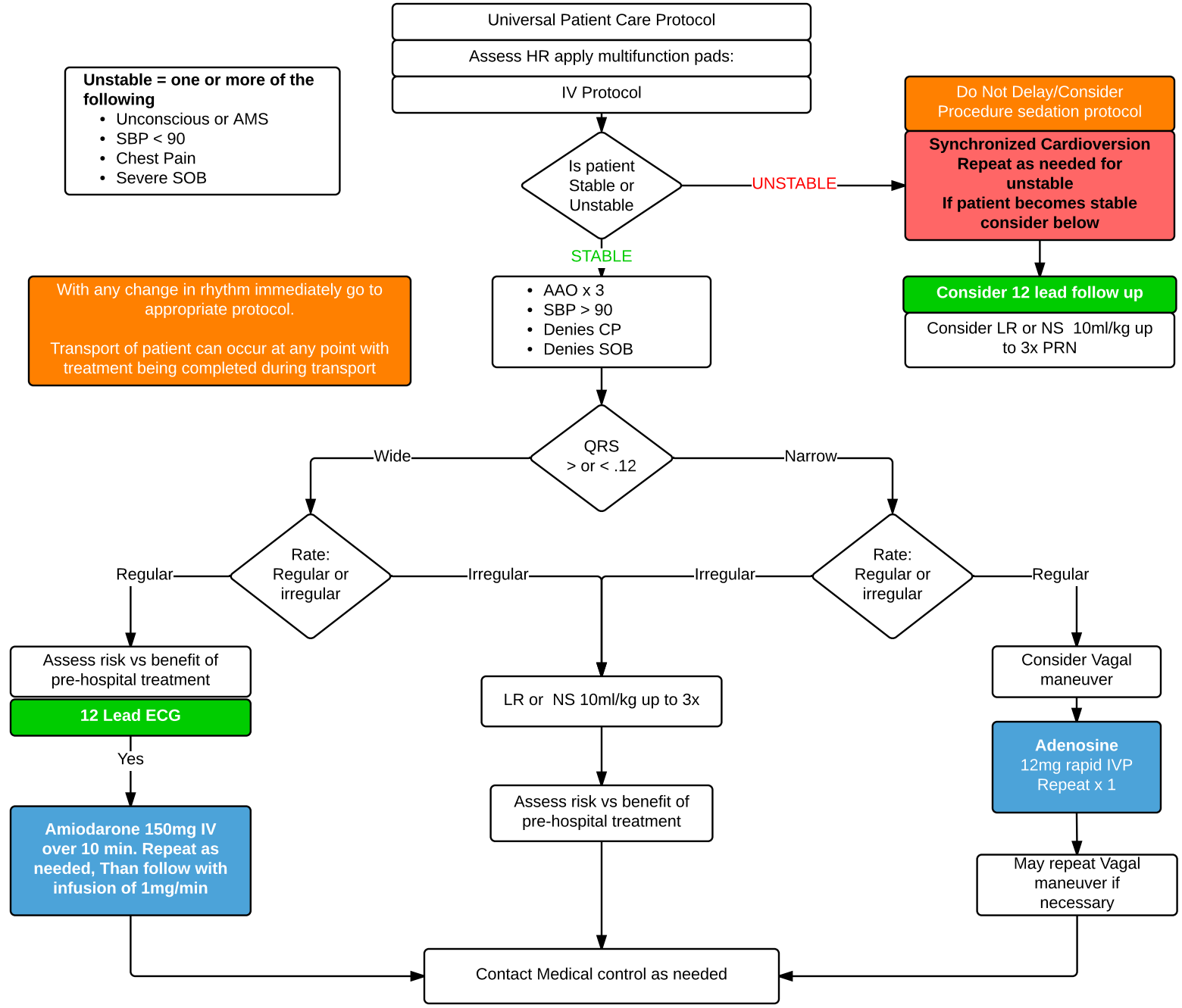
PEARLS:
- This protocol is for 12 yo or <, or those patients fitting the Broselow-Luten Tape.
- **Treatment of Bradycardia is based on the presence of symptoms. If asymptomatic, monitor only.**
- Consider treatable causes.
- **Aggressively Oxygenate these patients, and support respiratory effort.**
- Fluid Bolus titrated to maintain a SBP > 70 + (age in years x 2).

Cardiac: Tachycardia Adult

History:
- Past Medical history
- Medications - diet pills, Thyroid, Digoxin
- Syncope / Near syncope
- Diet - Caffeine, chocolate
- Palpitations
- CHF
- Pacemaker
- Allergies

Signs and Symptoms:
- HR > 150/Min
- Dizziness, CP, SOB
- Potential Presenting Rhythms:
  - Atrial/Sinus tachycardia
  - Atrial Fibrillation/Flutter
  - Multifocal atrial tachycardia

Differential:
- Heart Disease - WPW, Valves
- Sick Sinus
- MI
- Electrolyte imbalance
- Exertion, Pain, Emotional
- Fever
- Hypoxia, PE
- Hyperthyroidism



PEARLS:
- If the patient has a history of, or if the 12 lead reveals WPW, do not administer a Calcium Channel Blocker or Beta Blocker.
- Adenosine may not be effective in identifiable atrial fibrillation/flutter, but will not harm the patient.
- Monitor for hypotension after administration of Calcium Channel Blocker or Beta Blocker.
- Continuous Sp02 must be monitored.
- If patient has a known EF of < 40%, CHF, or Junctional Tachycardia, use caution when cardioverting.
- Serious S/S are uncommon with a HR < 150. Patients with impaired cardiac function may become symptomatic at lower HR's.
- Approximately 75% of patients with rapid atrial fibrillation, will be related to sepsis, hemorrhage, or some other underlying cause.

Protocol

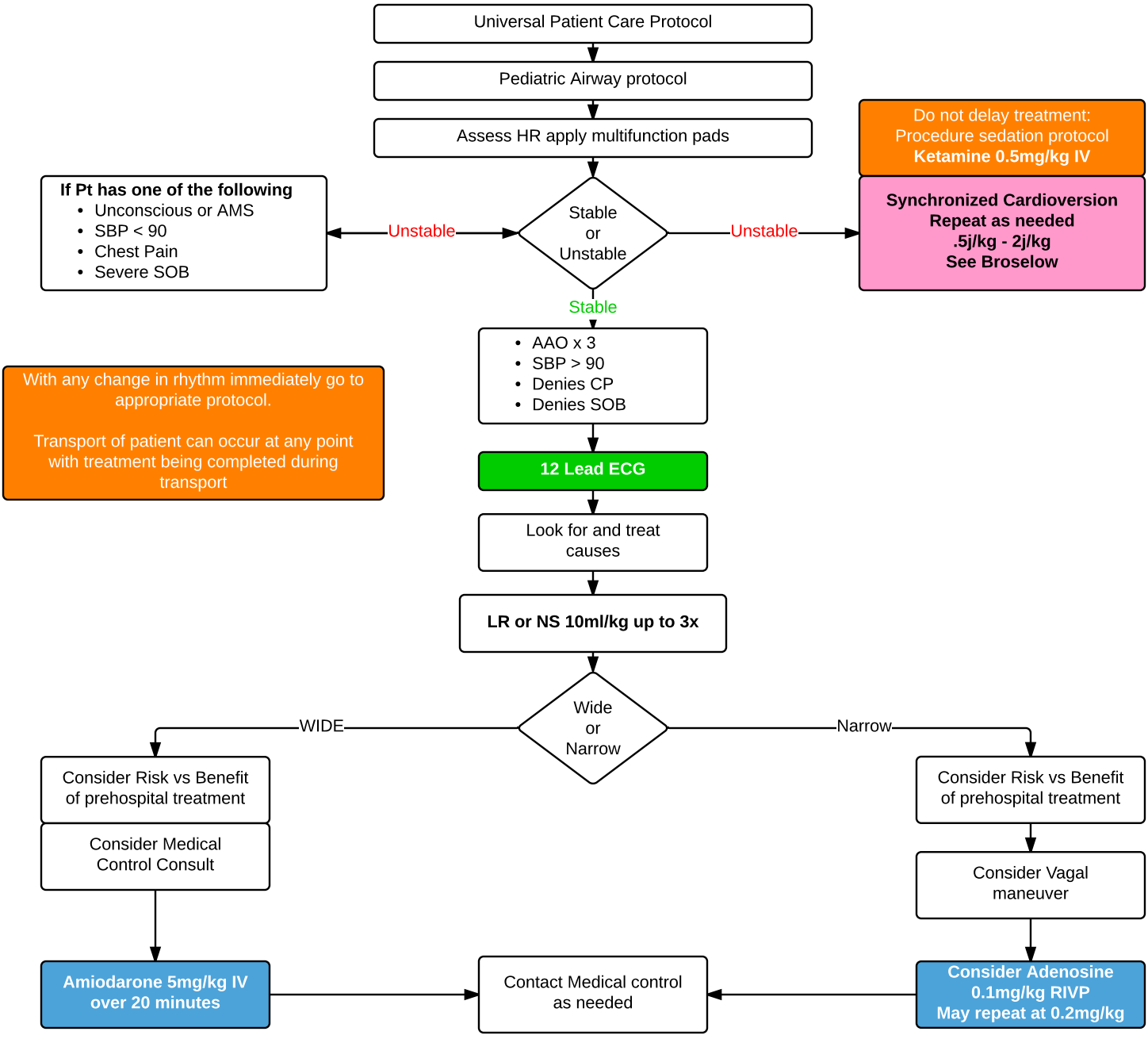
Version 9/25/2015

Cardiac: Tachycardia Pedi

History:
- Past Medical history
- Medications - diet pills, Thyroid, Digoxin
- Syncope / Near syncope
- Diet - Caffeine, chocolate
- Palpitations
- Allergies

Signs and Symptoms:
- Heart Rate
  - Child > 180
  - Infant > 220
- Pale or Cyanotic
- Diaphoretic
- Tachypnea
- Vomiting
- Hypotension

Differential:
- Heart Disease - WPW, Valves
- Electrolyte imbalance
- Exertion, Pain, Emotional
- Fever/Infection/Sepsis
- Hypoxia, PE
- Hypovolemia
- Trauma/Tension Pneumothorax



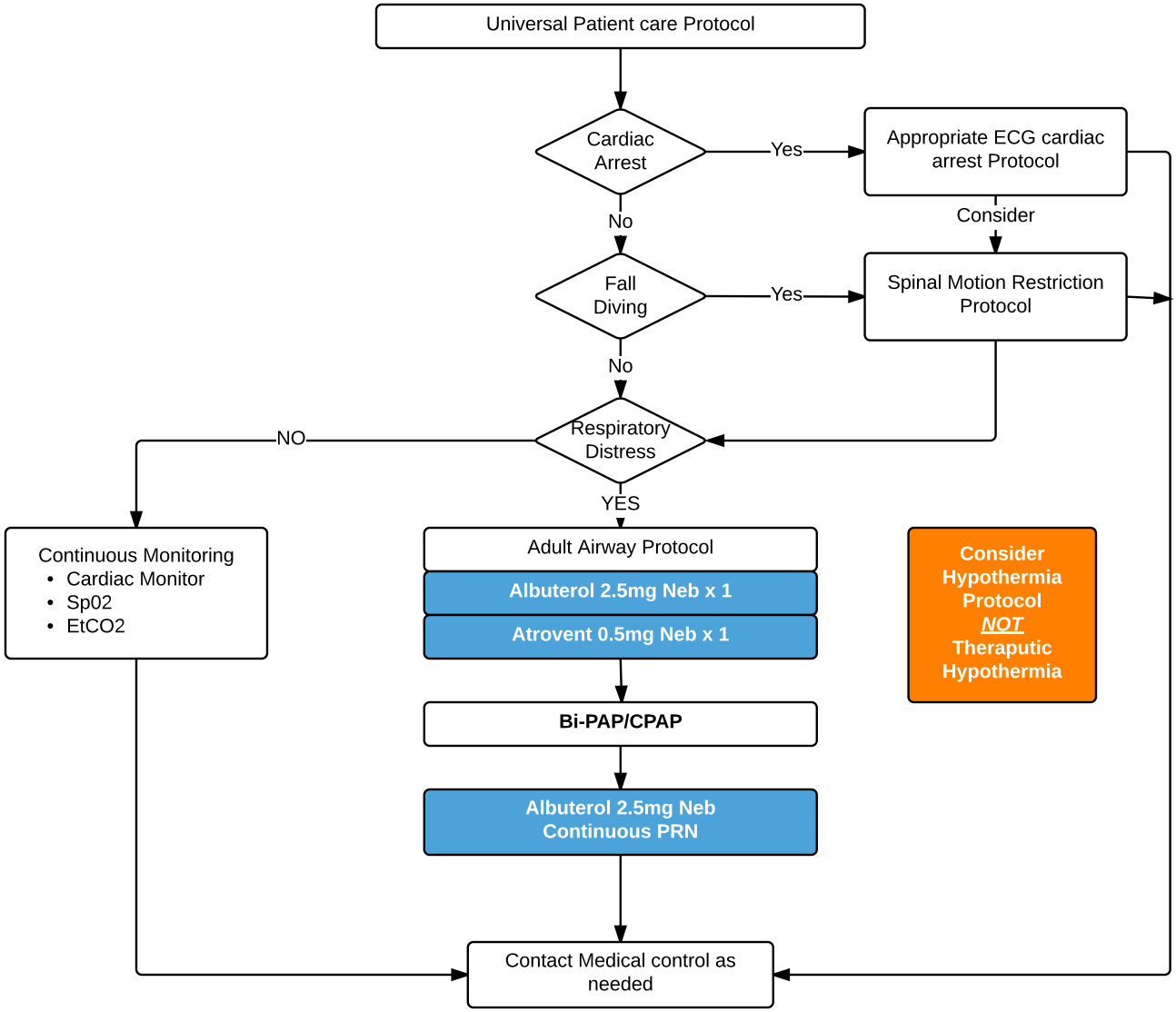
PEARLS:
- Carefully evaluate the rhythm to distinguish Sinus Tach, Supraventricular Tach, and Ventricular Tach.
- Separating the child from the caregiver may worsen the childs clinical condition
- Pediatric Pads should be used in children < 10kg or Broselow-Luten color Purple
- Continuous Sp02 is required for all SVT patients.
- The maximum Sinus Tach rate is (220 bpm - pt age in years).

Drowning / Near Drowning

HISTORY:
- Submersion in water regardless of depth
- Possible history of trauma
- Duration of immersion
- Temperature of water
- Fresh / Salt water

Signs and Symptoms:
- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing

Differential:
- Trauma
- Pre-existing medical problem
- Pressure injury - diving
  - Barotrauma
  - Decompression sickness



PEARL:
- All Near drowning patients, no matter how they appear must be transported, as they may develop complications with secondary drowning within 24 hours.
- Maintain a high level of suspicion for spinal injuries.
- With pressure injuries (decompresson / barotrauma) consider transport or availability of a hyperbaric chamber.
- Early use of Bi-PAP/CPAP, can greatly improve outcome.

Protocol

Version 9/25/2015

Hypotension Adult

HISTORY:

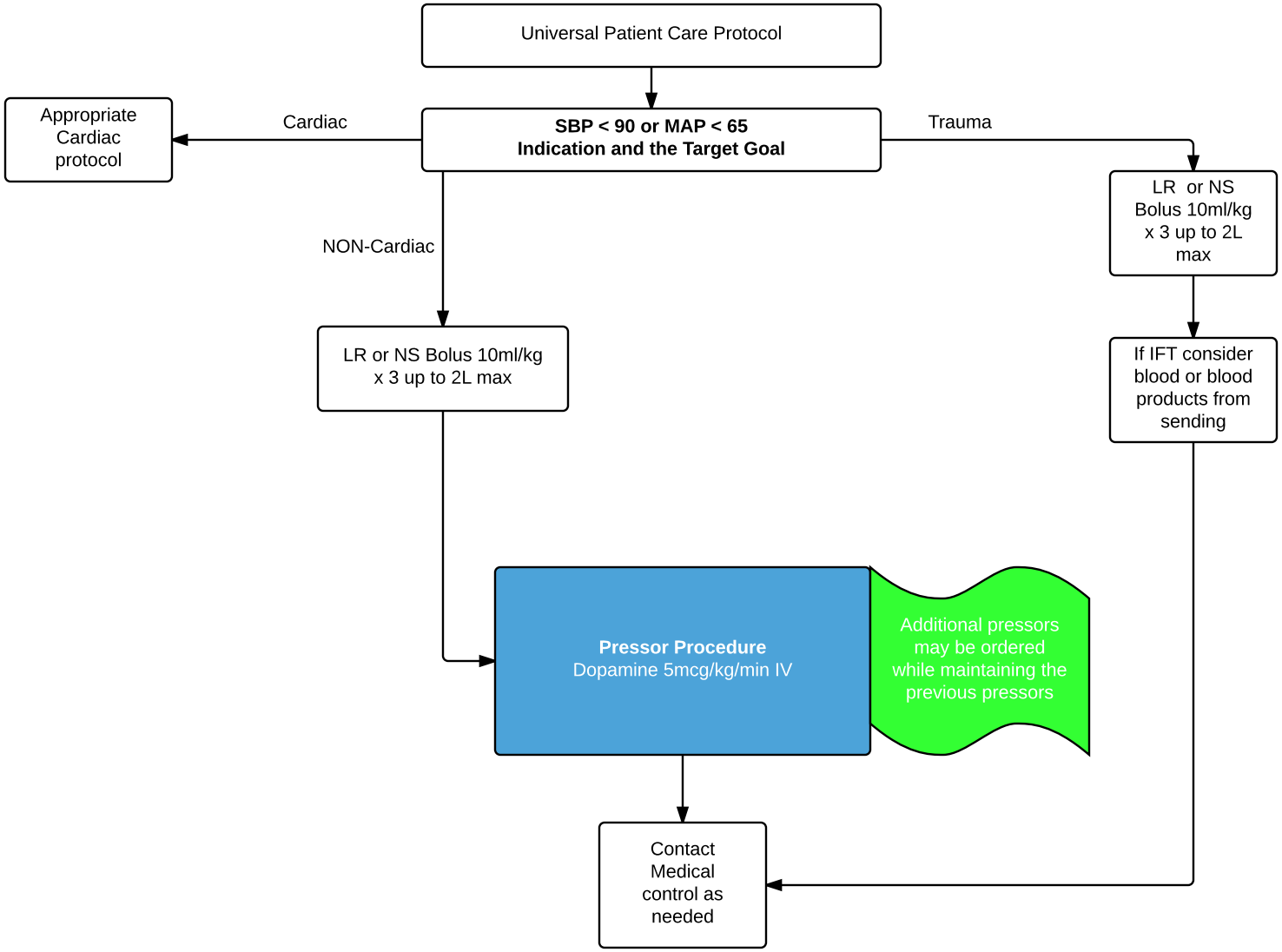
- Cardiac Ischemia.
- Infection - Septic
- Fluid Loss - Vomiting, Diarrhea
- Blood Loss - GI, AAA, Ectopic pregnancy, Vaginal.
- Medication.
- Allergic Reaction.
- Dehydration / Poor oral intake

Signs and Symptoms:

- Restlessness, Confusion.
- Weakness, Dizziness.
- Weak rapid pulse.
- Pale cool clammy skin.
- Delayed capillary refill.
- Hypotension.
- Coffee-ground emesis.
- Tarry Stool

Differential:

- Shock
  - Cardiogenic
  - Septic
  - Neurogenic
  - Hypovolemic
  - Anaphylactic
  - Ectopic Pregnancy
  - Dysrhythmia
  - PE



PEARL:

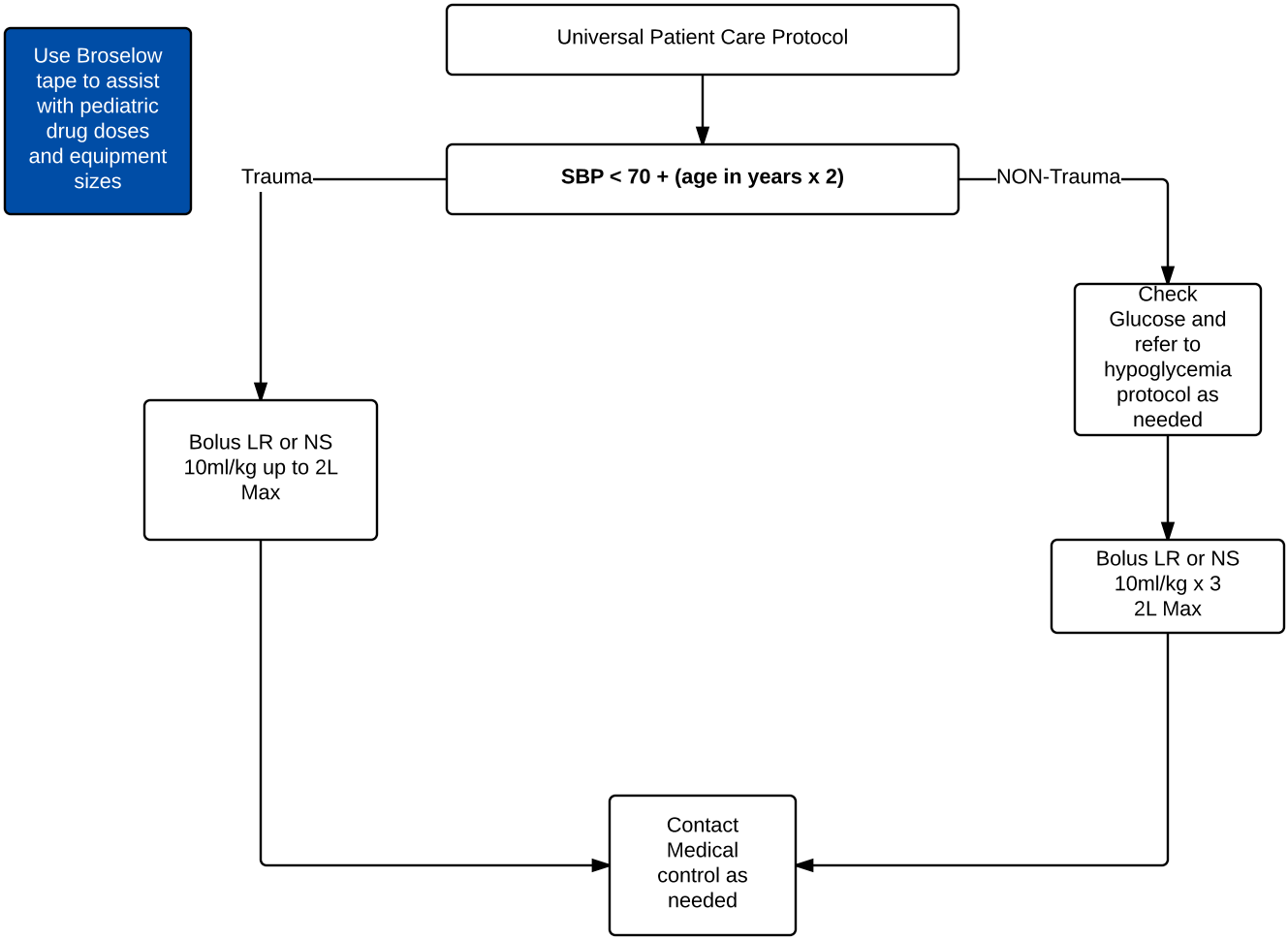
- Hypotension can be defined as a systolic BP < 90 or MAP < 65.
- Consider all possible causes of shock and treat as appropriate.
- Limit fluid bolus to 2 Liters.
- Circulating blood volume is approximately 80ml/kg
- Hypovolemic shock is never acutely treated with pressor administration.

Hypotension Pediatric

HISTORY:
- Vomiting
- Diarrhea
- Fever
- Infection
- Sick Contacts
- PO intake
- Last wet diaper/urine output

Signs and Symptoms:
- Restlessness, confusion, weaknesss
- Syncope
- Tachycardia
- Diaphoresis
- Pale, cool, clammy skin
- Delayed Capillary refill

Differential:
- Infection / Sepsis
- Dehydration
- Vomiting
- Diarrhea
- Congenital
- Medication or Toxin
- Anaphylaxis



PEARL:

DEHYDRATION SCALE

Characteristic:	0	1	2
General	Normal	Thirsty, restless,sleepy, irritable	Drowsy, limp, cold, possible comatose
EYES	Normal	Slightly Sunken	Deeply Sunken
Tongue	Moist	Sticky	Dry
Tears	Present	Decreased	Absent

0 No Dehydration
1-4 Mild to Moderate Dehydration
5-8 Severe Dehydration

Protocol

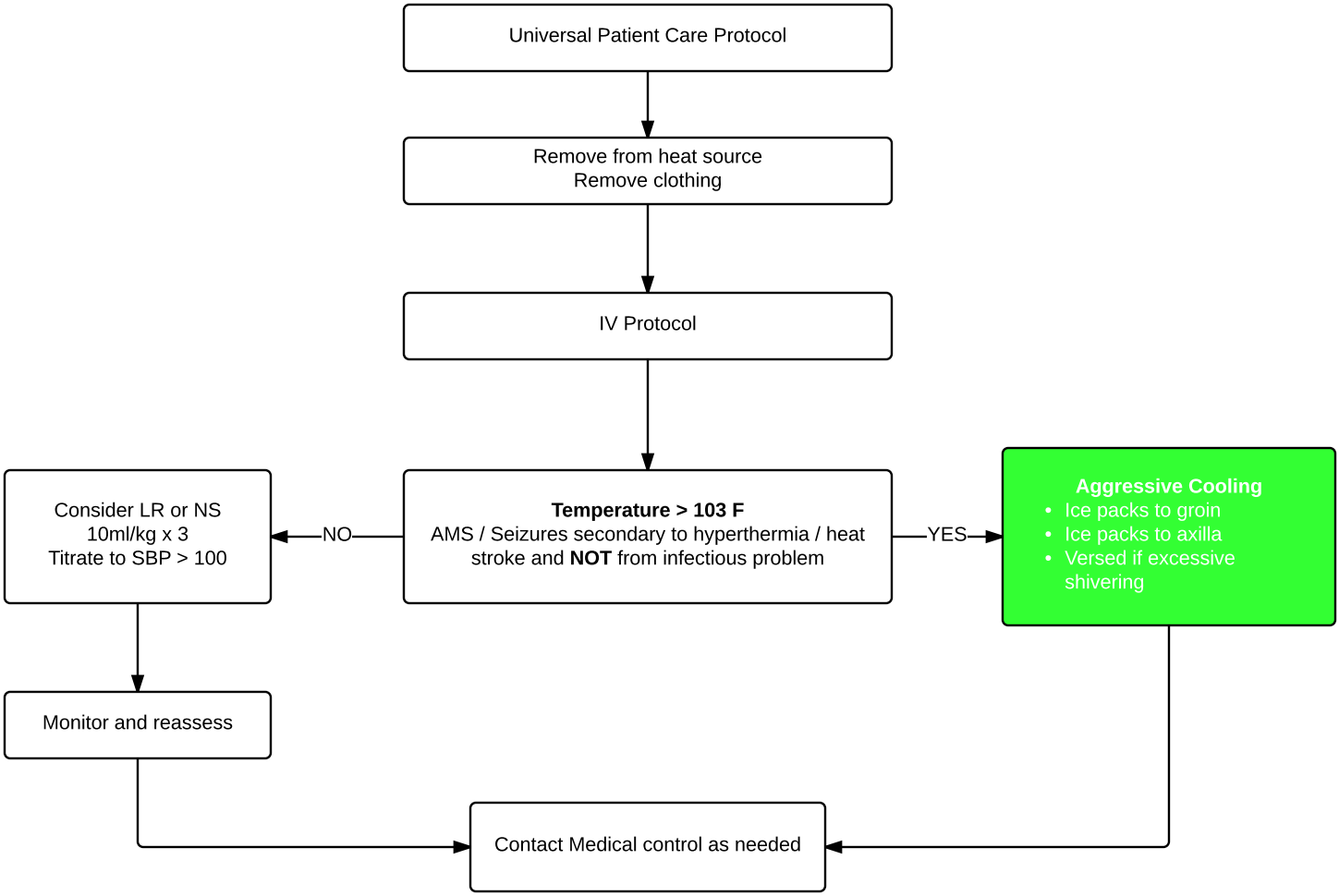
Version 9/25/2015

Hyperthermia

HISTORY:
- Age
- Past Medical history
- Medications
- Exposure to environment even in normal temperatures
- Exposure to extreme heat
- Extreme exertion
- Drug Use
- Fatigue / Muscle cramping

Signs and Symptoms:
- Altered LOC (AMS)
- Hot, Dry, Sweaty skin
- Seizures
- Hypotension or shock
- Seizures
- Nausea / Vomiting

Differential:
- Fever
- Dehydration
- Medications
- Hyperthyroidism
- Delirium tremems
- Heat cramps
- Heat Stroke
- CNS lesions



PEARL:

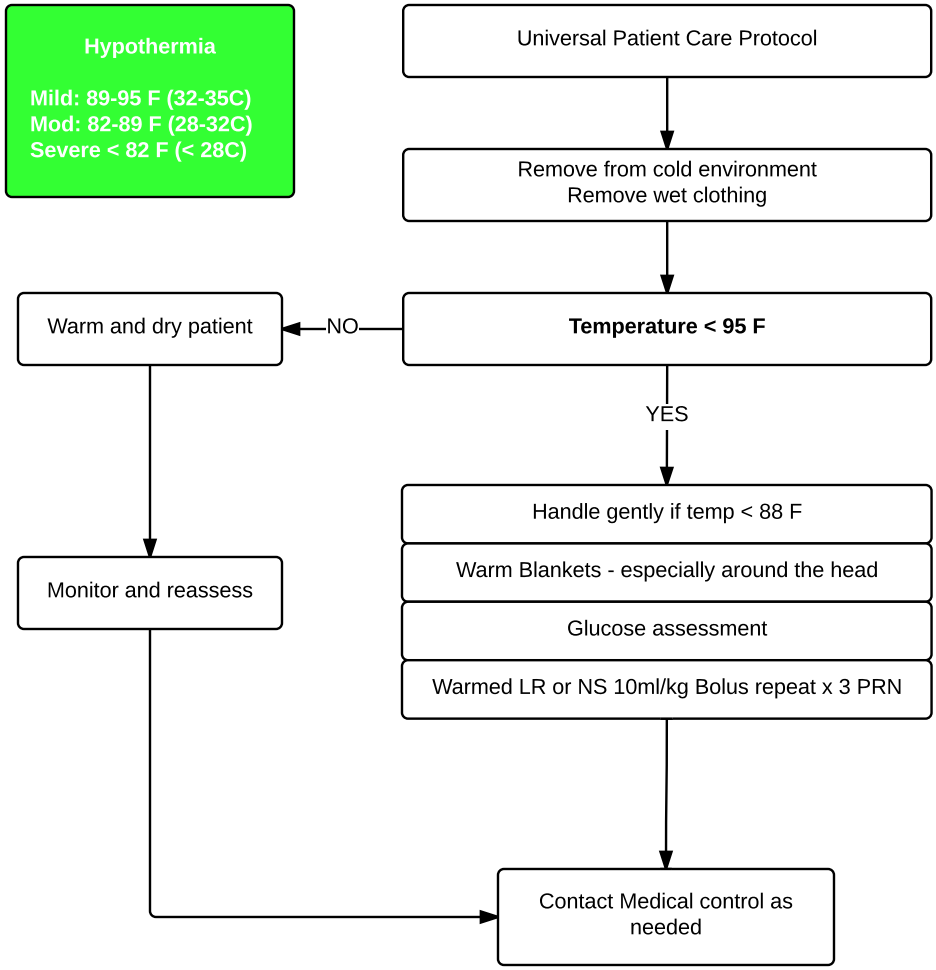
- Extremes of age are more prone to heat emergencies.
- Drugs may contribute to hyperthermia - Tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, Amphetamines, and Salicylates may elevate body temperature.
- Intense shivering may occur as the patient is cooled. Use Benzodiazepines per sedation protocol
- Heat cramps consist of benign muscle cramping secondary to dehydration and is not associated with elevated temperature.
- Heat Exhaustion consists of dehydration, salt depletion, dizziness, fever, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature.
- Heat Stroke with hyperthermia and AMS or seizure and a temp > 103.
- If history of, or suspected substance abuse, initiate aggressive cooling measures and benzodiazepine use.

Hypothermia

HISTORY:
- Age
- Past Medical history
- Medications
- Exposure to environment even in normal temperatures
- Exposure to extreme cold
- Infection / Sepsis
- Drug Use Alcohol, Barbiturates
- Length of exposure / wetness

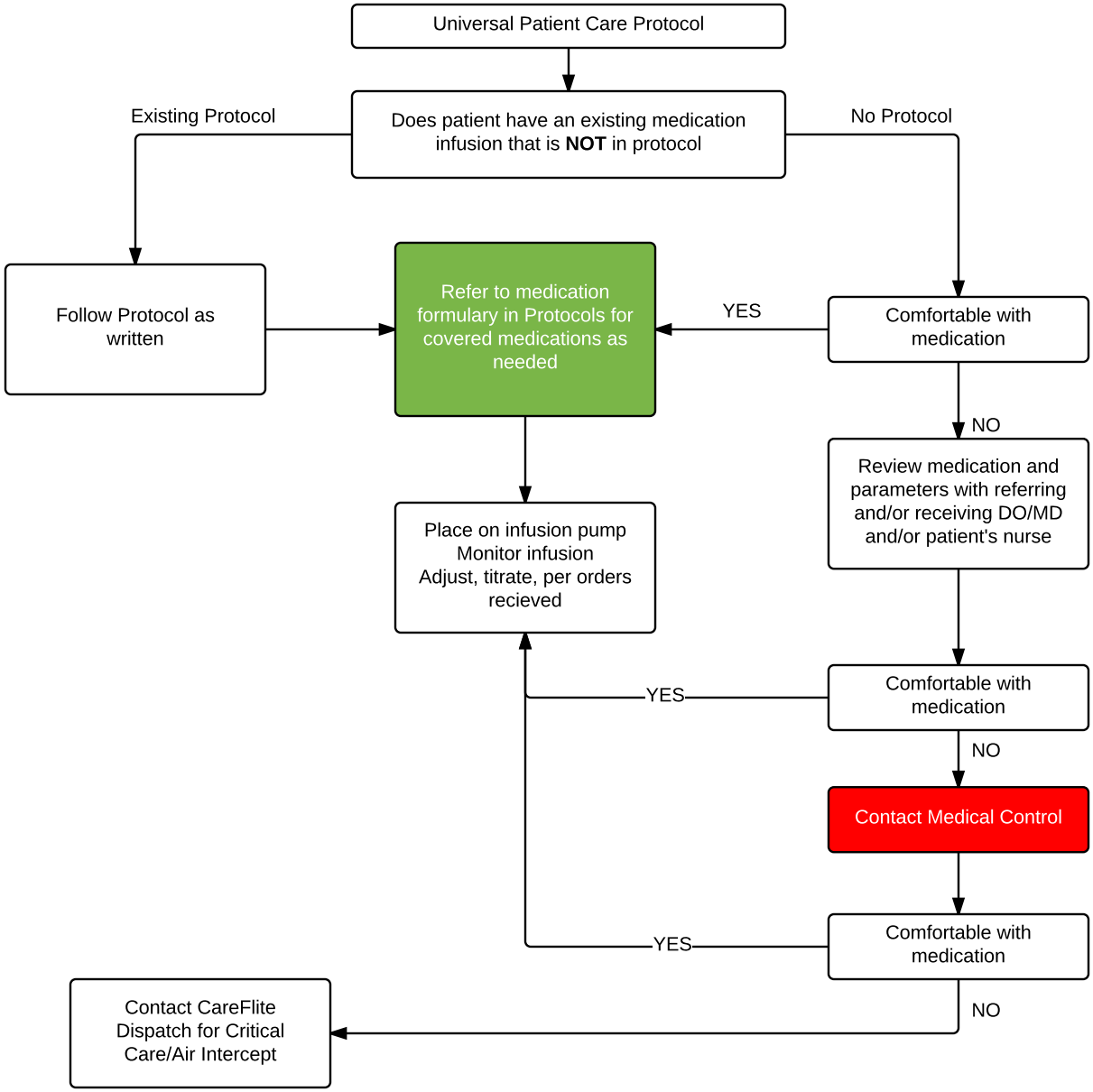
Signs and Symptoms:
- Cold, Clammy
- Shivering
- Mental status change
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension / Shock

Differential:
- Toxins
- Environmental exposure
- Sepsis
- CNS dysfunction
- Hypoglycemia



PEARL:
- No patient is dead until warm and dead.
- With temperatures less than 86 F (35C) ventricular fibrillation is a common cause of death. Gentle handling is important.
- Hypothermia may produce severe bradycardia so take extra time to palpate a pulse.
- Hot packs can be used in the groin and axilla if available.
- Consider withholding CPR if the patient has an organized rhythm or other signs of life. Contact Medical Control.
- If the patient temperature is < 86 F (30C) then only defibrillate 1 time if indicated.
- Antiarrythmics may not work with temperatures < 86 F (30C).

IFT / Existing Infusions | Adult | Pediatric



PEARLS:

- If medication is a trial medication contact medical control.
- Review medication with referring RN/MD in detail as needed. Refer to reference materials for additional medication information.
- If the patient becomes hemodynamically unstable confirm desired dose and rate and adjust as needed to include discontinuation.
- Contact Medical Control for further guidance.
- Crew members may transport any medication that has been established at a referring facility, that is appropriate and needed for transfer.
- All medication infusions should be placed on an infusion pump at the bedside.
- Patients who meet Level 1 Cardiac criteria may have all non-pressor infusions discontinued, and restarted if necessary.
- **This algorithm would applies to any any treatment modality, not just medications, and should be treated as a protocol for such treatments.**

Nausea / Vomiting Adult

HISTORY:

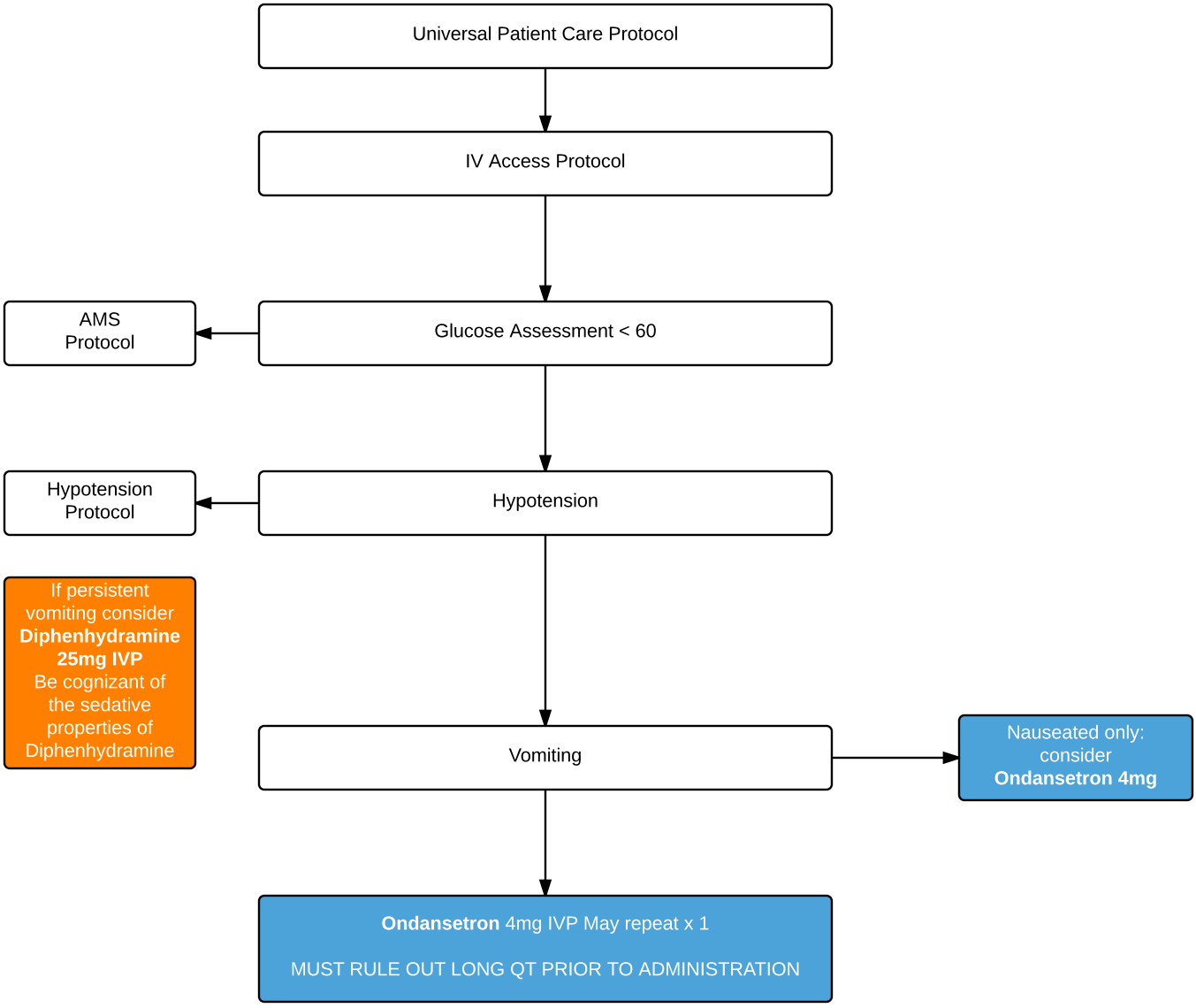
- Age
- Time of last meal
- Last Bowel movement/emesis
- Improvement or worsening with food or activity.
- Duration of problem.
- Past medical history.
- Past Surgical history.
- Medications.
- Menstrual History/pregnancy.
- Travel History
- Bloody emesis/diarrhea.

Signs and Symptoms:

- Pain - Character
- Distention.
- Constipation.
- Diarrhea.
- Anorexia.
- Radiation.
- Fever.
- Guarding.
- Hematemesis

Differential:

- CNS - increased pressure, headache, stroke, lesions, trauma or hemorrhage.
- ACS
- Drugs - NSAIDS, antibiotics, narcotics, chemotherapy.
- GI or Renal disorders.
- DKA
- Gynecologic disease - ovarian cyst, PID.
- Infections - Pneumonia, influenza.
- Electrolyte abnormalities.
- Food or Toxin induced.
- Medication or substance abuse.
- Pregnancy.
- Psychological.



PEARL:

- DKA may present as vomiting or abdominal pain.
- Consider supplemental glucose on patients with suspected alcoholic ketoacidosis
- Consider IV fluids on any patient with nausea or vomiting.
- Consider Odansetron prophylaxis for nausea associated with narcotic pain medication and or motion sickness
- Consider Naso/Oro Gastric tube for uncontrolled persistent emesis.

Protocol

Version 9/25/2015

Nausea / Vomiting Pediatric

HISTORY:

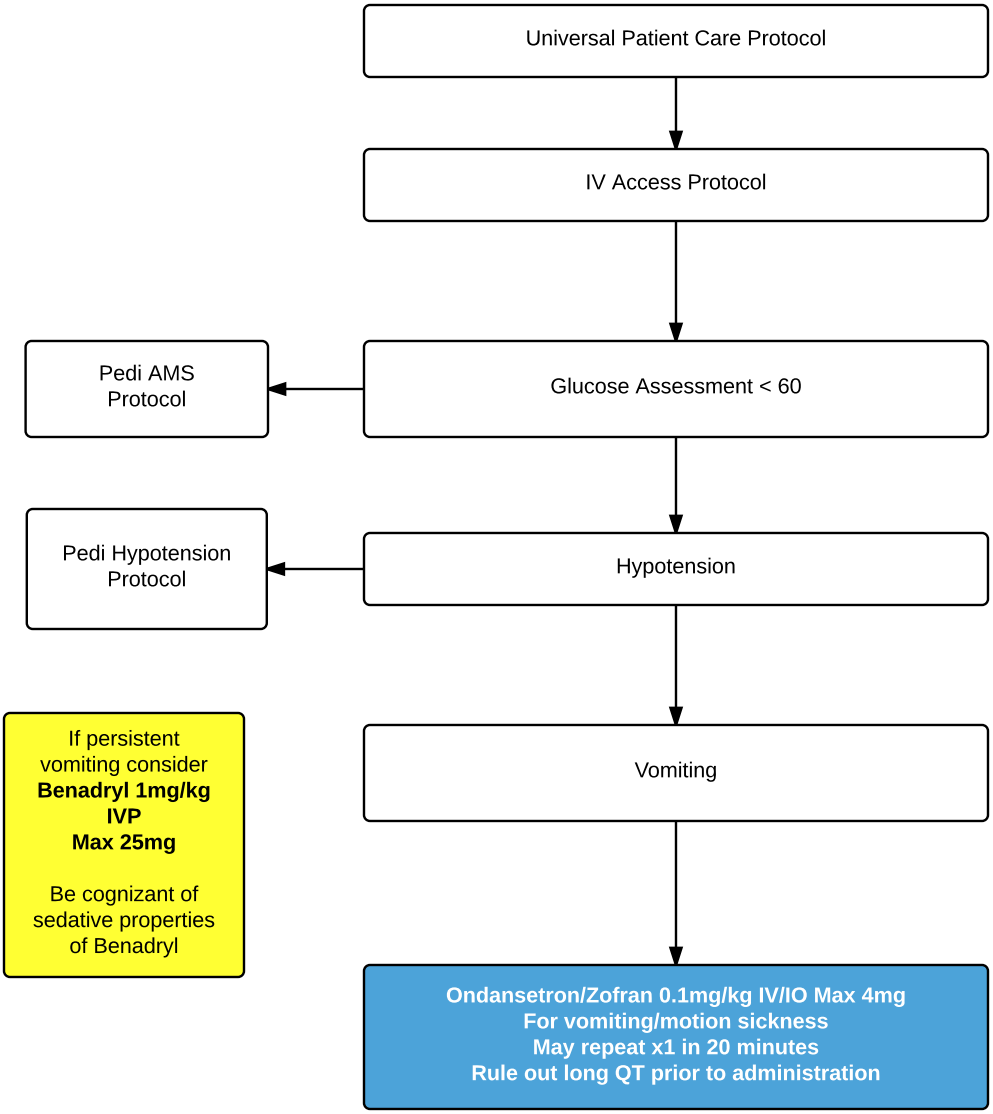
- Age
- Time of last meal
- Last Bowel movement/emesis
- Improvement or worsening with food or activity.
- Duration of problem.
- Past medical history.
- Past Surgical history.
- Medications.
- Travel History.
- Bloody emesis/diarrhea.

Signs and Symptoms:

- Pain - Character
- Distention.
- Constipation.
- Diarrhea.
- Anorexia.
- Radiation.
- Fever.
- Guarding.
- Hematemesis

Differential:

- CNS - increased pressure, headache, stroke, lesions, trauma or hemorrhage.
- Drugs - NSAIDS, antibiotics, narcotics, chemotherapy.
- GI or Renal disorders.
- DKA.
- Infections - Pneumonia, influenza.
- Electrolyte abnormalities.
- Food or Toxin induced.
- Medication or substance abuse.
- Psychological.



PEARL:

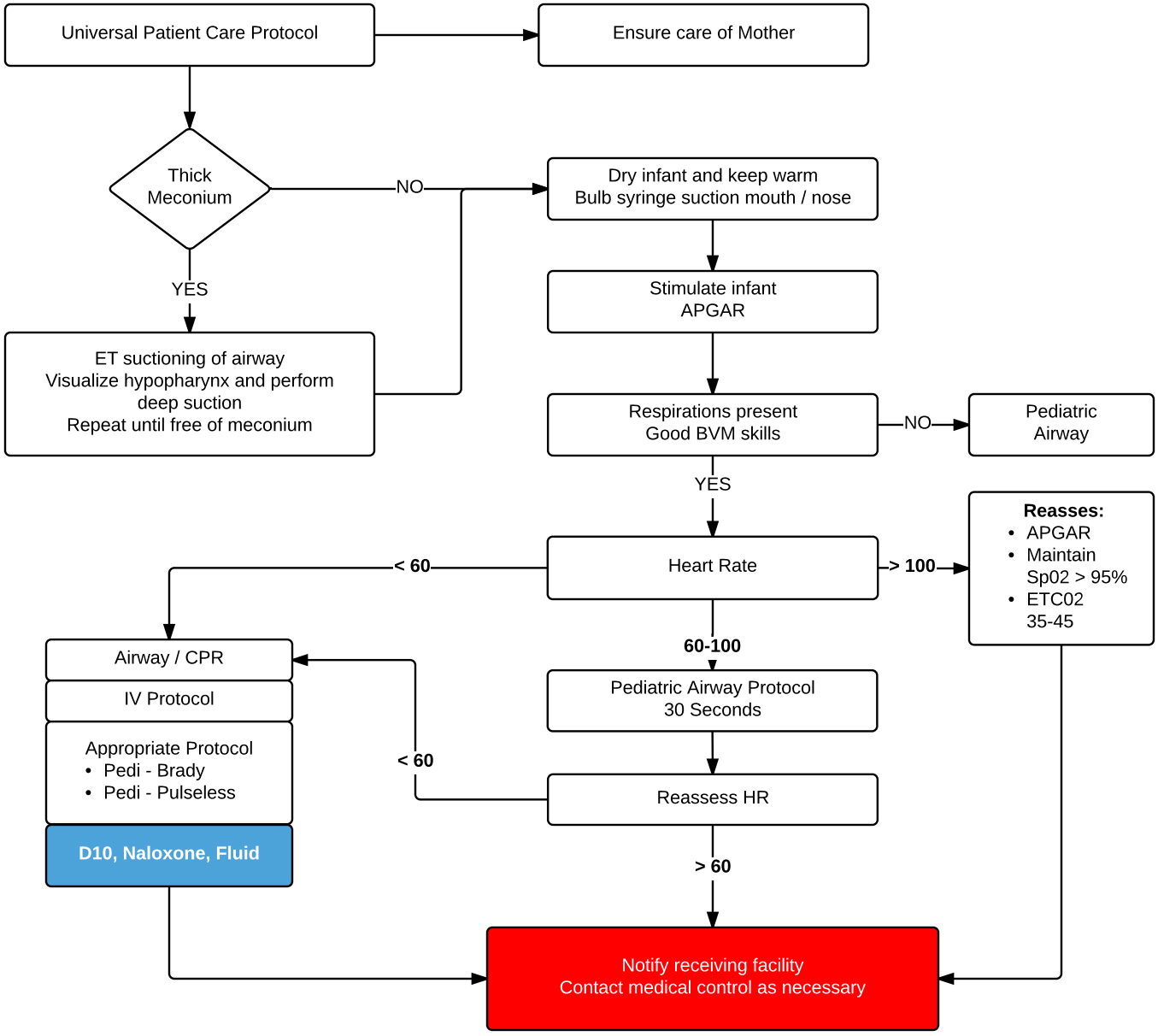
- **Heart Rate -** One of the first clinical signs of dehydration, almost always increased heart rate, tachycardia increases as dehydration becomes more severe, very unlikely to be significantly dehydrated if heart rate close to normal.
- **Labs -** Elevated BUN/Creatinine indicates dehydration.
- Consider IV fluid bolus 10ml/kg LR May repeat x 3 in any pediatric patient with vomiting.

Newborn Care

HISTORY:
- Due date
- Multiple gestation
- Meconium
- Delivery difficulty
- Congenital disease
- Medications - maternal
- Maternal risk factors
  - Substance abuse
  - Smoking

Signs and Symptoms:
- Respiratory distress
- Peripheral cyanosis or mottling
- Central cyanosis - abnormal
- AMS
- Bradycardia

Differential:
- Airway failure
  - Secretions
  - Respiratory drive
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia



PEARL:
- CPR in infants is 120 compressions / minute with a 3:1 compression to ventilation ratio.
- Check blood sugar as soon as possible after infant is considered immediately stable.
- It is extremely important to keep the infant warm.
- Maternal sedation or narcotics will sedate the infant.

Protocol

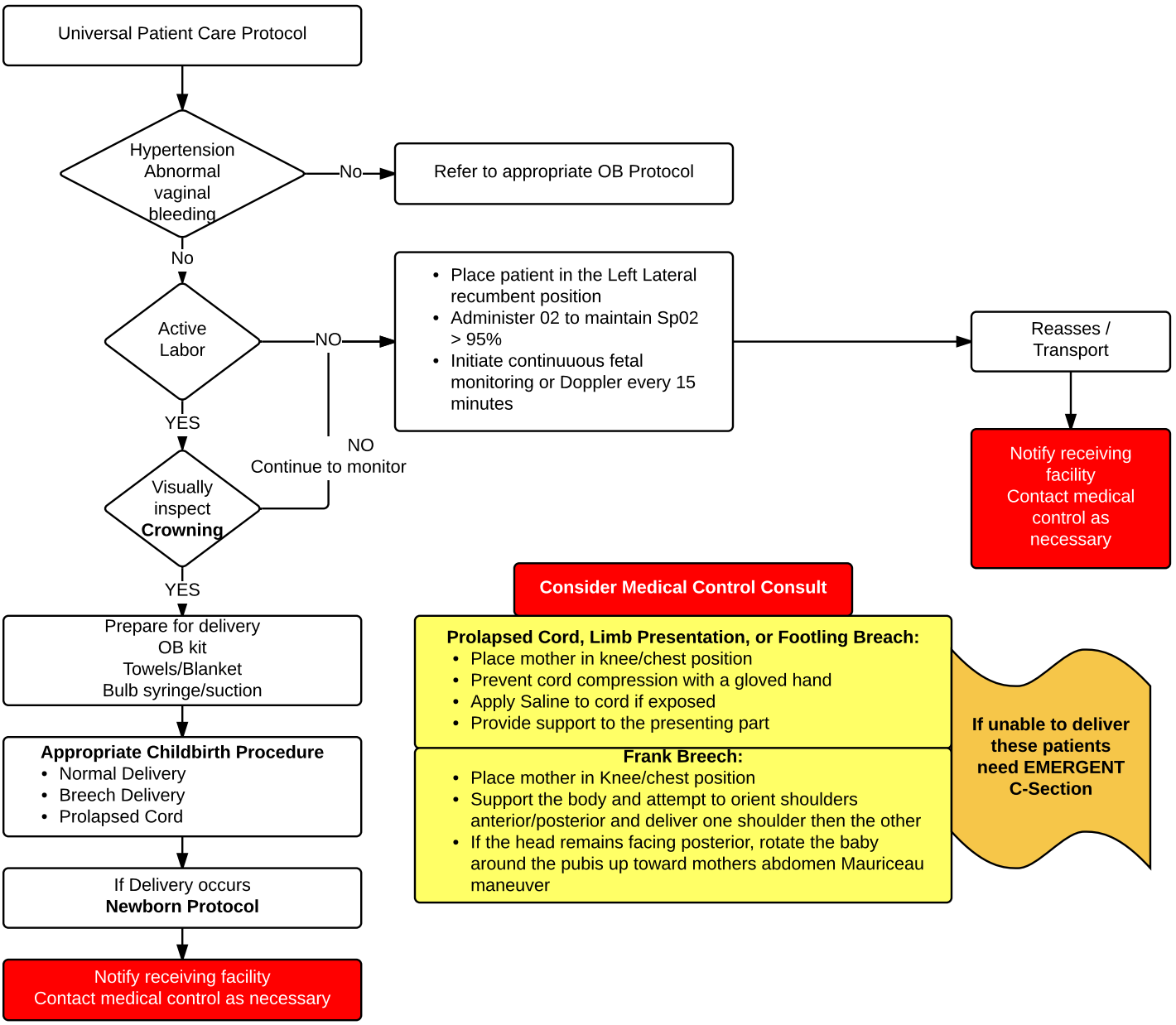
Version 9/25/2015

OB: Childbirth > 34 weeks

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

Signs and Symptoms:
- Spasmotic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

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



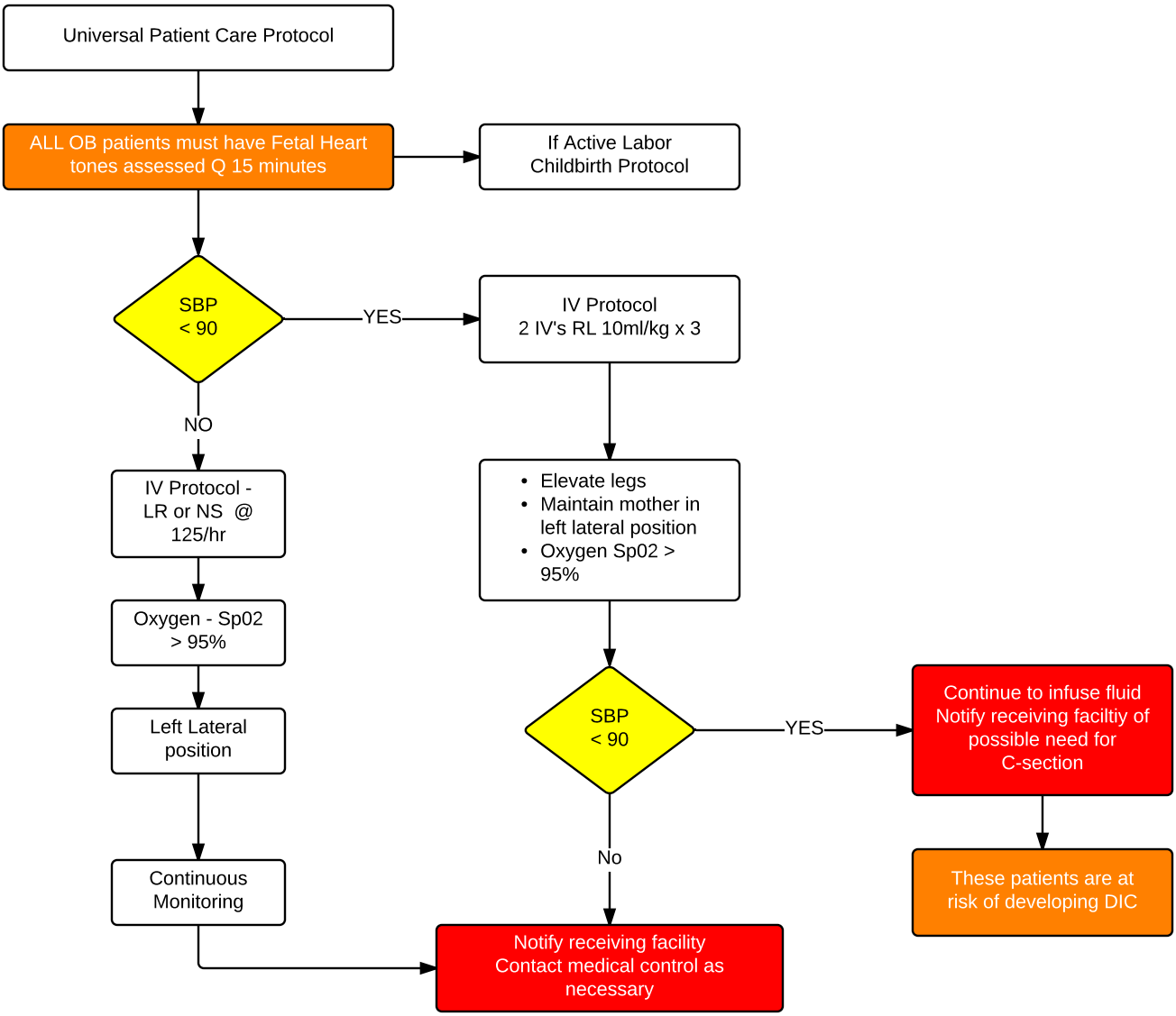
PEARL:
- Document all times, (delivery, contraction frequency, intensity, and length.
- Assessment should include Fetal heart monitor, or Doppler of fetal heart tones Q 15 minutes.
- Document APGAR at 1 and 5 minutes.
- After delivery, allowing the child to nurse and massaging the uterus will promote uterine contraction and help to control postpartum hemorrhage.
- Postpartum hemorrhage is defined as blood loss > 1000mL, or 500mL with signs and symptoms.

Hemorrhage / Abruptio / Previa

HISTORY:
- Past Medical History
- Hypertension Medications
- Prenatal care
- Prior pregnancies / births

Signs and Symptoms:
- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe Headache
- Visual Changes
- Edema of hands and face

Differential:
- Pre-eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion
- HELLP / DIC
- Ruptured uterus



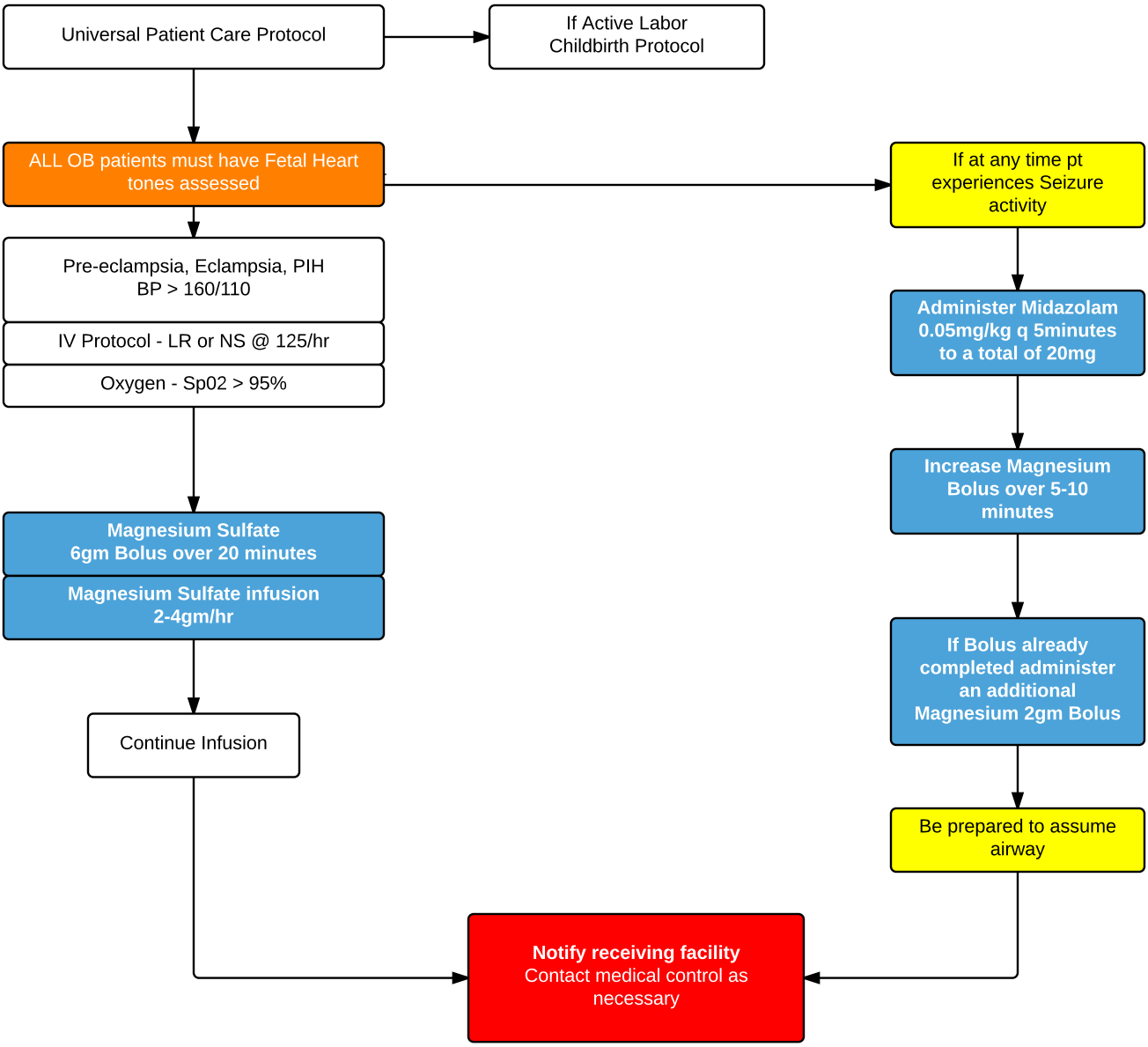
PEARL:
- No manual vaginal exams should be performed.
- Contractions may or may not be present.
- DIC - Petechiae, hematuria, bruising, bleeding from IV sites.
- Monitor for shock.
- Attempt to determine fundal height and mark reassessment frequently, recognition of concealed bleeding will be confirmed by an increase in the fundal height.
- The degree of vaginal bleeding has no correlation with the severity of the abruption.

Pre-Eclampsia / Eclampsia / PIH

HISTORY:
- Past Medical History
- Hypertension Medications
- Prenatal care
- Prior pregnancies / births

Signs and Symptoms:
- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe Headache
- Visual Changes
- Edema of hands and face

Differential:
- Pre-eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion
- HELLP / DIC
- Ruptured uterus



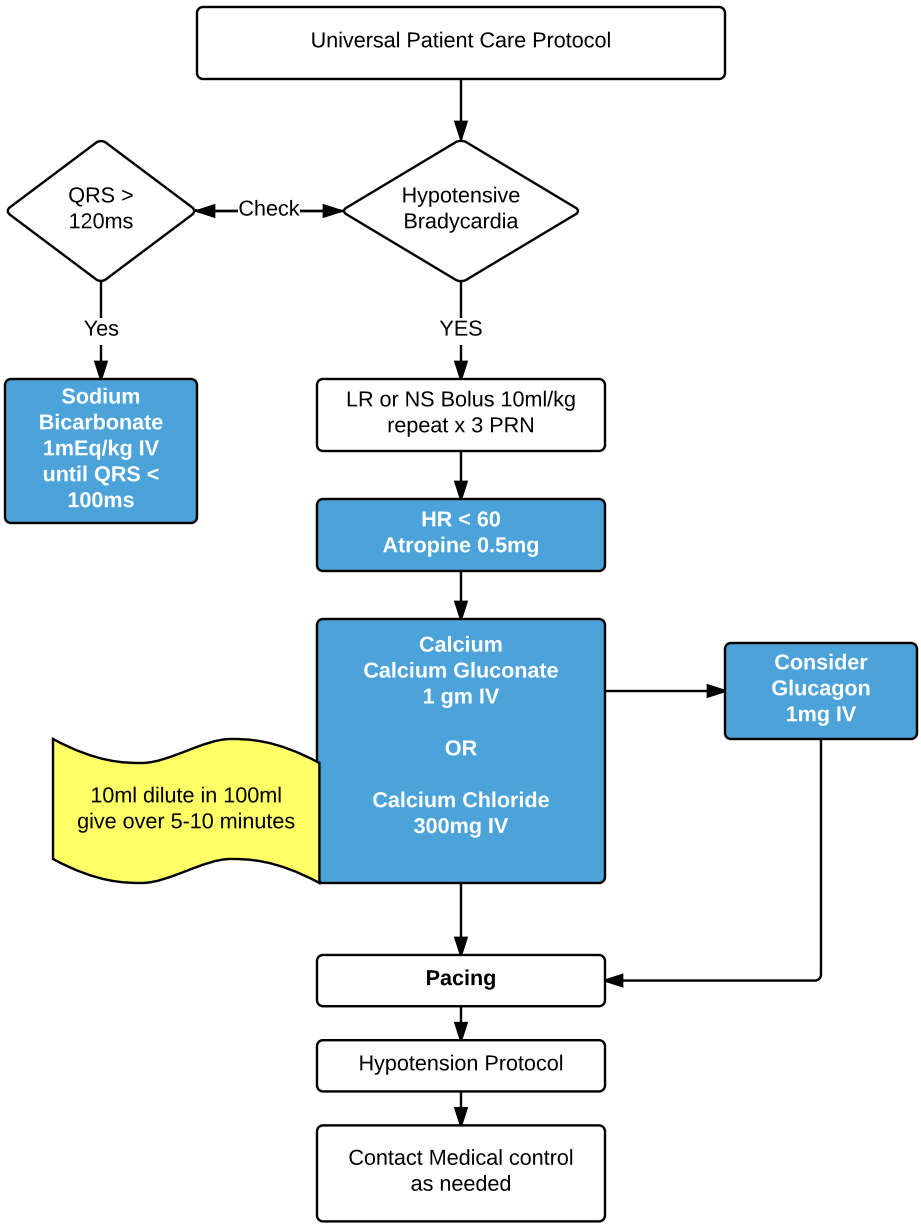
PEARL:
- In the setting of pregnancy, HTN is defined as BP > 140/90 or a relative increase of 30 systolic and 20 diastolic from the patients pre-pregnancy BP.
- Magnesium Sulfate can cause respiratory depression, with cardiovascular collapse. - Monitor Level of consciousness, Sp02, EtCO2, Patellar reflexes, and urinary output every 15 minutes.
- The antidote for Magnesium Toxicity is Calcium Gluconate 1gm or Calcium Chloride 300mg.
- If patient begins seizing - Protect from injury, Maintain left lateral position, Monitor airway.
- Pre-eclampsia - can be seen up to 6 weeks postpartum, HTN as defined above, Proteinuria 2+, Hyperactive reflexes, Nondependent edema of the face and hands.
- Eclampsia - Headache, visual disturbances, right shoulder pain, epigastric pain, apprehension, anxiety, hyperreflexia with clonus, seizures, and pulmonary edema, are signs of impending eclampsia.

Overdose / Beta / Calcium Channel

HISTORY:
- Ingestion or suspected ingestion of a possibly toxic substance
- Substance ingested, route, quantity
- Time of ingestion
- Reason
- Past Medical history
- Medications in the home

Signs and Symptoms:
- Altered Mental Status
- Hypotension / Hypertension
- Decreased respiratory rate
- Tachycardia, Dysrhythmias
- Seizures

Differential:
- Cardiac Medications
- Beta Blockers
  - '-OLOL' type Drugs



PEARL:

- When pacing, for electrical capture to improve; Administer Calcium.
- There also may be an increase in time for the calcium to enter the myocyte during diastole. For this reason a lower target rate may be necessary.
- Nifedipine, Amlodipine, Nicardipine, and other CCB's in the dihydropyridines class have a very poor affinity for myocardial calcium channel. This selectivity is not lost in the OD. This will cause profound hypotension generally without bradycardia and possibly present with reflex tachycardia.
- In CCBs OD's Atropine and Glucagon will generally be ineffective.

Protocol

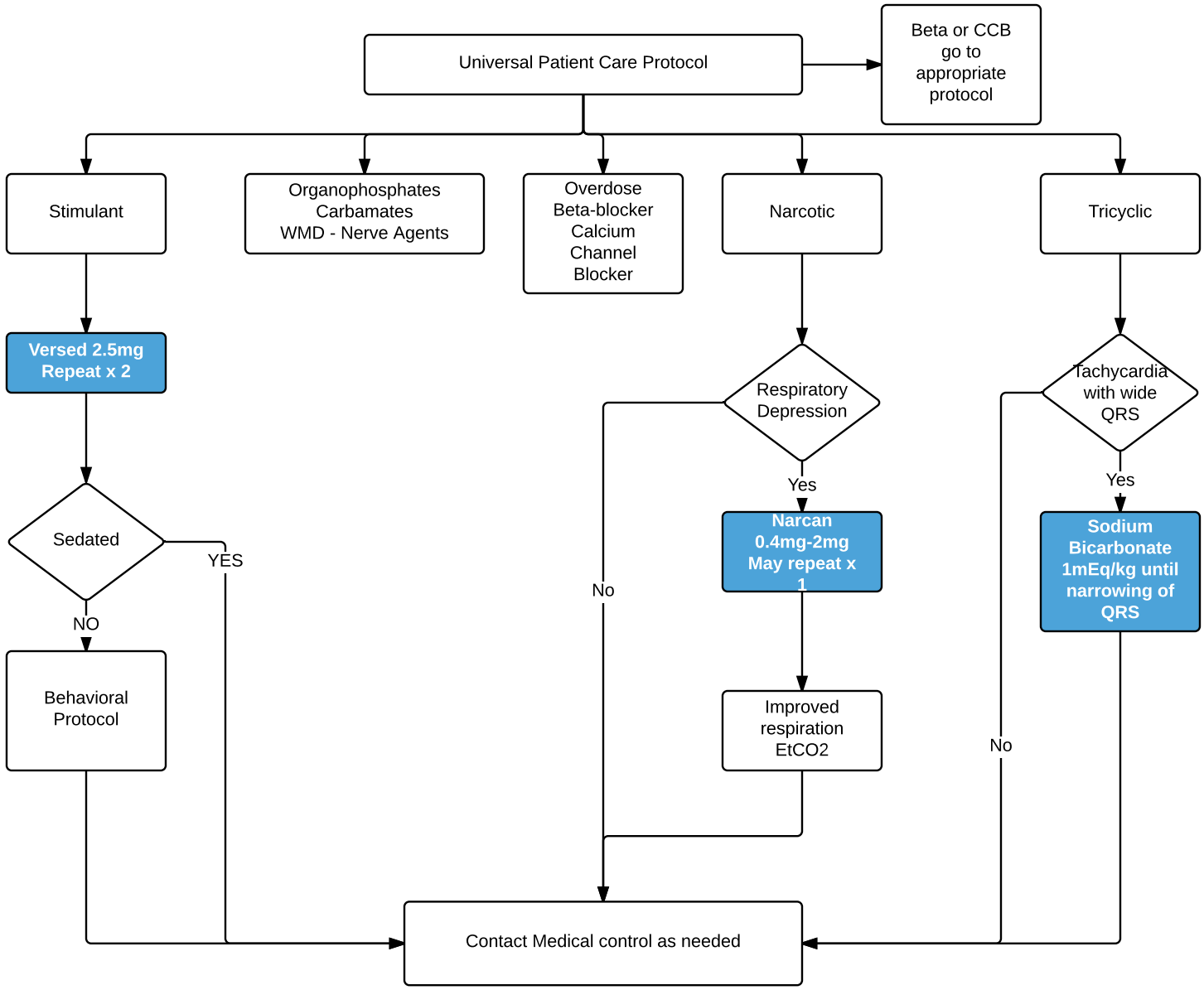
Version 9/25/2015

Overdose / Toxic Ingestion / Adult

HISTORY:
- Ingestion or suspected ingestion of a possibly toxic substance
- Substance ingested, route, quantity
- Time of ingestion
- Reason
- Past Medical history
- Medications in the home

Signs and Symptoms:
- Altered Mental Status
- Hypotension / Hypertension
- Decreased respiratory rate
- Tachycardia, Dysrhythmias
- Seizures

Differential:
- Tricyclics
- Acetaminophen
- Stimulants
- Anticholinergics
- Cardiac Medications
- Solvents, Alcohols, Cleaning agents
- Insecticides - Organophosphates



PEARL:

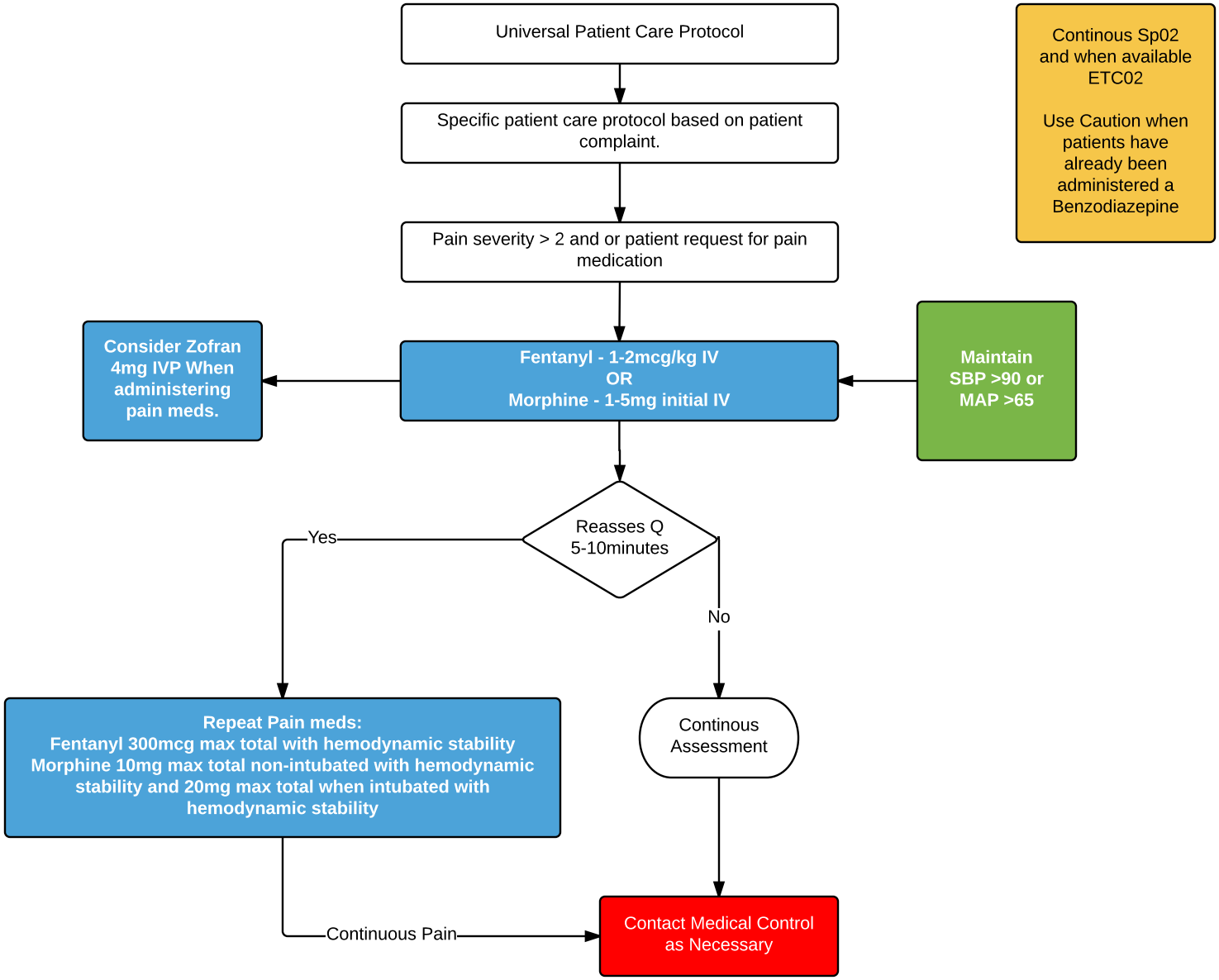
- Do not rely on patient history of ingestion especially in suicide attempts.
- **Tricyclic** - 4 major areas of toxicity - Seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.
- **Depressants** - Decreased HR, Decreased BP, Decreased temperature, Decreased respiration's.
- **Stimulants** - Increased HR, Increased BP, Increased temperature, Dilated pupils, Seizures.
- **Anticholinergics** - Increased HR, Increased temperature, Dilated pupils, Altered Mental Status.
- **Solvents** - Nausea, Vomiting, AMS.
- Consider contacting US/Texas Poison Control 1-800-222-1222.
- Nerve agent Kits contain 2mg of Atropine, 600mg of Pralidoxime in an auto-injector.
  - May be carried by and /or received for use from Hazmat team.

Pain Control Adult

HISTORY:
- Age
- Location
- Drug Allergies
- Severity (1-10)
- Duration of problem.
- Past medical history.
- Medications.
- If a child Wong-Baker Faces

Signs and Symptoms:
- Pain - Character
- Quality - Sharp, dull, etc.
- Relation to movement, respiration
- Radiation.
- Guarding.
- Increased with palpation of area

Differential:
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)



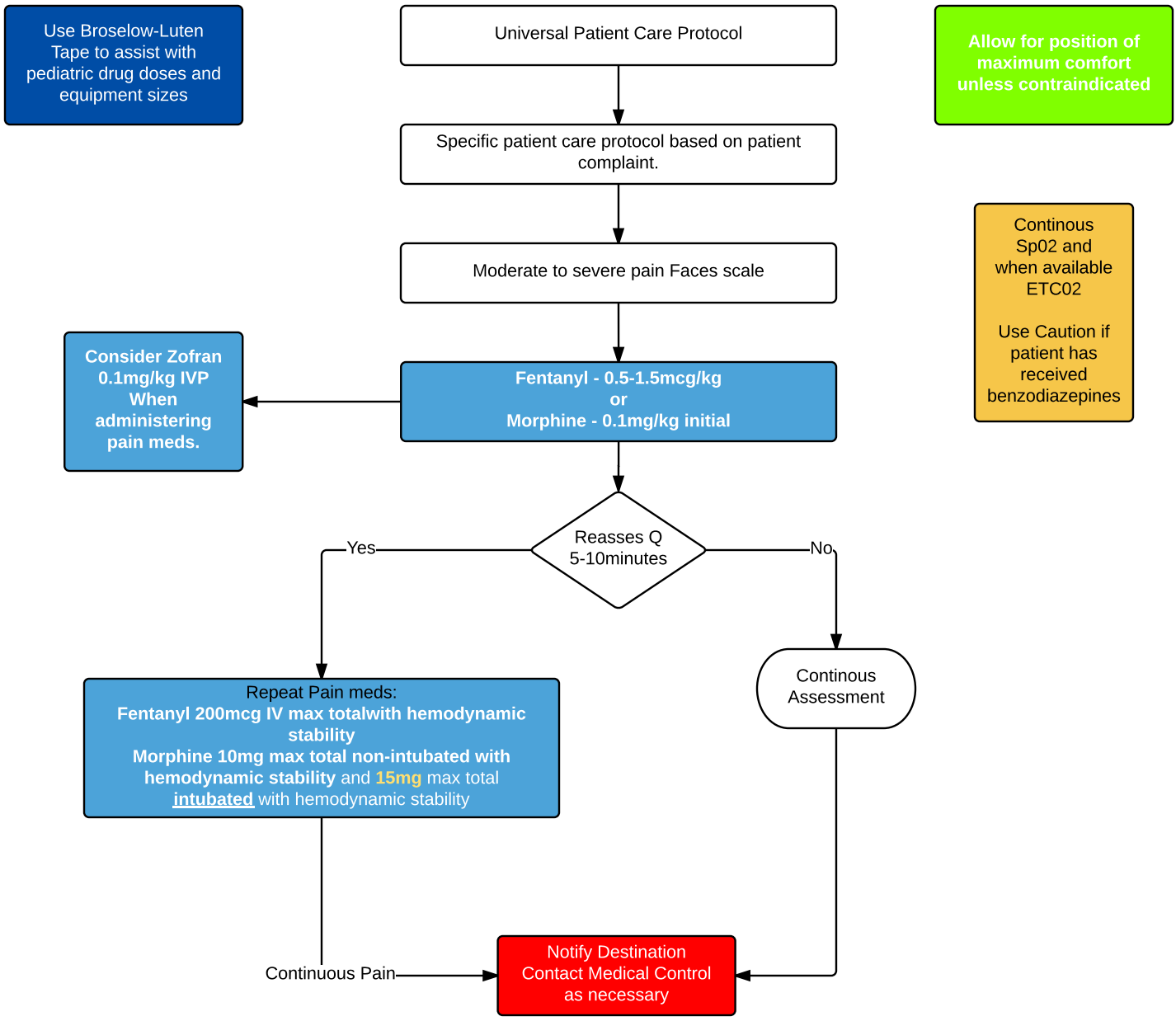
PEARL:
- Pain severity 1-10 is a vital sign that MUST be documented pre and post medication delivery on the PCR.
- In patients > 60years old OR with liver disease, REDUCE Fentanyl dosing by 50%.
- Monitor SpO2 and ETCO2 and observe closely for over sedation.
- Relative contraindications to narcotic use: Hypotension, Head injury, Respiratory distress, Severe COPD.
- Document all drug allergies.

Pain Control Pediatric

HISTORY:
- Age
- Location
- Drug Allergies
- Wong-Baker Faces
- Duration of problem.
- Past medical history.
- Medications.

Signs and Symptoms:
- Pain - Character
- Quality - Sharp, dull, etc.
- Relation to movement, respiration
- Radiation.
- Guarding.
- Increased with palpation of area

Differential:
- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)



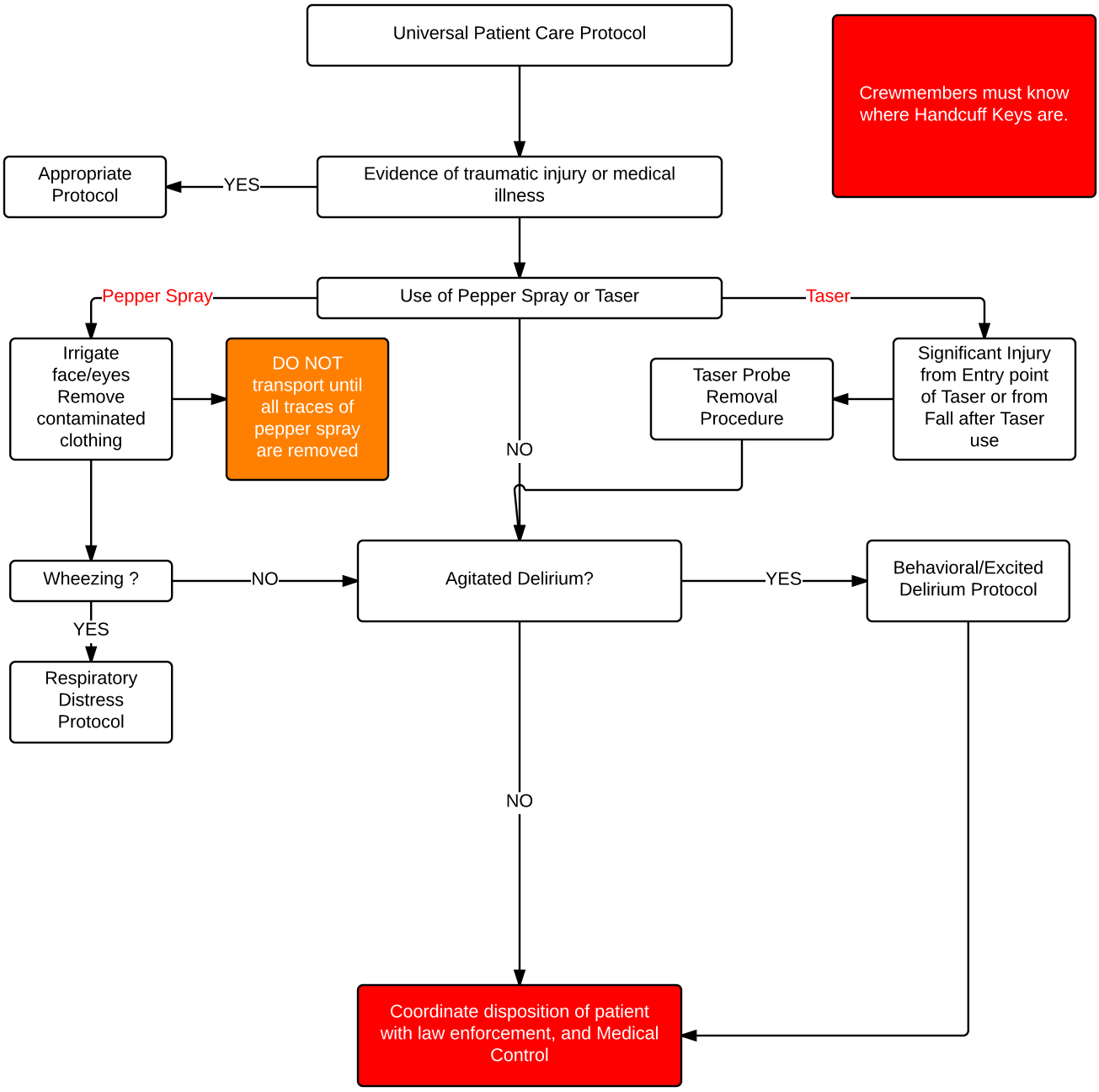
PEARL:
- Pain severity 1-10 is a vital sign that MUST be documented pre and post medication delivery on the PCR.
- Monitor patients closely for over sedation.
- Relative contraindications to narcotic use: Hypotension, Head injury, Respiratory distress, Severe COPD.
- Document all drug allergies.
- Monitor for respiratory depression.

Police Custody

HISTORY:
- Traumatic injury
- Drug Use/history of
- Cardiac History
- Asthma History
- Psychiatric History

Signs and Symptoms:
- External signs of trauma
- Palpitations
- Shortness of breath
- Wheezing
- Altered Mental Status
- Intoxication/Substance use

Differential:
- Agitated Delirium - Psychiatric, Substance abuse
- Traumatic injury
- Closed head injury
- Asthma Exacerbation
- Cardiac Dysrhythmia



PEARL:

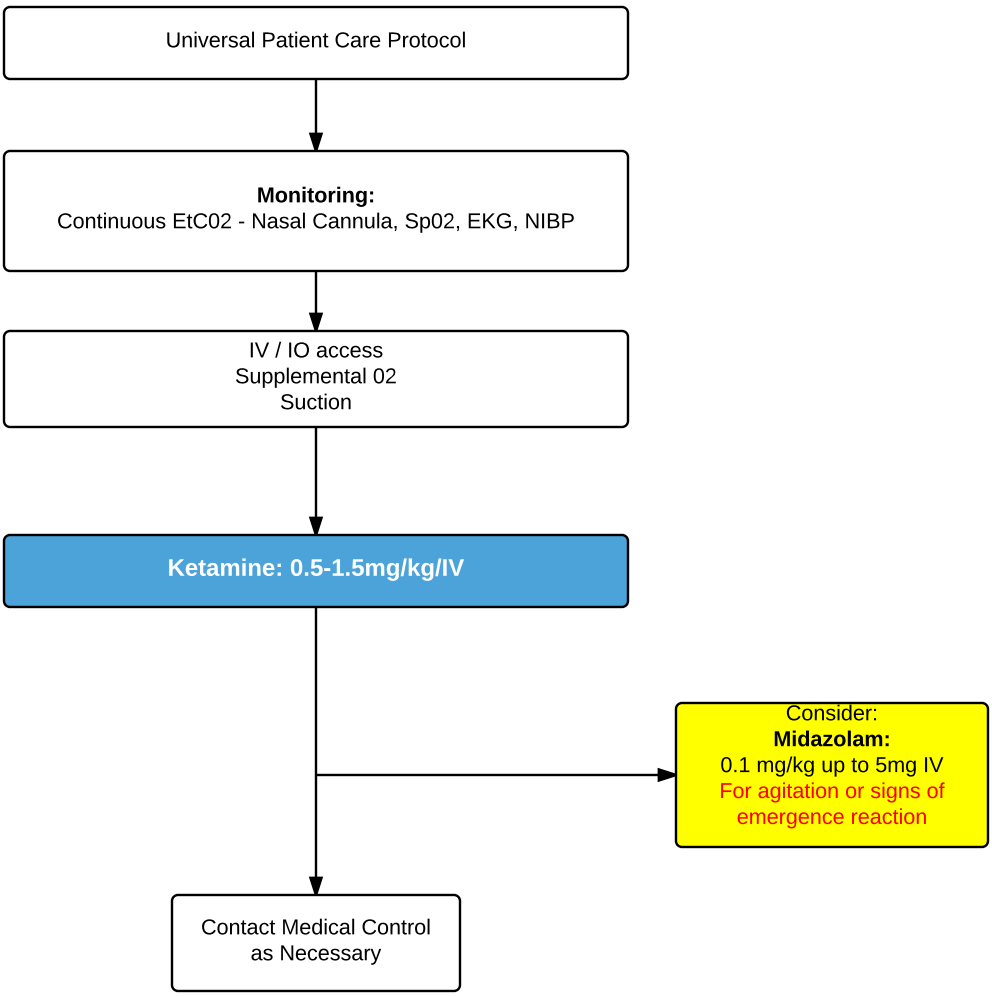
- Agitated Delirium is characterized by marked restlessness, irritability, and/or high fever. Patients exhibiting these signs are at High Risk for sudden death and should be transported ASAP.
- Patients in Law Enforcement custody or restrained by Law Enforcement Must have the Officer accompany the patient.
- Ensure all traces of Pepper Spray ex clothing hair skin has been decontaminated prior to loading these patients into transport vehicle.

Protocol

Version 9/25/2015

Procedural Sedation

Indications: Patients requiring an ***extremely painful*** procedure in which general pain management would be insufficient or would require such large doses as to potentially cause ventilatory compromise, and the procedure is necessary for potential salvation of life/limb. Examples include: cardioversion, transcutaneous pacing, anatomic re-alignment of severely deformed extremity with vascular compromise, extrication from vehicle or in a rescue environment in which the patient has multiple injuries and patient movement is expected to be extremely painful and or prolonged.



PEARL:

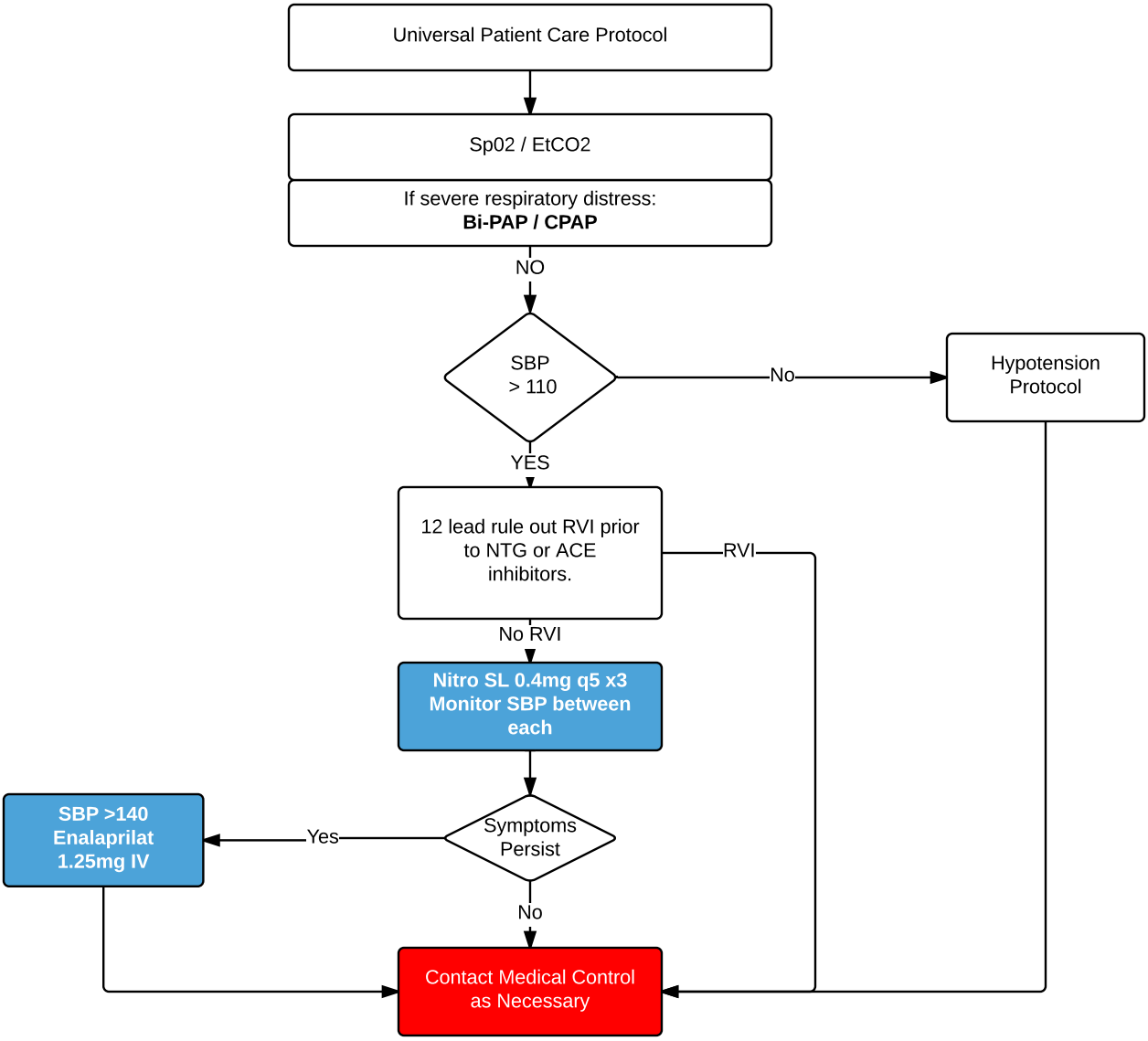
- Ketamine side effects include an increased Heart rate, increased BP, nystagmus, and increased salivation.
- Patients CAN experience respiratory depression when Ketamine is given concurrently with opiates.
- Some patients experience some emergence "nightmares" when the medication is wearing off. Performing pre-treatment coaching of the patient. Consider Midazolam 2mg IV if the patient appears agitated. Monitor for respiratory depression.
- Onset of Ketamine is usually 1-3 minutes when given IV. Duration is 10-20 minutes
- Any Patient receiving procedural sedation needs to be monitored as close as possible for signs of respiratory depression or loss of protective airway reflexes.

Pulmonary Edema

HISTORY:
- Congestive Heart failure
- Past medical history
- Medications - digoxin, lasix, Viagra, Levitra, Cialis
- Cardiac history - past myocardial infarction

Signs and Symptoms:
- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain
- Hypoxia

Differential:
- Myocardial infarction
- CHF
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary Embolus
- Pericardial Tamponade



PEARL:
- Avoid Nitroglycerin in any patient who has used Viagra or Levitra in the past 24hrs or Cialis in the past 48 hours due to possible severe hypotension.
- Do not administer Enalapril to patients who are pregnant or may be pregnant.
- Careful monitoring of level of consciousness, BP, and respiratory status with above interventions is essential.
- Consider use of sedation protocol if patient is experiencing problems with NPPV.
- Consider Myocardial infarction in all these patients if MI is suspected give ASA.
- Allow the patient to be in a position of comfort to maximize breathing effort

Respiratory Distress Adult

HISTORY:

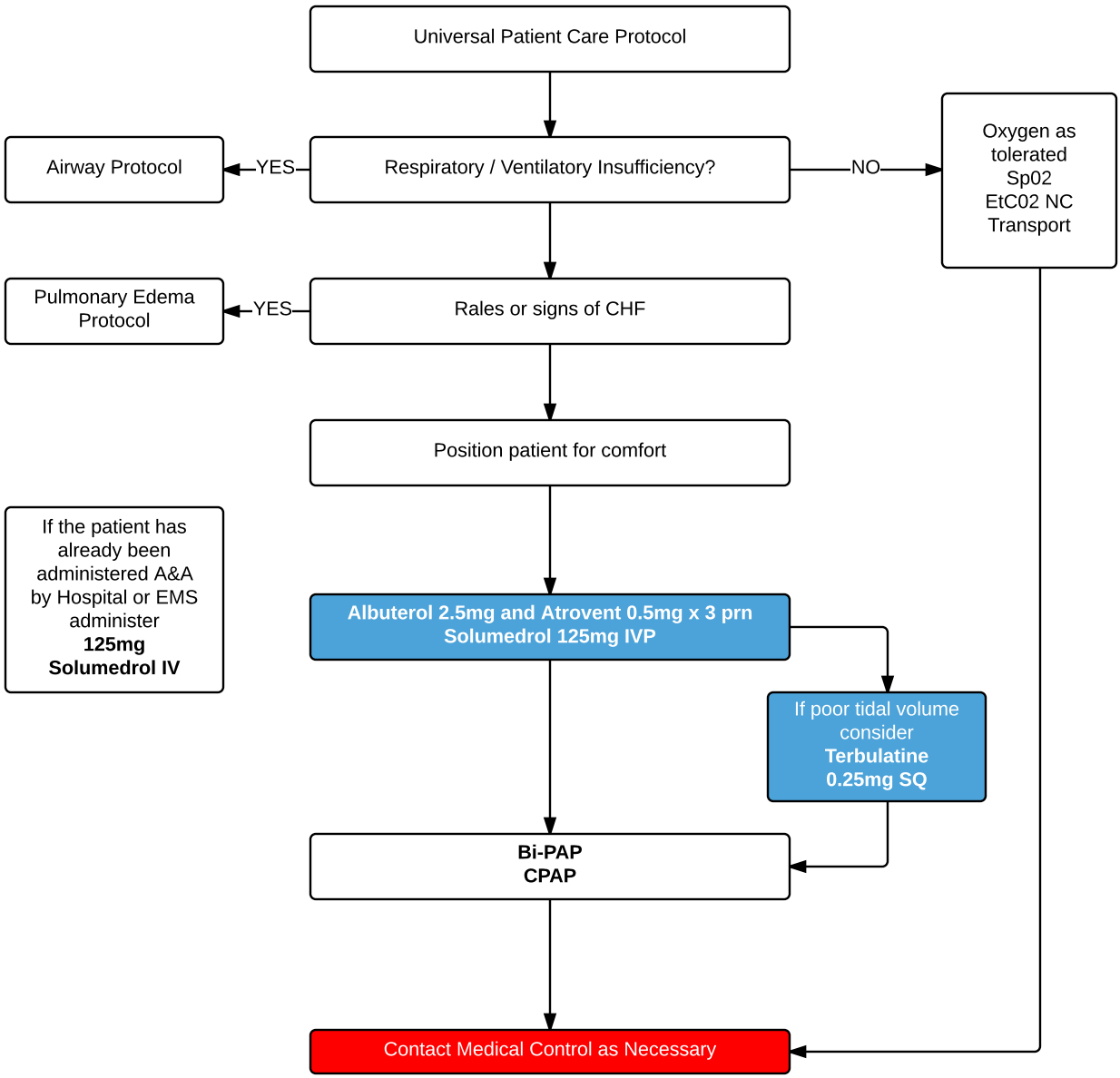
- Asthma, COPD - chronic bronchitis, emphysema, CHF
- Home treatment - oxygen, nebulizer
- Medications - theophylline, steriods, inhalers
- Toxic exposure, smoke inhalation

Signs and Symptoms:

- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, ronchi, rales, stridor
- Use of accessory muscles
- Fever, cough
- Tachycardia

Differential:

- Asthma / COPD - Emphysema, Bronchitis
- Anaphylaxis
- Aspiration
- Pleural Effusion
- Pulmonary embolus
- Pneumothorax
- Cardiac - MI or CHF
- Pericardial Tamponade
- Inhaled Toxin - Carbon Monoxide



PEARL:

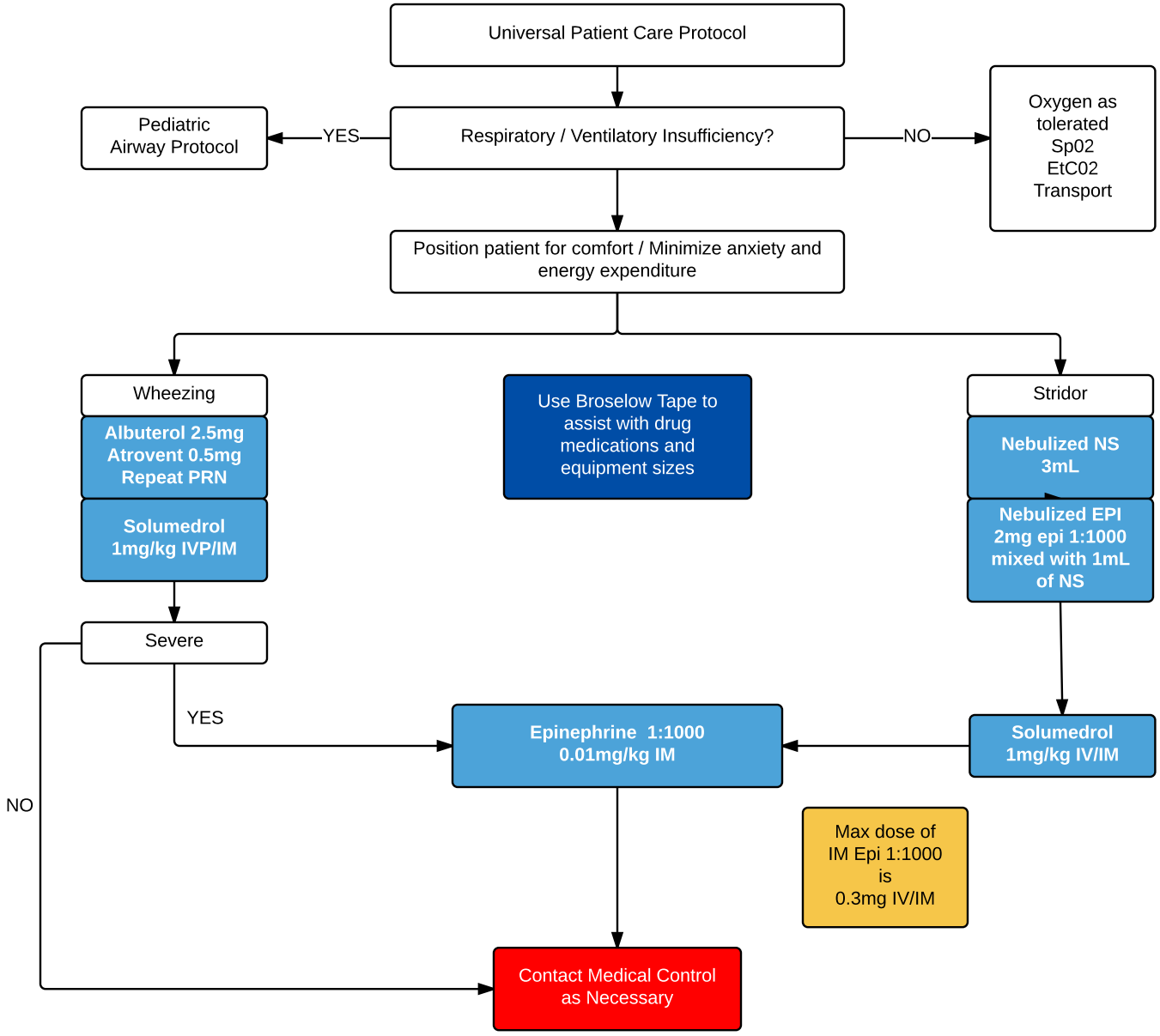
- Consider monitoring EtC02 via NC if there is a decline in patient's status ie Sp02 < 92%, ventilatory insufficiency, or AMS.
- Epinephrine may precipitate cardiac ischemia. 12 lead ECG should be performed on these patients.
- Consider contacting Medical Control if the patient is refractory to therapy.
- The absence of breath sounds is a dire condition, and indicates impending arrest.

Respiratory Distress Pediatric

HISTORY:
- Time of onset
- Foreign body airway obstruction
- Medical History
- Fever or respiratory distress
- Other sick siblings
- History of trauma

Signs and Symptoms:
- Stridor or Wheezing
- Respiratory retractions
- Increased heart rate
- Altered level of consciousness
- Anxious appearance

Differential:
- Allergic reaction
- Asthma
- Aspiration
- Foreign Body
- Pneumonia
- Croup / Epiglotitis
- Medication or toxin
- Trauma



PEARL:
- Epiglottitis is primarily a pediatric illness, affecting children > 2 years of age; however, it may also be encountered in adult patients. Typical onset is rapid, with fever, stridor, drooling, tripod positioning. AIRWAY MANIPULATION MAY WORSEN THE CONDITION.
- Bronchiolitis is a viral infection typically affecting infants < 18 months which results in wheezing, which may not respond to beta-agonists.
- Croup typically affects children < 2 years old. It is viral, possible fever, NO drooling.
- Pulse oximetry will be monitored continuously.
- Do NOT force a child into a position. They will attempt to protect their airway by body position.

Protocol

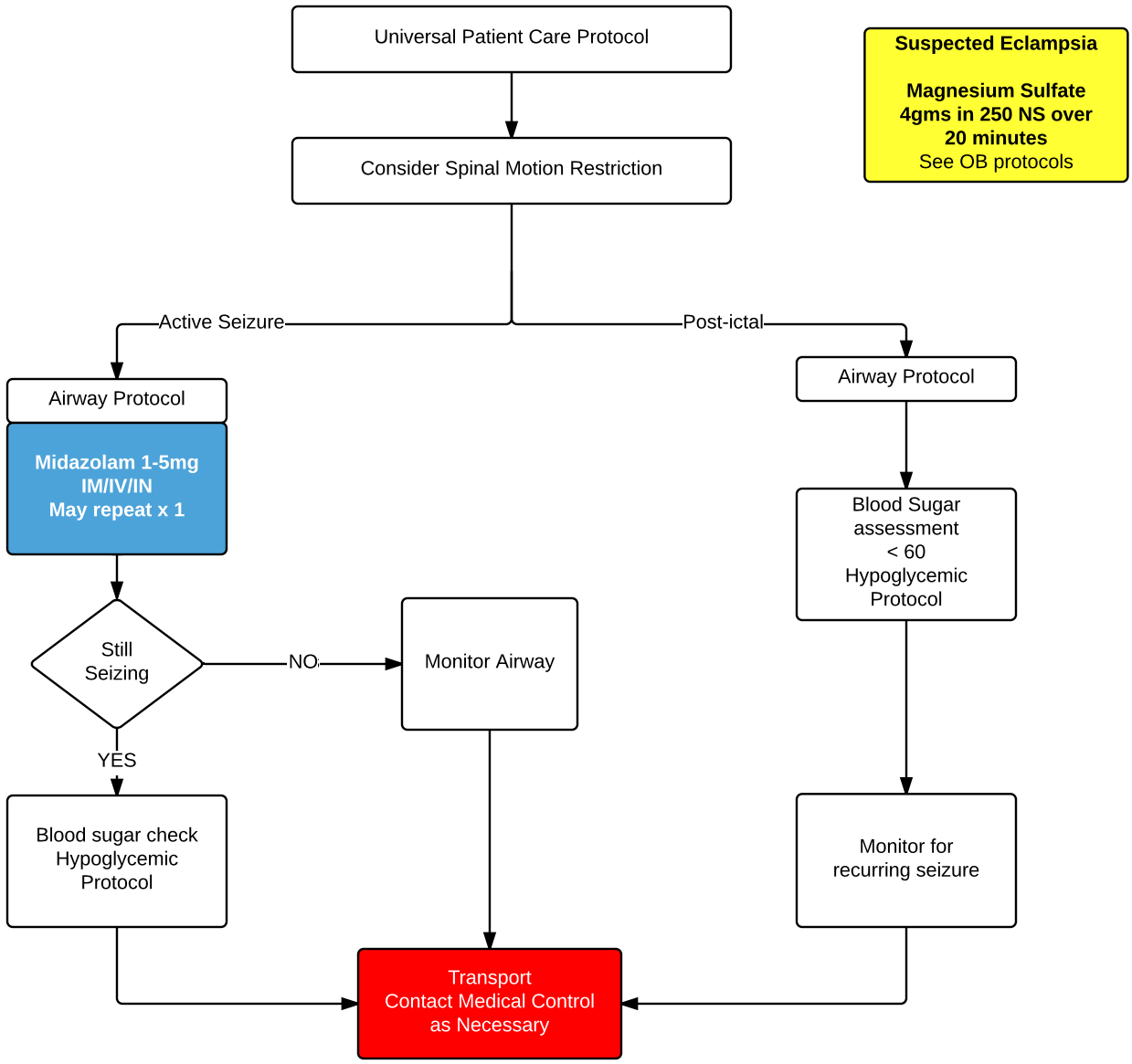
Version 9/25/2015

Seizure Adult

HISTORY:
- Reported or witnessed seizure activity
- Previous seizure history
- Medic alert tag
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy

Signs and Symptoms:
- Altered mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

Differential:
- CNS - Head trauma, Tumor, Stroke
- Metabolic, Hepatic, Renal Failure
- Hypoxia
- Electrolyte abnormality - Na, CA, Mg, K+
- Drugs, Medications, Non-comp.
- Infection / Fever
- Hyperthermia
- Hypoglycemia



PEARL:

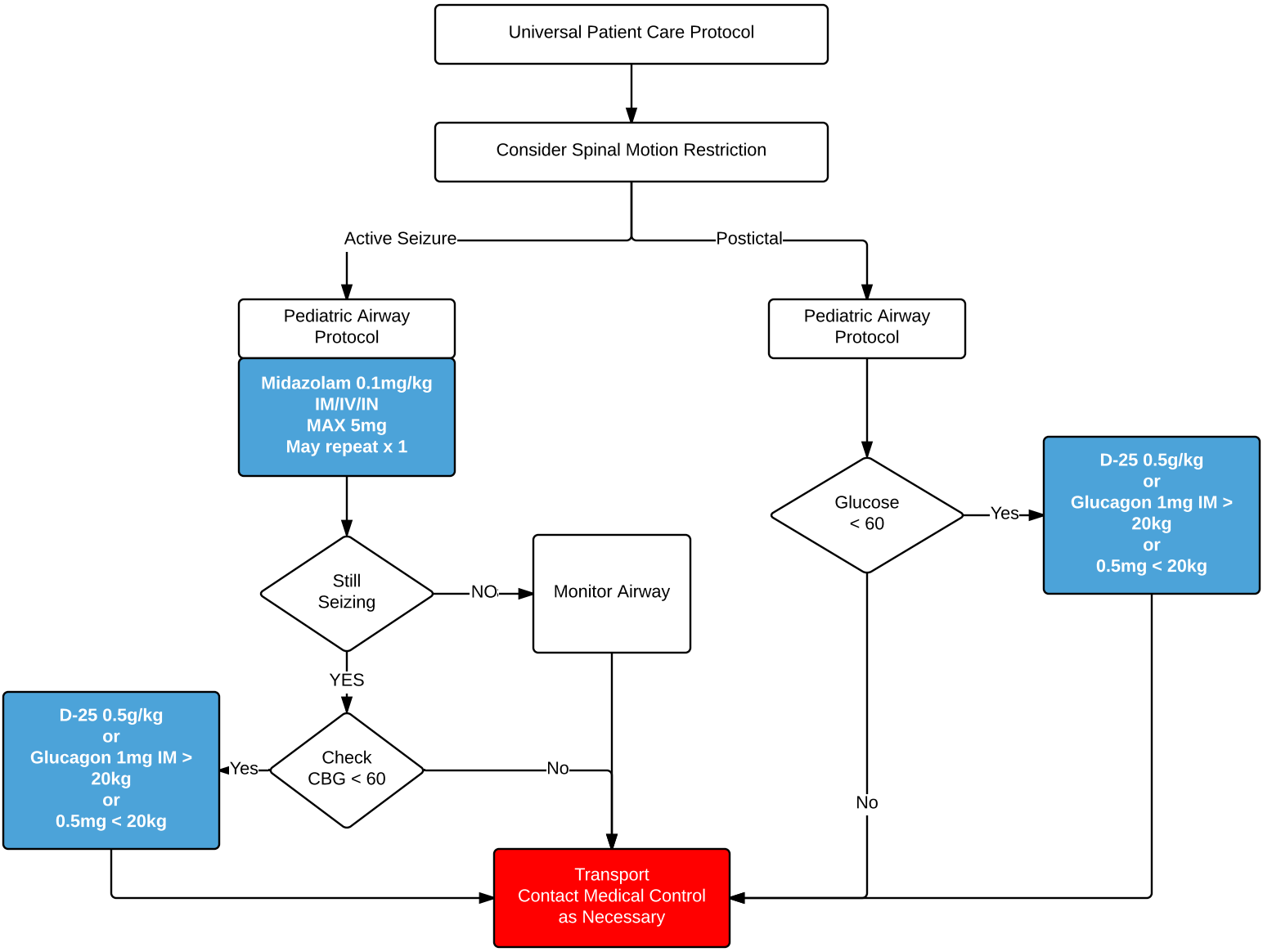
- Status Epilepticus - Two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring airway control, treatment, transport.
- Grand mal - Generalized associated with LOC, incontinence, and tongue trauma.
- Focal - Petit mal, effects only a part of the body and are not usually associated with a loss of consciousness.
- Jacksonian - Begin as a focal and become generalized.
- Be prepared to assume airway control with the administration of Midazolam.
- For any seizure in a pregnant patient follow, OB emergencies protocols.
- When using MAD device, only 1cc of medication per nostril may be administered.

Seizure Pediatric

HISTORY:
- Fever
- Prior history
- Seizure Medications
- Reported seizure activity
- Recent head trauma
- Congenital abnormality
- Duration

Signs and Symptoms:
- Altered mental status
- Seizure activity
- Hot Dry Skin or elevated body Temperature

Differential:
- Fever
- Infection
- Head Trauma
- Medication or Toxin
- Hypoxia or Respiratory Failure
- Hypoglycemia
- Metabolic abnormality / acidosis
- Tumor



PEARL:

- Status Epilepticus - Two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring airway control, treatment, transport.
- Grand mal - Generalized associated with LOC, incontinence, and tongue trauma.
- Focal - Petit mal, effects only a part of the body and are not usually associated with a loss of consciousness.
- Jacksonian - Begin as a focal and become generalized.
- Be prepared to assume airway control with the administration of Midazolam.
- When using MAD device only 1cc of medication per nostril may be administered.
- Addressing the ABCs, and verifying blood glucose is more important than stopping the seizure.
- Avoiding hypoxemia is extremely important.
- In an infant, a seizure may be the only evidence of a closed head injury.

Suspected Stroke

HISTORY:
- Previous CVA, TIA
- Previous cardiac / Vascular surgery
- Associated diseases: diabetes, HTN, CAD
- Atrial fibrillation
- Anti-coagulants
- History of trauma

Signs and Symptoms:
- AMS
- Weakness / Paralysis
- Blindness or sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Hypertension / Hypotension

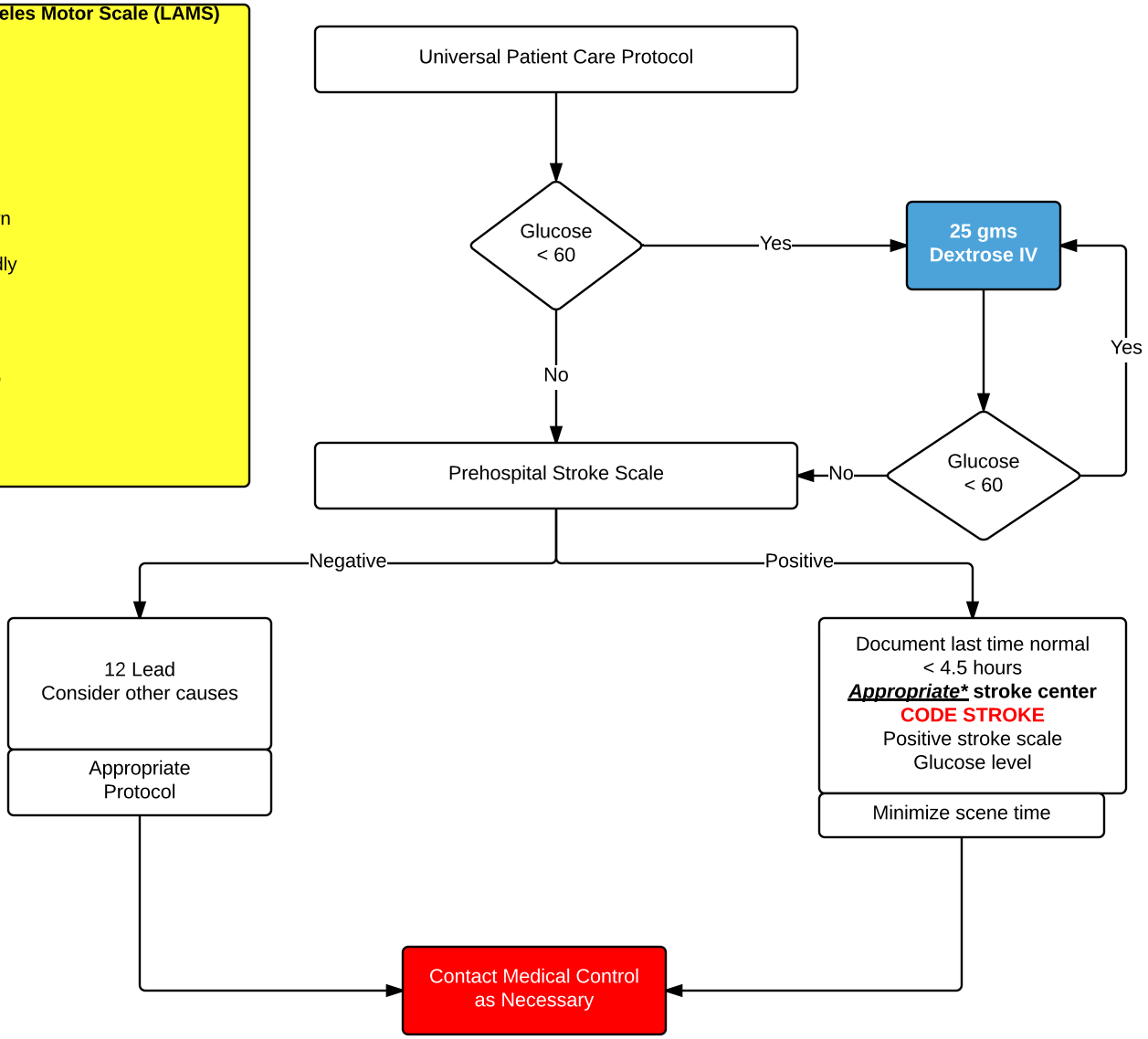
Differential:
- AMS
- TIA
- Seizure
- Hypoglycemia
- Hypoxia / Hypercarbia
- Tumor
- Trauma
- Stroke
  - Thrombotic / Embolus (85%)
  - Hemorrhagic (15%)

The Los Angeles Motor Scale (LAMS)

Facial droop
- Absent
- **0**
- Present
- **1**

Arm drift
- Absent
- **0**
- Drifts down
- **1**
- Falls rapidly
- **2**

Grip strength
- Normal
- **0**
- Weak grip
- **1**
- No grip
- **2**



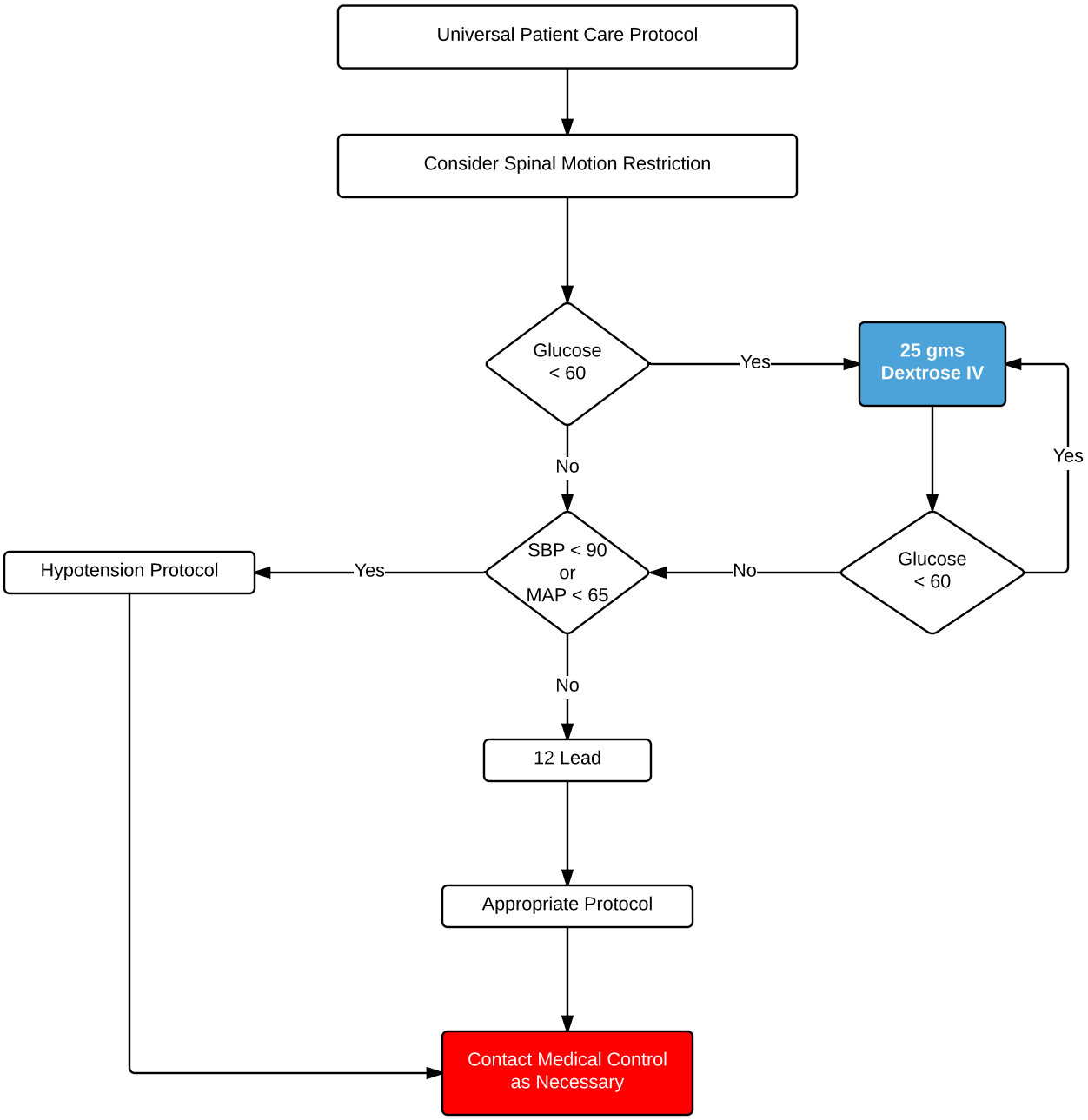
PEARL:
- *** Transport to ENDOVASCULAR CAPABLE or COMPREHENSIVE stroke center if < 4.5hrs from onset.**
- **(Check EMSystems for closest available Endovascular/Comprehenisve facility)**
- Document onset of symptoms, defined as last time the patient was seen symptom free.
- Whenever possible, a family member should accompany the patient to provide a detailed history.
- The differential listed on the AMS protocol should also be considered.
- Be alert for airway problems.
- Hypoglycemia can present as a localized neurological deficit, especially in the elderly.
- Consider other protocols as indicated.

Syncope

HISTORY:
- Cardiac history
- Occult Blood loss - GI, ectopic
- Females - LMP, Vaginal
- Fliud loss - Nausea, vomiting, diarrhea
- Past medical history
- Medications

Signs and Symptoms:
- Loss of Consciousness with recovery
- Light headedness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased Blood Pressure

Differential:
- Vasovagal
- Hypotension / Shock
- Cardiac syncope
- Micturation / Defecation syncope
- Stroke
- Hypoglycemia
- Seizure
- Toxicologic



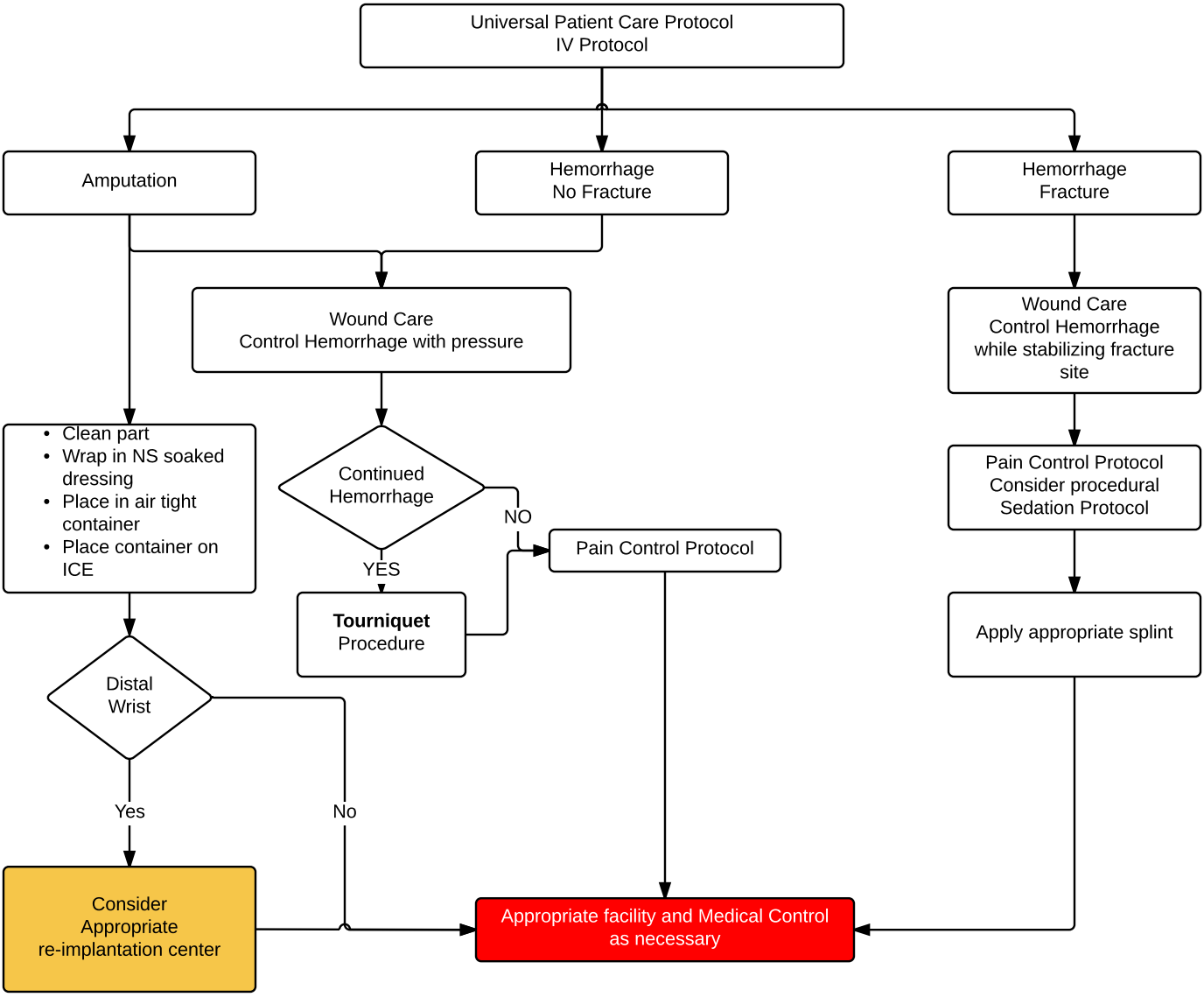
PEARL:
- Assess for signs and symptoms of trauma if associated or questionable fall with syncope.
- Consider dysrhythmias, GI bleeds, ectopic pregnancy, and / or seizures as possible causes of syncope.
- More than 25% of geriatric syncope is cardiac dysrhythmia based.
- D10 may be substituted for D50 as needed

Trauma: Extremity & Amputation - Adult

HISTORY:
- Type of / Mechanism of injury
- Time of injury
- Open vs Closed wound / fracture
- Contamination
- Medical history
- Medications

Signs and Symptoms:
- Pain / Swelling
- Deformity
- Altered sensation / motor function
- Diminished pulse / Capillary refill
- Decreased extremity temperature

Differential:
- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation



PEARL:

- Peripheral neurovascular status should be documented on all extremity injuries, and before and after splinting procedures.
- If pulse-less extremity, a single attempt at realignment may be performed.
- In amputations, time is critical. Limit scene times.
- If an amputation is incomplete, splint affected digit or limb in physiologic position.
- Hip, knee and elbow fractures/dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations should be evaluated for repair as soon as possible after injury.
- C.A.T. Tourniquet is the device of choice.

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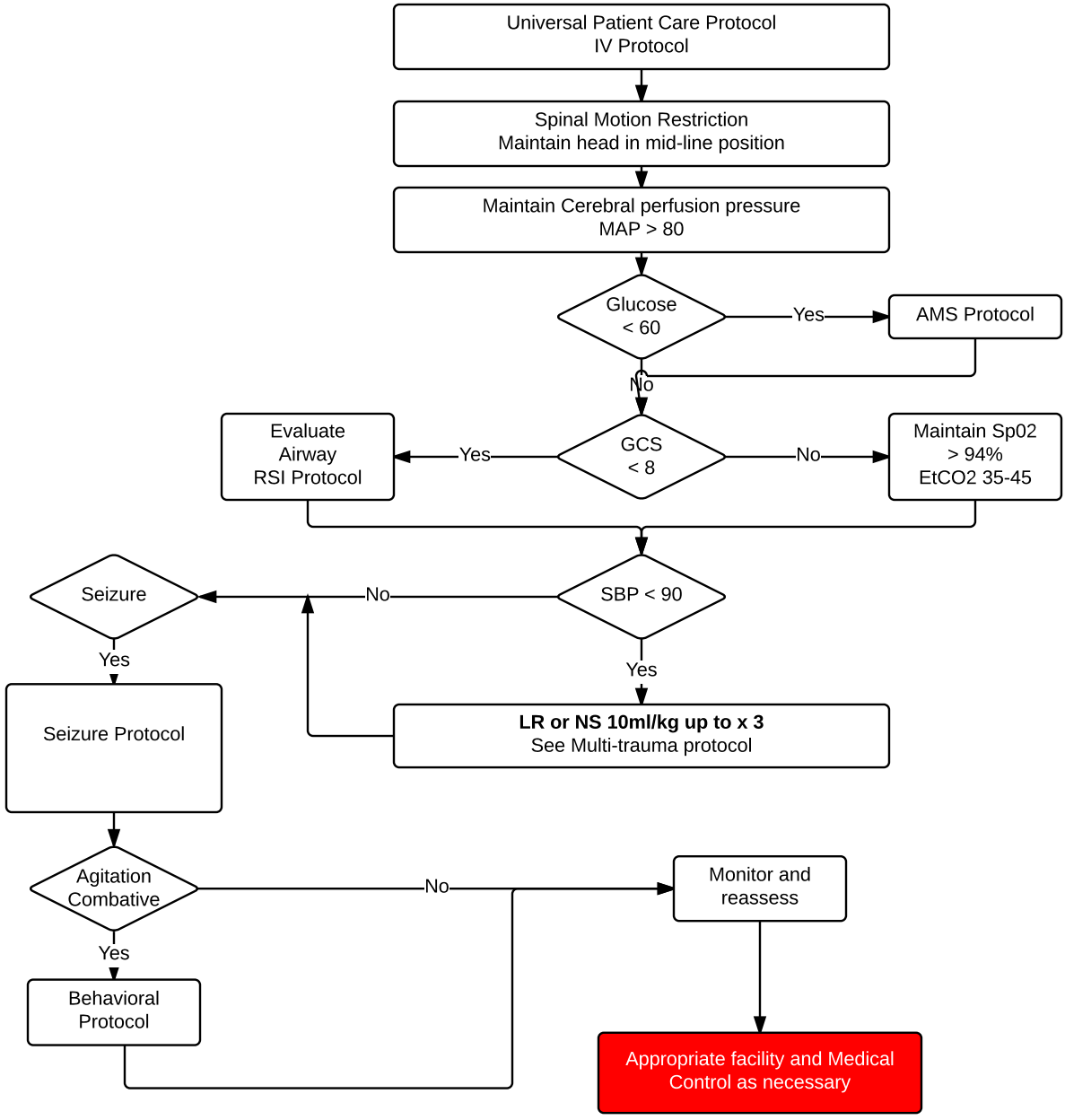
Traumatic Brain Injury

HISTORY:
- Mechanism of injury - blunt / penetrating
- Time of injury
- Open vs Closed
- Loss of consciousness
- Medical history
- Medications
- Evidence of multi-trauma

Signs and Symptoms:
- Pain, swelling, bleeding
- Altered mental status
- Unconsciousness
- Respiratory distress / failure
- Vomiting
- Significant mechanism of injury
- Pupillary abnormalities
- CSF leaking from ears / nose

Differential:
- Skull fracture
- Brain injury - concussion, contusion, hemorrhage, laceration.
- Epidural / Subdural
- Alcohol intoxication
- Subarachnoid / Intracranial
- Spinal Injury
- Abuse



PEARL:
- If evidence of brain herniation - Pupillary changes, Cushings reflex, rapid decline in GCS, bradycardia; hyperventilate the patient to an EtCO2 of 30-35mmHg.
- If interfaciltiy transfer and S/S of herniation are present consider Mannitol 1gm/kg
- Increased ICP may cause hypertension - High SBP with wide pulse pressure and bradycardia.
- If hypotension consider spinal shock or additional injuries.
- Hypotension and hypoxia are devastating to neurologic injury and should be aggressively treated.
- The most improtant item to monitor and document is a change in the level of consciousness and GCS.
- Concussions are periods of confusion or LOC associated with trauma which may self resolve, but requires further evaluation

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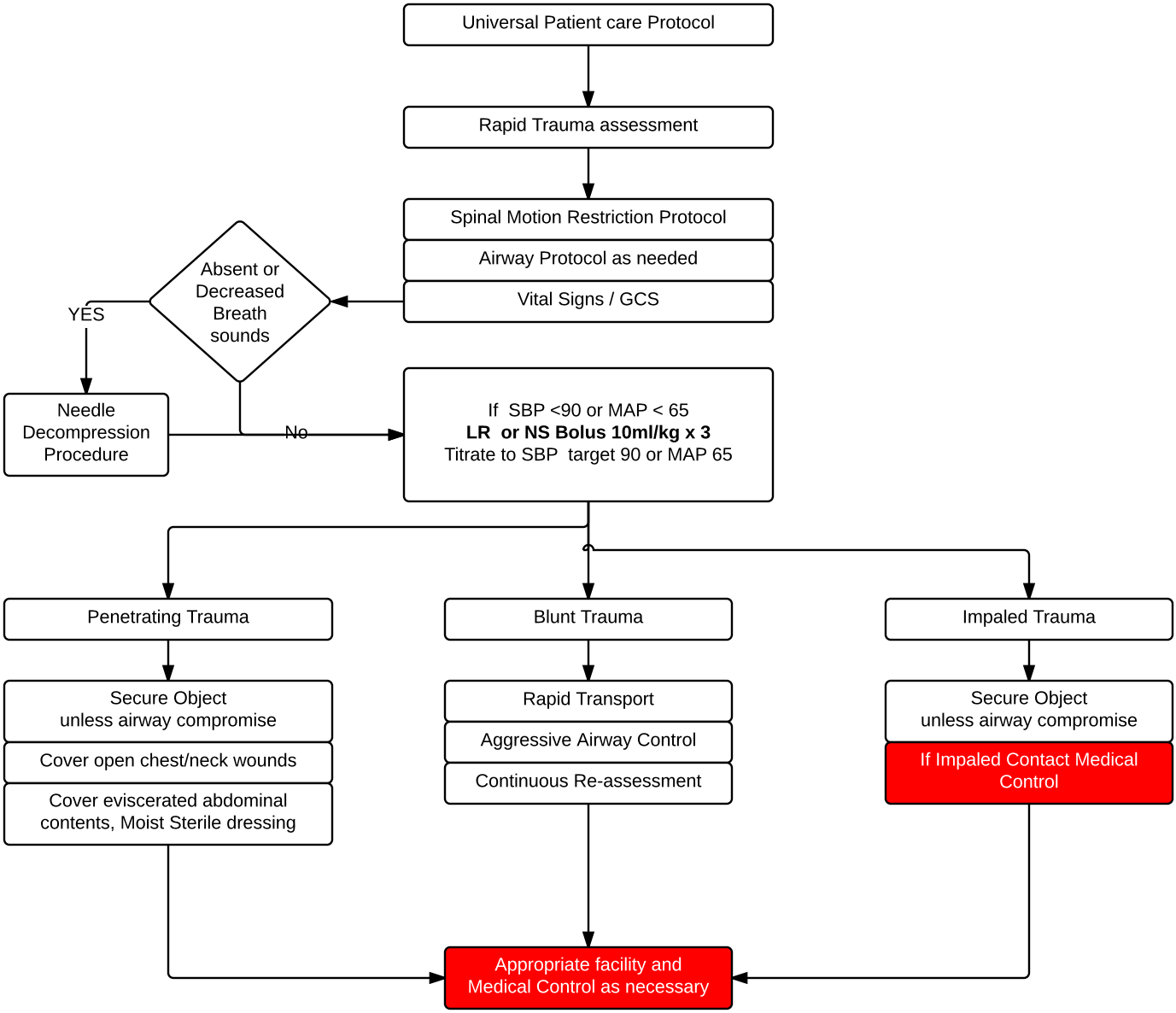
Multi-Trauma

HISTORY:
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

Signs and Symptoms:
- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status
- Hypotension / Shock
- Cardaic arrest

Differential:
- Chest - Tension pneumothorax, Flail chest, Pericardial Tamponade, Open chets, Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- HEENT
- Hypothermia



PEARL:
- Consider chest decompression with signs of shock and diminished / absent breath sounds. If patient arrests bilateral Needle decompression.
- See Hospital specific guidelines for trauma activation.
- Severe bleeding from an extremity not rapidly controlled by direct pressure may necessitate the application of a tourniquet.
- Geriatric patients should be evaluated with a high index of suspicion. Often occult injuries are more difficult to recognize and patients can decompensate with little warning.

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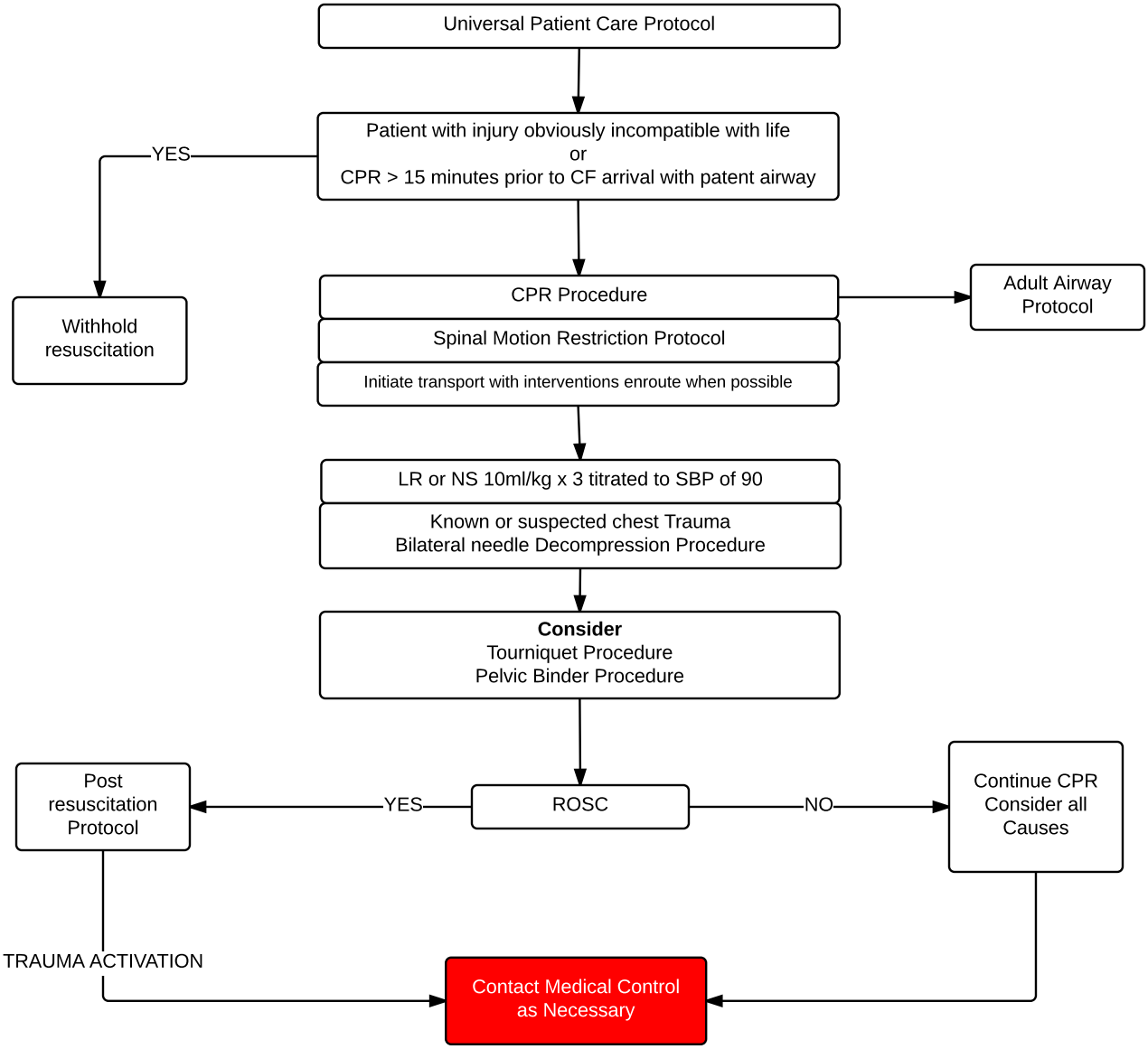
Trauma Arrest

HISTORY:
- Patient who has suffered traumatic injury and is now pulseless

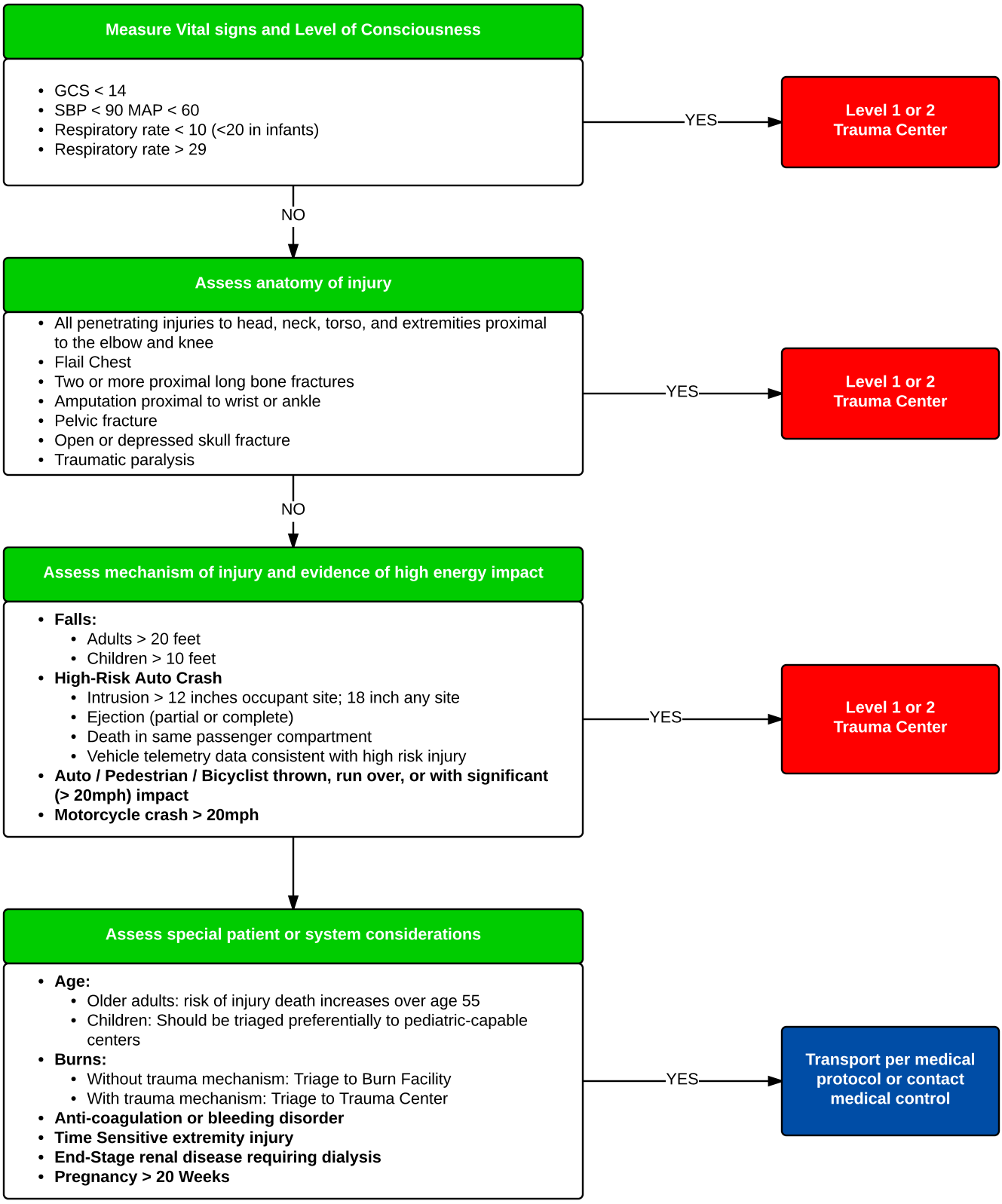
Signs and Symptoms:
- Evidence of penetrating trauma
- Evidence of blunt trauma

Differential:
- Medical condition preceding traumatic event as cause of arrest
- Tension Pneumothorax
- Hypovolemic Shock
  - External Hemorrhage
  - Unstable pelvic fracture
  - Displaced long bone fracture
  - Hemothorax
  - Intra-abdominal hemorrhage
  - Retroperitoneal hemorrhage



PEARL:
- Injuries that are obviously incompatible with life - Decapitation, incineration, destruction of internal organs of torso/head.
- Patients with suspected traumatic mechanism found pulseless and apneic by first provider on scene with no respiratory effort after basic airway maneuvers AND lack of organized electrical activity on ECG, termination should be considered.
- Drowning with submersion of > 20 minutes from arrival of first provider on scene to patient in position for resuscitation, may be futile.
- Consider using medical cardiac arrest protocols if uncertainty exists regarding medical or traumatic cause of arrest.

Field Triage

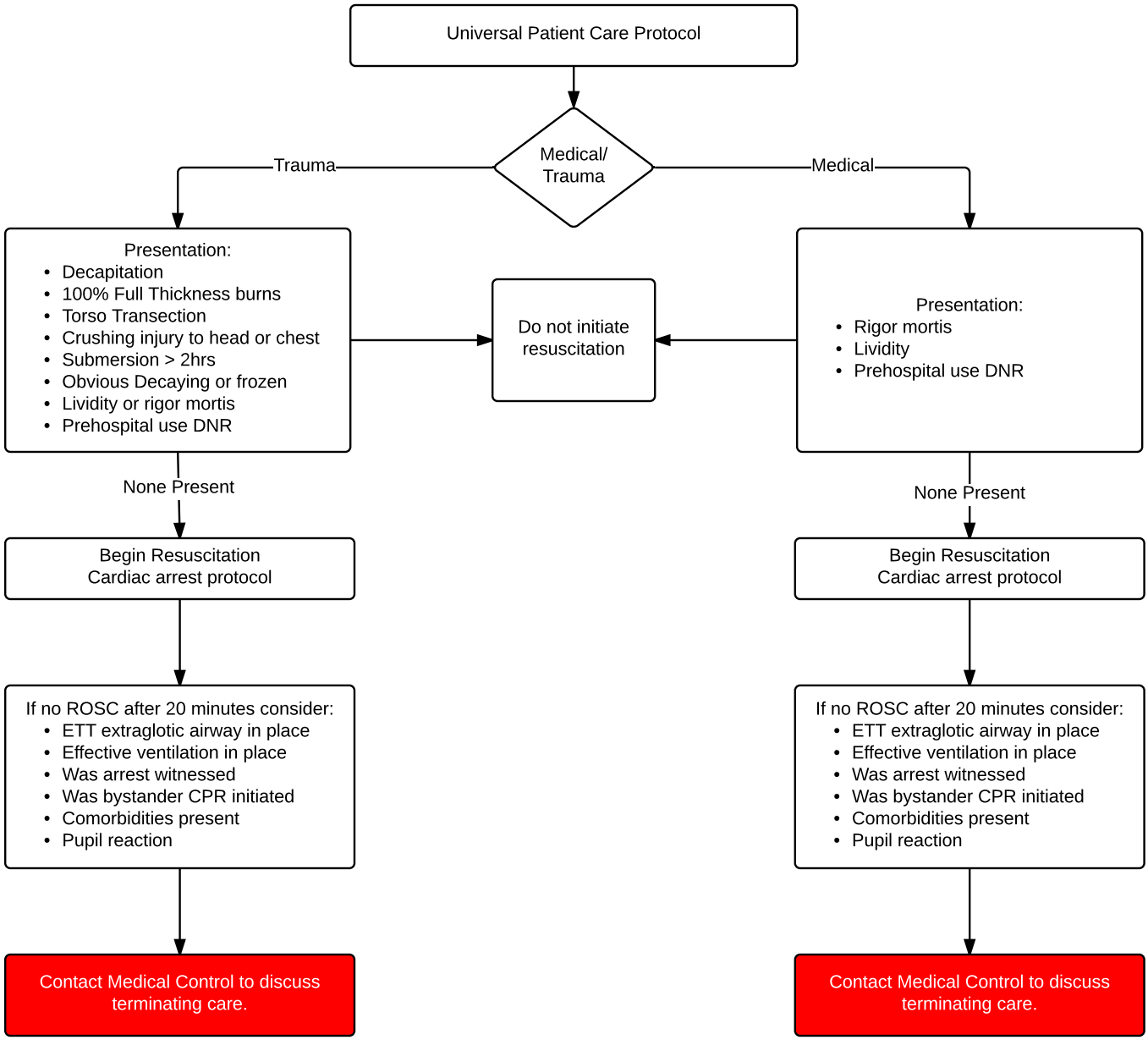


Withholding/Terminating Resuscitation

HISTORY:
- Age
- Past medical history
- Medications
- Time last seen normal
- Trauma
- Comorbidity

Signs and Symptoms:
- Skin color, Temperature
- Pupils

Differential:



PEARL:

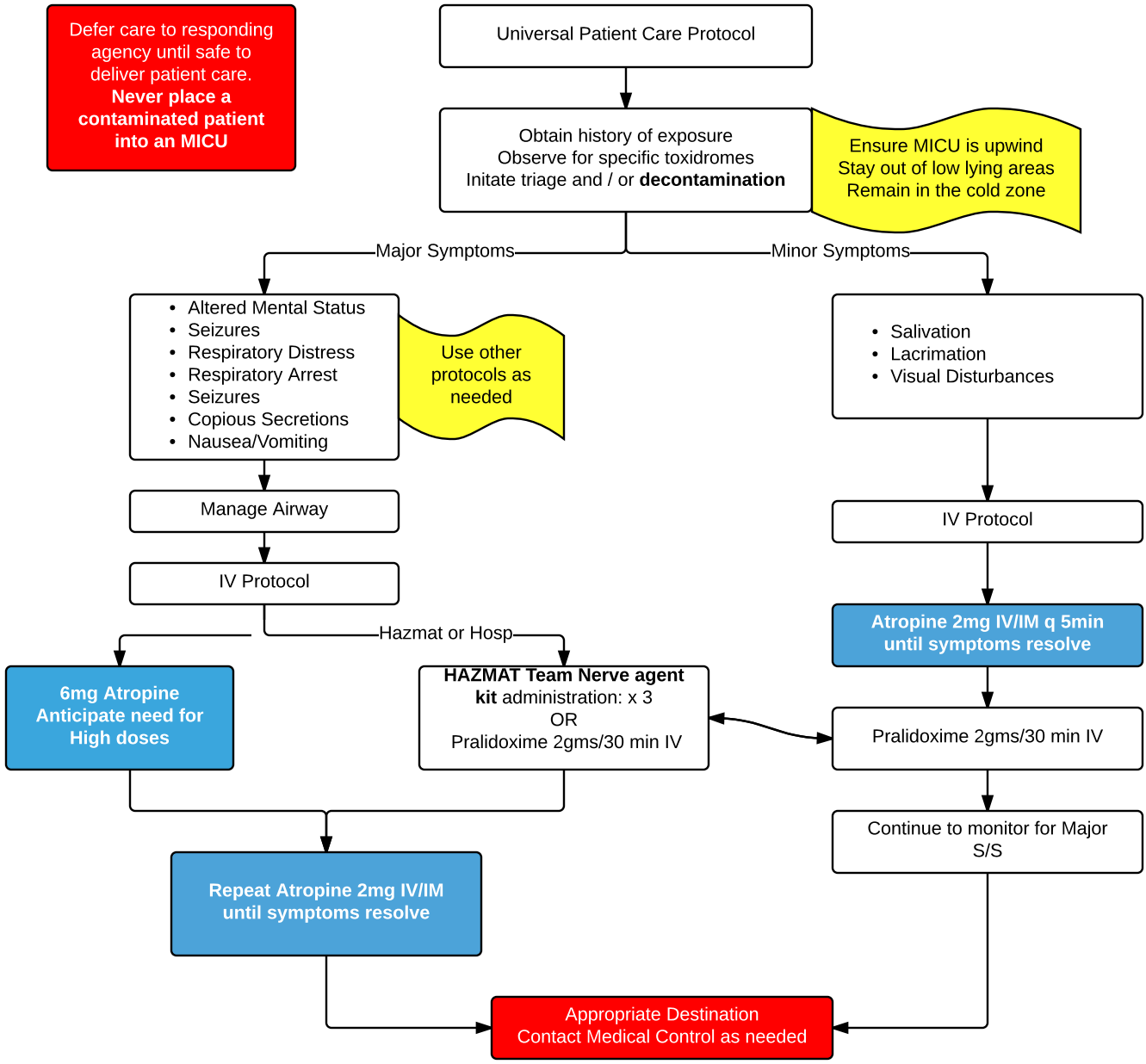
- Special considerations such as pediatric patients, crew safety, or patients that are involved with a public safety office.
- Resuscitation should be continued in flight unless directed by physician.
- ETC02 may not be present during cardiac arrest and thus cannot be used to confirm placement of ET tube.
- Profound hypothermia patients should be given the benefit of attempted resuscitation.

WMD - Nerve Agent - Pesticide

HISTORY:
- Exposure to chemical, biologic, radiologic, or nuclear hazard
- Potential exposure to an unknown substance

Signs and Symptoms:
- Visual Disturbance
- Headache
- Nausea / Vomiting
- Salivation, Lacrimation
- Respiratory distress / Arrest
- Diaphoresis
- Seizure Activity

Differential:
- Nerve agent exposure - VX, Sarin, Soman
- Organophosphate - pesticide
- Vesicant - Mustard Gas
- Respiratory irritant - Hydrogen Sulfide, Ammonia, Chlorine



PEARL:
- In the face of a bonafide attack, begin with 1 nerve agent kit for patients < 7yrs of age, 2nerve agent kits for 8-14yrs of age, and 3 nerve agent kits for > 15yrs of age.
- Each nerve agent kit contains 600mg Pralidoxime (2-PAM), and 2mg Atropine. Not carried by Careflite. May be supplied by Hazmat team or Hospital
- Follow local HAz-Mat protocols.
- For patients with major symptoms there is no limit on Atropine administration.
- Take additional Atropine from on scene or hospital unit.

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SUGGESTED OPERATING GUIDELINES

MEDICATION POLICY

The administration of any medication, including oxygen, may only be done under the authorization of a licensed CareFlite Medical Control Physician. The authorization is typically by means of established protocol or during direct contact with a physician. These protocols do not allow EMS providers discretionary authority to administer a medication they are not approved or authorized to carry or use. This includes the administration of a medication when requested by a patient (e.g., patient on DVT precautions asking you to administer their Lovenox via injection).

Medication Administration
Because medication safety encompasses many areas, a standardized and intuitive process is needed to help ensure patient safety. This is best accomplished by adhering to a basic principle, such as the "Five Rights of Medication Administration", when administering any medication to any patient.

The "Five Rights of Medication Administration" are:
(1) Right Medication
(2) Right Route
(3) Right Patient
(4) Right Amount
(5) Right Time

Any medication given via the IV route may instead be given via the IO route if an IO is established.

Pediatric doses should be calculated based on the patient's ideal weight or Broselow tape, not actual weight. No single pediatric dose shall exceed the adult dosage.

All medications shall be thoroughly documented in the patient record to include: clinical need, patient presentation, dose, route, vital signs, and clinical response observed after administration.

Drug Adulteration
The "Texas Food, Drug, and Cosmetic Act" mandates that medications be properly stored according to manufacturer specifications. This includes, but is not limited to, things like keeping medications out of direct sunlight, storing medications in a climate/temperature recommended by the drug manufacturer, routinely checking medications for damage to storage container, routinely checking for clarity of medication, and routinely checking for expiration date of medication.

Expired Medication:
Medication and IV fluid inventory which has been used, broken, and/or near its expiration date should be replaced as soon as possible. Medications are labeled with an expiration date on the outside of the box and/or on the medication container itself, in one of two formats. The expiration date is either stated with the: (a) Date expressed as "mm/yyyy" - This drug can be held until the last day of the respective month; or (b) Date expressed as "1 mm/yyyy" - If you see a date with a "1" in front of the month, the drug expires on the first day of the respective month and must be pulled no later than the first day of that month.

Packaging Substitution:
Every effort should be made to maintain the quantity and packaging of a medication as outlined in the drug list. However, should a medication not be available in the recommended and/or specified format, a suitably equivalent form and amount may be substituted. Field crews are to be notified before a replacement medication is put into service, as it may be packaged differently or have a new dosage concentration strength.

SUGGESTED OPERATING GUIDELINES

PATIENT CONFIDENTIALITY

CareFlite providers have a legal and ethical responsibility to handle all information and documentation regarding a patient with the utmost degree of confidentiality. Information obtained during the course of patient contact is not to be disclosed and/or used in any form (verbal/written/electronic, etc.) that might identify the patient without his or her consent. Patient information is only to be shared with those individuals considered part of the continuity of care and/or those personnel assigned to a QA/QI process (this does not include non-medical public safety entities such as law enforcement). Every effort should be made to ensure that the record will not be left unattended, open for public view, or stored in such a way as to compromise patient confidentiality.

CONSENT FOR MEDICAL TREATMENT

Consent for medical treatment is based upon the concept that every individual eighteen (18) years of age or older has the right to determine what is to be done with and/or to his/her own body. For consent to be legally valid, it must be informed or implied. A patient younger than eighteen (18) years of age (defined as a "minor") may not self-consent to medical treatment unless certain criteria are met (as described below). A patient declared legally incompetent by a court of law, cannot consent to his/her own treatment; therefore, the appointed guardian has the right to consent to treatment.

For every patient contact, the CareFlite provider should:

- Determine the patient's competency (as described on the following page).
- Determine the patient's legally-defined ability to consent to medical treatment.
- Obtain verbal permission (when applicable) prior to patient evaluation, treatment, and/or transport.

Informed consent for emergency care of an individual is NOT required and is considered to be <u>implied</u> if:

- The individual is unconscious and/or unable to communicate because of an injury, accident, and/or illness; and appears to be suffering from what reasonably appears to be a life threatening injury and/or illness.
- A court of record orders the treatment of an individual due to an imminent emergency in order to prevent the individual from suffering from serious bodily harm and/or loss of life.
- The individual is under the age of eighteen (18), and is suffering from what appears to be a life and/or limb threatening injury or illness.

A minor may self-consent to evaluation, treatment, and/or transport if said minor: (a) Presents evidence that his disabilities of minority have been removed by court order; and/or (b) Is on active duty with the armed services of the United States of America; (c) Is sixteen years of age or older and resides separate and apart from his/her parents, managing conservator, or guardian, with or without the consent of parents, managing conservator, or guardian and regardless of the duration of such residence, and is managing his/her own financial affairs, regardless of the source of income; (d) Consents to the diagnosis and treatment of an infectious, contagious, or communicable disease that is required by law or a rule to be reported by the licensed physician or dentist to a local health officer or the Texas Department of State Health Services, including Sexually Transmitted Diseases; (e) Is unmarried and pregnant and consents to hospital, medical, or surgical treatment - other than abortion - related to the pregnancy; (f) Consents to examination and treatment for drug or chemical addiction, drug or chemical dependency, or any other condition directly related to drug or chemical use; (g) Is unmarried, is the parent of a child, and has actual custody of his or her child and consents to medical, dental, psychological, or surgical treatment for the child; (h) Is serving a term of confinement in a facility operated by or under contract with the Texas Department of Criminal Justice, unless treatment would constitute abortion of pregnancy.

When a minor is lacking legal-ability to consent to his/her own medical treatment, and the parent/legal guardian having the power to consent cannot be contacted, and actual notice to the contrary has not been given by the parent/legal guardian; any of the following persons may consent to medical treatment of a minor: (a) a Grandparent; (b) An adult brother or sister; (c) An adult Aunt or Uncle; (d) An educational institution in which the minor is enrolled and that has received written authorization to consent from the parent or legal guardian; (e) An adult who has care and control of the minor and has written authorization to consent from the person having power to consent as otherwise provided by law; (f) A court with control over a suit affecting the parent-child relationship where child is the subject; (g) An adult responsible for the actual care, control, and possession of a child under the jurisdiction of a juvenile court or committed by a juvenile court to the care of any agency of the state or county; (h) a Peace Officer who has lawfully taken custody of a minor, if the Peace Officer has reasonable grounds to believe the minor is in need of immediate medical treatment.

If unsure whether a patient, regardless of age, is legally able to consent to, or refuse, medical evaluation, treatment, and/or

SUGGESTED OPERATING GUIDELINES

PATIENT REFUSING TREATMENT AND/OR TRANSPORT

For CareFlite Suggested Operating Guidelines, any person who is eighteen (18) years of age or older (or legally emancipated as described in "Consent for Medical Treatment" on page 8.2 of this document), and who is deemed "competent", possesses a legal right to refuse any aspect of evaluation, treatment, and/or transport; even if said refusal could result in serious harm and/or death to the patient. An appropriate patient care record/report, at a minimum, should be completed for any/all patient contacts, regardless of whether any treatment is or isn't provided. In the case of a patient refusal, the patient care record/report must accurately and legibly reflect any/all interaction with the patient, as well as include a clearly documented and signed agency-specific refusal documentation form/tool

Parents may not refuse medical care for their children if the child is suffering from a life and/or limb threatening illness or injury.

If a conscious patient receives any intervention, procedure, medication, and/or therapy...or an intervention, procedure, medication, and/or therapy causes a previously unconscious patient to regain consciousness...and the patient refuses transport, every effort should be made to encourage them to be transported by EMS. If the patient still refuses EMS transport, and is assessed as competent, they may refuse EMS transport; however, if the patient has been given a medication that could impair their judgment, CareFlite Medical Control **must** be contacted before a refusal is signed (also consider law enforcement assistance and/or intervention as needed).

If unsure whether a patient, regardless of age, is legally able to consent to, or refuse, medical evaluation, treatment, and/or transport, CareFlite Medical Control should be consulted.

PATIENT COMPETENCY

Competency is ultimately defined by law, but mental capacity and competency is assessed and determined by medical professionals based on patient presentation and mental status. For CareFlite Suggested Operating Guidelines, anyone who meets the following criteria is considered to be "competent" or "incompetent" in regards to consenting to or refusing medical care.

A patient may be deemed **COMPETENT** if they:

- Are oriented to person, place, time of day, and circumstance of the situation.
- Are able to effectively communicate (foreign/sign language may be used through an interpreter).
- Can demonstrate appropriate mental cognitive skills (understand instructions and repeat them back if normally able to do so).
- Have no evidence of mental or judgmental impairment due to alcohol or drug use.
- Have no suicidal thoughts or show any indication of being a danger to themselves and/or others (if the patient has attempted suicide, they may not refuse and law enforcement must be contacted for assistance).
- Have no evidence of bizarre/psychotic thoughts and/or behavior.
- Have no neurological disease or condition that could affect mental capacity and/or judgment.
- Have no findings suggestive of an impaired physiology that could potentially affect their decision making capabilities including, but not limited to: Head trauma; Inadequate cerebral perfusion or injury (e.g. acute stroke); An acute alteration in body temperature; Hypoglycemia or significant hyperglycemia; Hepatic dysfunction or hepatic failure; Hypoxia, and/or Hypoperfusion/hypotension/shock.

A patient may be deemed **INCOMPETENT** if they cannot and/or are unable to:

- Respond knowingly and intelligently to questions about treatment or medical care.
- Participate in treatment decisions by means of rational thought processes.
- Understand basic medical treatment information including:
  - -the seriousness of the illness or injury
  - -the medical treatment itself
  - -the benefits and risks of any therapy or intervention
  - -the risks and benefits of reasonable care alternatives
  - -the consequences of refusal or lack of treatment

If unsure whether a patient, regardless of age, is legally able to consent to, or refuse, medical evaluation, treatment, and/or transport, CareFlite Medical Control should be consulted.

SUGGESTED OPERATING GUIDELINES

PATIENT CARE RECORDS/REPORTS (PCR)

Documentation is a crucial component of patient care, and effective communication of information is vital...as improper and/or poor communication can result in confusion and/or complications in delivery of patient care.

Regardless of the method of documenting information, patient care records/reports should include, *at a minimum*, the following patient care data (when the data is available):

- Patient name, age, and sex.
- Approximate weight in pounds or kg.
- Chief complaint, nature of illness and/or mechanism of injury.
- Patient history, medications prescribed, medications taken, and any drug hypersensitivities/allergies.
- Pre-arrival care provided by bystanders or other medical personnel.
- Neurological assessments in stroke or head injured patients, including a GCS score.
- Physical assessment of the patient including at least 2 complete sets of vital signs.
- Pertinent ECG findings or patient exam findings including acute changes in cardiac rate or rhythm.
- All care provided to the patient including any negative or positive responses to medical therapy, as well as the time an intervention was initiated or a medication was administered.

Basic guidelines for pre-hospital documentation:

- A PCR should be completed on every patient with an injury, illness, and/or medical complaint.
- JCAHO forbidden or "do not use" abbreviations are not to be used.
- A separate PCR should be completed for each patient seen. *Example:* a mother and her newborn are transported together, or a delivery takes place en route to the hospital. A separate PCR is needed on each (one for mother and another for child).
- A PCR shall be completed for each encounter of the same patient on a new and separate call. *Example:* diabetic seen and treated by EMS who refuses transport, but who requests EMS later for the same complaint or worsening of their symptoms.
- ECGs obtained during the course of patient assessment or treatment must be attached (or captured if electronic reporting is used) to EMS and hospital copies of PCR.
- A receiving staff signature should be obtained on the PCR for all transported patients.

The Texas Department of State Health Services (TDSHS) and CareFlite require EMS personnel to provide a written or computer generated PCR to the receiving facility on all transports. Failure to provide appropriate documentation allows TDSHS to suspend or decertify an EMS certificant, or suspend or revoke a licensed pre-hospital healthcare provider entity/agency/organization for failing to make complete, accurate, and/or clearly written patient care reports that fully document: (a) a patient's condition upon arrival at the scene; (b) the pre-hospital care provided; and (c) the patient's status during transport, including signs, symptoms, and responses to interventions, procedures, medications, and/or therapies utilized before and/or during transport. In the event EMS is in a response-pending status, or was called out prior to PCR completion, the PCR shall be delivered to the receiving facility within 24 hours of the call. It is the responsibility of the transporting CareFlite unit to gather all necessary information from the scene and ancillary personnel. Information given to the transporting CareFlite unit from other First Responder Agencies/ Organizations should be included in the report left with the receiving facility.

Abbreviations: To avoid confusion, certain abbreviations, acronyms, and symbols are no longer advocated for use in the health care setting. To assure continued patient safety, the following abbreviations should not be used as outlined below.

Item	*Prohibited Abbreviation*	*Potential Problem*	*Use Instead*
1.	**U** or **u** (unit)	Mistaken for a "0" (zero), the number 4 (four) or "cc"	Write **"unit"**
2.	**IU** (International Unit)	Mistaken as IV (intravenous) or the number 10 (ten)	Write **"International Unit"**
3.	**Q.D., QD,** or **q.d., qd**	Mistaken for each other	Write **"daily"**
4.	**Q.O.D., QOD,** or **q.o.d., qod**	The period after the **"Q"** can be mistaken for an **"I"** and the **"O"** can be mistaken for an **"I"**	Write **"every other day"**
5.	**Trailing zero** (X.0) mg*	Decimal point is missed	Write **"X mg"** (do not use a trailing zero)
6.	**Lack of leading zero** (.Xmg)	Decimal point is missed	Write **"0.X mg"** (always use a leading zero)
7.	**MS**	Can mean morphine sulfate or magnesium sulfate Confused for one another	Write **"morphine sulfate"**
8.	**MSO4**		
9.	**MgSO4**		Write **"magnesium sulfate"**

SUGGESTED OPERATING GUIDELINES

RADIO AND PHONE REPORTS

Verbal reports to the destination hospital should include the following elements as indicated by patient condition:

- Identify unit and level of provider
- Estimated time of arrival (ETA)
- Mental status
- Patient's age and sex
- Patient's chief complaint
- Brief pertinent history of the present illness
- Baseline vital sign assessments
- Pertinent physical exam findings
- Emergency care given and the patient's response to care given
- Major past medical history including pertinent medications and drug allergies

Transporting units should also advise the receiving facility of changes in a patient's status.

It is not necessary, nor required, to contact CareFlite Medical Control for routine patient care considered part of a Treatment Protocol; however, contact should be made with the destination hospital as soon as possible in the following situations:

- Major trauma.
- Cardiopulmonary or respiratory arrest.
- Difficulty in establishing or maintaining an airway.
- Acute MI or stroke
- Unstable obstetrical patient
- Anytime diversion to the closest facility occurs due to patient instability.

All medical consultations and/or orders must be obtained via the recorded phone line. Once communication with CareFlite Medical Control has been established (with the exception of an initial notification), all decisions regarding the protocols and care plans should be made through that physician. Thereafter, standing orders are only valid when immediate intervention is warranted.

When contacting on-line medical control, utilize the "SBAR" structured communication format:

- S: Situation
- B: Background
- A: Assessment
- R: Recommendation

INABILITY TO ESTABLISH CONTACT WITH MEDICAL CONTROL (8111)

On the rare occasion that the patient is so unstable that a delay in treatment could threaten life and/or limb; and after good faith attempts the provider cannot contact a CareFlite Medical Control physician; the protocol in its entirety shall become as standing order. This may include circumstances when a CareFlite physician is unable to respond to a phone request within 2 minutes of phone contact.

Anytime patient care has been performed outside of CareFlite protocol the provider must:

- Continue attempting to establish contact with the destination facility.
- Notify the receiving physician (after arrival or by radio/phone) of all said care.
- Thoroughly document the care provided, number of attempts to establish medical consultation, and the suspected reason for the communication failure.
- Fax a completed "out of contact (8111)" form to CareFlite within 24 hrs of the incident.

SUGGESTED OPERATING GUIDELINES

INTERFACILITY TRANSFERS

All pre-hospital treatment occurring during transfer shall comply with established CareFlite Treatment Protocols, or have specific written physician orders from the transporting or receiving facility. A written physician order (from current hospital chart or specific to EMS) must accompany the patient for any intervention, treatment, medication, and/or therapy that is not covered in a specific CareFlite Treatment Protocol. If a CareFlite provider is unfamiliar with a given intervention, treatment, medication, and/or therapy; the provider must first consult with the transferring hospital staff, followed by consultation with CareFlite Medical Control for transfer approval.

The transferring facility should be requested to provide staff clinically capable of supporting any intervention, treatment, medication, and/or therapy that is beyond the scope, training, certification and/or licensure of CareFlite providers (unless paramedics who have completed a CareFlite approved "critical care" course are available). Should the transferring facility be unwilling or unable to provide staff during transport, the CareFlite providers must contact CareFlite Medical Control for consultation and guidance before they can accept the patient for transport.

An accompanying health care provider may assist with patient care within their respective scope practice while under written orders of the transferring physician. The transporting CareFlite providers and the accompanying staff are both responsible for the management of the patient during transport; however, **should the patient decompensate during transport, CareFlite providers shall assume all primary patient care responsibilities** with assistance from accompanying staff.

Interstate transfers are permitted as long as protocols and staffing requirements are met and adhered-to during patient transfer.

TRANSPORT OF THE PATIENT RECEIVING BLOOD PRODUCTS

Blood Products are substances normally comprising the circulatory volume of the body and provide transport of nutrients, waste products, and clotting properties. Blood Products include: (a) whole blood; (b) packed red cells; (c) platelets; and/or (d) plasma.

General guidelines for the transport of patients receiving Blood Products:

- These patients require continuous ECG monitoring by CareFlite providers who are capable of handling an acute reaction; therefore, only Paramedics may transport a patient receiving Blood Products.
- All blood products **MUST** be initiated by the transferring facility. Paramedics are not authorized to start, hang, and/or initiate any infusion of Blood Products.
- CareFlite Paramedics shall request a written order from the transferring facility as to the infusion rate and total amount to be infused during transport. A copy of this order is to be attached to the PCR and transferring-facility charts.
- CareFlite Paramedics shall record a complete set of vital signs (pulse, respirations, full BP, temperature, etc.) prior to initiating transport; and obtain a complete set of vital signs every ten minutes during transport.
- **If the patient develops *any* signs of an allergic reaction and/or a transfusion reaction (described below), immediately stop the infusion and initiate a normal saline infusion (using new tubing) in its place.** The Blood Product is not to be thrown away and must be turned over to the receiving facility for evaluation.

Allergic reactions: Immediate anaphylactic reactions are characterized by skin flushing, hives, laryngeal edema, chills and hypotension. In the majority of cases, anaphylactic reactions occur before 10 mL of blood has been infused. When an immediate allergic/hypersensitivity reaction occurs, the transfusion is to be terminated and treatment for the allergic response implemented as per the CareFlite "Allergic Reaction / Anaphylaxis" Treatment Protocol.

Hemolytic transfusion reactions (HTR): The hemolytic transfusion reaction is an adverse reaction that has symptoms of burning at the IV site, restlessness and apprehension, chest tightness, joint and/or back pain, fever, chills, flushing, and/or nausea/vomiting. **The treatment of patients with an HTR focuses on the prevention of shock and maintaining renal perfusion to prevent kidney failure**. If a hemolytic transfusion reaction is suspected, the transfusion must be terminated immediately. Contact CareFlite Medical Control for guidance (if needed).

SUGGESTED OPERATING GUIDELINES

TREATING AND/OR TRANSPORTING PATIENTS IN CUSTODY OF LAW ENFORCEMENT

CareFlite providers are expected to treat these patients with respect and inform them of their rights as a patient to consent to, or refuse, medical evaluations, interventions, procedures, medications, and/or therapies; based upon the CareFlite Suggested Operating Guidelines for Consent, Competency, and Refusal as presented in this document.

When dealing with an incarcerated individual or an individual currently in law enforcement custody:

- The role of EMS is to provide thorough evaluation, interventions, procedures, medications, therapies, and/or transportation.
- Individuals being detained, under arrest, or classified as inmates currently in the custody of a law enforcement agency, still have a right to receive and/or refuse medical care (as long as the patient meets the guidelines referenced above).
- The arresting officer has the right to request a specific hospital destination for the patient in his custody as long as the officer accompanies the patient in the ambulance or by close proximity vehicle escort. An attempt should be made to honor the request of law enforcement for transport to a specific hospital as long as it does not conflict with required CareFlite transport criteria (e.g. trauma facility criteria).
- Law enforcement cannot refuse medical care for a subject in custody, and cannot legally sign a refusal of treatment and/or transportation form for a subject in custody; however, based on your assessment, it is possible for a law enforcement agency to transport the prisoner themselves.
- It is the responsibility of law enforcement, prison, or jail staff to search the prisoner for weapons, dangerous objects, and/or contraband; and for assuming control of any property seized, before EMS care and transport is to occur.

DOMESTIC VIOLENCE REPORTING

CareFlite defines domestic violence as "an act by a member of a family or household against another member of the family or household that is intended to result in physical harm, bodily injury, and/or assault; or that is a threat that reasonably places the family member in fear of imminent physical harm, bodily injury, and/or assault; but does not include defensive measures to protect oneself...or an act that is intended to inflict emotional harm, including an act of emotional abuse."

In accordance with information provided by *Medical Professions of the Family Code of the Texas Criminal and Traffic Law*, a medical professional who treats a patient for injuries that the medical professional has reason to believe were caused by family violence shall: (1) Immediately provide the patient information regarding the nearest family violence shelter center; and (2) Thoroughly document in the patient care record/report: (a) the fact the patient received the information provided under subdivision (1); (b) the reasons why the provider believes the patient's injuries were caused by family violence; and (3) give the patient a written notice including the following information completed with the required information, in both English and Spanish.

NOTICE TO ADULT VICTIMS OF FAMILY VIOLENCE

It is a crime for any person to cause you any physical injury or harm, even if that person is a member or former member of your family or household. You may report family violence to a law enforcement officer by calling the following telephone number: _____. If you, your child, or any other household resident has been injured or if you feel you are going to be in danger after a law enforcement officer investigating family violence leaves your residence or at a later time, you have the right to ask the local prosecutor to file a criminal complaint against the person committing family violence and apply to a court for an order to protect you.

You may want to consult with a legal aid office, a prosecuting attorney, and/or a private attorney. A court can enter an order that: (1) prohibits the abuser from committing further acts of violence; (2) prohibits the abuser from threatening, harassing, and/or contacting you at home; (3) directs the abuser to leave your household; and (4) establishes temporary custody of the children or any property.

A VIOLATION OF CERTAIN PROVISIONS OF COURT-ORDERED PROTECTION MAY BE A FELONY. CALL THE FOLLOWING VIOLENCE SHELTERS OR SOCIAL ORGANIZATIONS IF YOU NEED PROTECTION:

_____

*Except as provided by Subsection (b), a person who reports family violence or provides information under Section 91.003 is immune from civil liability that might otherwise be incurred or imposed.

*A person who reports the person's own conduct or who otherwise reports family violence in bad faith is not protected from liability under this section.

The CareFlite provider will make use of this information when the need arises and promptly notify law enforcement officials when a family violence, domestic assault, and/or child abuse case is suspected. EMS providers are responsible for directly reporting this information to law enforcement officials at the time of call.

SUSPECTED ABUSE/NEGLECT (ELDERLY OR CHILD)

Elder abuse comes in many forms: battering, verbal abuse, sexual abuse, neglect of physical, financial and/or emotional needs; and/or neglect of proper health care, hygiene, and/or nutrition. Unintentional abuse often occurs because of ignorance, inexperience, and/or an inability to provide good care.

Under the Child Abuse Prevention and Treatment Act (CAPTA), child abuse and neglect means, at a minimum: "Any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act, which presents an imminent risk of serious harm."

"Abuse" includes, but is not limited to, the following acts or omissions by a person:

- Physical injury that results in substantial harm to a child or elder, or the genuine threat of substantial harm from physical injury, including an injury that is at variance with the history or explanation given.
- Verbal and psychological abuse.
- Mental or emotional injury that results in an observable and material impairment in growth, development, and/or psychological well being.
- Sexual conduct harmful to a child's or elder's mental, emotional, and/or physical welfare; and/or compelling/encouraging one to engage in sexual conduct with a child or elder, as defined by the Texas Penal Code.
- Failure to make a reasonable effort to prevent an action by another person that results in physical injury or substantial harm.
- The current use by a person of a controlled substance, as defined by the Texas Health and Safety Code, in a manner or to the extent that the use results in physical, mental, and/or emotional injury to a child or elder.

"Neglect" includes, but is not limited to, the following acts or omissions by a person:

- The failure to provide a child or elder with food, clothing, and/or shelter necessary to sustain life.
- The leaving of a child or elder in a situation where they would be exposed to a substantial risk of physical or mental harm, without arranging for necessary care, or leaving a child or elder without the goods and services that are necessary.
- Placing or failing to remove a child or elder from a situation that would expose them to a substantial risk of sexual conduct harmful to the child or elder.
- Failing to seek, obtain, and/or follow through with medical care; with the failure resulting in or presenting a substantial risk of death, disfigurement, and/or bodily injury; and/or with the failure resulting in an observable and material impairment to growth and development.

Who must report: By law, any person and **all** health care providers (including CareFlite Providers) are obligated to report suspected and/or actual elder/child abuse and/or neglect to either local law enforcement or the Texas Department of Family and Protective Services (TXDFPS).

When to report: When you have cause to believe that a child or elder's physical and/or mental health or welfare has been adversely affected by abuse and/or neglect; and/or when you have cause to believe that a child or elder has been abused and/or neglected or may be abused and/or neglected.

CareFlite reporting of suspected abuse is accomplished by one of three methods:

1. Directly to a law enforcement officer (not hospital security) either on scene or at the hospital.
2. Via the 24 hour Texas Department of Family Protective Services (TDFPS) Family Violence Hotline at 1-800-252-5400.
3. Via secure website at https://www.txabusehotline.org/

All CareFlite personnel must report abuse and/or neglect, and/or suspected abuse and/or neglect, via one of the three methods listed above. Reporting abuse and/or neglect, and/or suspected abuse and/or neglect, to a Registered Nurse, Physician, and/or or Social Worker DOES NOT satisfy your LEGAL OBLIGATION to report abuse and/or neglect, and/or suspected abuse and/or neglect.

SUGGESTED OPERATING GUIDELINES

ADVANCED DIRECTIVES / DO NOT RESUSCITATE (DNR) ORDERS

Competent and informed patients have a moral and legal right to consent to, or refuse, recommended medical evaluations, interventions, procedures, medications, and/or therapies; including, but not limited to: CPR, advanced airway management, artificial ventilation, defibrillation, and/or transcutaneous pacing.

An Advance Directive is any expression of a person's thoughts, wishes, and/or or preferences for end-of-life care. A patient must be incompetent or otherwise incapable of communication before an Advance Directive is used to determine treatment decisions; however, CareFlite providers shall make reasonable efforts to inform the patient of any/all proposed treatment and/or of any proposal to withdraw and/or withhold treatment before implementing an Advance Directive. An Advance Directive does not imply that a patient refuses palliative care initiated prior to cardiac and/or respiratory arrest for comfort measures, unless specified.

Six valid reasons for withholding resuscitation in the pre-hospital environment:

(1) Obvious signs of death.

(2) Presence of a valid Out-of-Hospital Do Not Resuscitate Order. (which includes a department-standardized identification device such as a necklace or bracelet).

(3) The presence of a valid written Advance Directive that has been signed by the patient. DNR orders of a physician written onto a piece of plain paper or prescription pad is not sufficient.

(4) A licensed physician directs CareFlite providers to withhold resuscitative efforts. This may occur either in person or via phone. CareFlite Providers must contact CareFlite Medical Control if the physician giving the order is not a CareFlite Medical Control physician.

(5) Attempts to perform CPR places the rescuer at risk of injury and/or death. This often will include grossly contaminated patients (hazardous waste), a dangerous and/or volatile situation, and/or patient location.

(6) Medical Power of Attorney form (MPOA). In the event that a CareFlite provider knows that the patient has executed a valid medical power of attorney and the agent named in the medical power of attorney is physically present at the scene, CareFlite providers may withhold treatment, including life support, at the direction of said agent.

- CareFlite providers **must** contact CareFlite Medical Control if a MPOA directs you to hold or stop resuscitation.
- Unless a limitation on the authority is contained in the MPOA form, the agent may make any medical decision on the patient's behalf that the patient could make if the patient were competent.
- Treatment may not be given to, or be withheld from, the patient if the patient at anytime objects, regardless of whether at the time of the objection a MPOA is in effect or if the individual is competent.
- The MPOA is effective indefinitely unless it is revoked as provided by state law or the patient.
- If the MPOA has an expiration date, and if on that date the patient is incompetent, the MPOA continues to be in effect until the patient becomes competent, unless it is revoked.
- In the event that CareFlite providers are informed of, or provided with, a revocation of a MPOA, they shall immediately record the revocation in the patient care record and give notice of the revocation to the agent and any health care providers responsible for the patient's care.

The Texas Department of State Health Services' rule §157.25 Out-of-Hospital Do Not Resuscitate (DNR) Order states:
"Records shall be maintained on each incident in which an out-of-hospital DNR order or DNR identification device is encountered by responding healthcare professionals, and the number of cases where there is an on-site revocation of the DNR order shall be recorded. The data documented should include: an assessment of patient's physical condition, whether an identification device or a DNR form was used to confirm DNR status and patient identification number, any problems relating to the implementation of the DNR order, the name of the patient's attending physician, and the full name, address, telephone number, and relationship to patient of any witness used to identify the patient. These records must be maintained and shall meet records retention requirements for each health care profession. **If the patient is transported, the original DNR order, or a copy of the original order, will be kept with the patient.** Copies of the original DNR order may be put on file with concerned parties, and the original order shall remain in the possession of the patient, a legal guardian, or the healthcare facility responsible for the patient's care."

If unsure whether a patient, regardless of situation/circumstance, should have resuscitation efforts withheld or discontinued, CareFlite Medical Control should be contacted for consultation/guidance.

SUGGESTED OPERATING GUIDELINES

DNR IDENTIFICATION DEVICES

CareFlite recognizes the following Out-of-Hospital Do-Not-Resuscitate (OOH-DNR) orders/identification devices:

(1) TEXAS DEPARTMENT OF STATE HEALTH SERVICES STANDARD OUT-OF-HOSPITAL DO NOTRESUSCITATE ORDER

(2) As an optional means of identification, a patient may obtain, at patient's expense, an OOH-DNR device. An OOH DNR device, as approved by the Texas Department of State Health Services, must meet the following requirements:

- An intact, unaltered, easily identifiable plastic identification OOH DNR bracelet, with the word "Texas" (or a representation of the geographical shape of Texas and the word "STOP" imposed over the shape) and the words "Do Not Resuscitate", shall be honored by qualified EMS personnel in lieu of an original OOH-DNR Order form.
- An intact, unaltered, easily identifiable metal bracelet or necklace inscribed with the words, "Texas Do Not Resuscitate - OOH" shall be honored by qualified EMS personnel in lieu of an OOH-DNR Order form.

(3) Valid Out-of-State DNR orders or device.

An OOH-DNR order is considered revoked and is <u>not</u> to be honored when:

(1) The patient or person who executed the order: (a) Destroys the form and removes the identification device; or (b) Directs someone in their presence to destroy the form and/or remove the ID device; or (c) Informs EMS that it is their intent to revoke the order (includes qualified patient younger than eighteen [18] years of age).
(2) The patient is known to be pregnant.
(3) Unusual or suspicious circumstances are involved with the death (crime, suicide, etc.).

If there is any doubt to the validity and/or authenticity of a DNR, and/or any dispute concerning a presented DNR, immediately contact CareFlite Medical Control for physician involvement and resolution.

DEAD ON SCENE (DOS) PATIENTS

DOS specifically refers to circumstances in which resuscitative efforts were attempted unsuccessfully, or in certain circumstances, not at all due to specific reasons as described below; however, in order to fulfill certain medical and/or legal obligations in the determination of death at the scene, CareFlite providers must, if at all possible, gain access to the patient and assess for signs of life, which may include: attaching a cardiac monitor, assessing for pulses, and observing for lividity and/or rigor mortis. Use caution in situations of hypothermia, where the patient can appear clinically dead but may still be resuscitated.

Indications for withholding initial resuscitation efforts:

CareFlite providers may withhold resuscitation attempts for medical and/or trauma patients when any of the below described criteria are met; however, attempting resuscitation **is** required when: (a) no criteria are present; (b) an exception to the criteria is present; and/or (c) the situation/circumstance is at anytime questionable.

- A legal Advanced Directive or a valid OOH-DNR is presented in non-trauma patients (as described on pages 8.9-8.10).
- Signs of obvious death are present, as evidenced by: decomposition, dependent lividity, decapitation, incineration, cold patient with rigor mortis (not hypothermic), and/or obvious mortal wounds with vital organ destruction (e.g. brain and/or thoracic contents extrusion) in addition to no spontaneous pulse and respiration.
- Resuscitation efforts pose a danger to the health/safety of responders.

When it is deemed appropriate to pronounce a patient dead after unsuccessful cardiac resuscitation:

- Re-evaluation of the patient reveals signs of an obvious death (as described above). Do not attempt to pronounce a patient who is not obviously deceased without first attempting cardiac resuscitation measures.
- The patient has received a reasonable attempt (20 minutes) at **all** indicated cardiac resuscitation interventions, procedures, medications, and/or therapies (including attempts to correct reversible causes of cardiac arrest); but has failed to clinically respond. Failure to clinically respond can be described as: no spontaneous respiration, no spontaneous eye opening, no spontaneous motor and/or other neurological activity...and no presence of Ventricular Fibrillation (VF) or Ventricular Tachycardia (VT). If either VF/VT is present, resuscitation should be continued and the patient should be transported.
- Inadvertent initiation of CPR in the obviously deceased patient (by first responders, family, etc.) or when resuscitative efforts have been initiated prior to receiving a legal Advanced Directive or a valid OOH-DNR.

If unsure whether a patient, regardless of situation/circumstance, should have resuscitation efforts withheld or discontinued, CareFlite Medical Control should be contacted for consultation/guidance.

DEAD ON SCENE (DOS) PATIENTS

Obtaining and documenting a pronouncement:

- Only CareFlite Paramedic-level providers may obtain an in-field pronouncement.
- Contact CareFlite Medical Control via the recorded phone line. Once an CareFlite Medical Control physician is on the line, clearly identify yourself, your certification level, and CareFlite affiliation; provide a complete and accurate description of pertinent events, patient presentation, and any response to care provided; and accurately document the official time of death, physician providing the time of death, and/or any other pertinent/relevant information about the death on the Patient Care Record/Report (PCR).

Important points to remember in DNR patients and pronouncements:

- It is always appropriate to transport the patient to the hospital if the body location would create a problem and/or hazazrd for the public (e.g. death in a public place such as a grocery store or movie theater). This does not apply if the death is due to a criminally related act (e.g. shooting) and the patient is obviously deceased.
- Always rule out a *non-traumatic etiology* for what may be perceived as a traumatic arrest (e.g. patient going into cardiac arrest from an MI causing a minor car crash).
- Never leave a body in the possession of someone who is not a member of an authorized emergency services group (EMS, Fire, Police) and *neve*r leave a body alone with family members.
- When an CareFlite provider honors an appropriately executed DNR order, the law provides protection against any charges of aiding in suicide (Section 22.08 of the Penal Code -TAC 166.047).
- **When in doubt, initiate resuscitation. Termination can always be obtained later, if appropriate.**

Securing the scene and/or evidence after pronouncement:

When a patient is obviously dead or pronounced dead on scene, all access in and out of that scene should be limited/restricted until law enforcement takes control of the scene. This is often accomplished by assigning personnel (First Responders, EMS, and/or Fire crews, etc.) to limit and/or prevent unauthorized or repeated entry into the area. Under no circumstance is a deceased body to be left unsecured prior to local Law Enforcement, Justice of the Peace, Medical Examiner, or an authorized funeral home arriving on-scene and accepting responsibility. Security of the body (and scene) must be maintained at all times until it is appropriately relinquished.

Be aware that you may find or encounter evidence within and/or attached to a patient's clothing. Be certain to check your stretcher and ambulance for any potential evidence (such as bullets that may fall out of clothing) after each run. Any items of evidence must be turned over to the Medical Examiner's office or Law Enforcement agency. Clearly document in your run report what was found and where it was found, along with the name of the individual to whom the article(s) were released.

Body Management - post resuscitation / pronouncement:

If pronounced in a public setting and there is any reason to believe that the situation may be a crime scene, any additional movement of the body should occur only when it is deemed necessary to prevent the destruction and/or loss of the body (move only if safe to do so). Movement of a body not in danger of destruction should occur only with Law Enforcement, Justice of the Peace, and/or Medical Examiner (ME) approval.

All decisions to move and/or cover the deceased should be made with the greatest possible respect for the dignity of the patient, family, friends, and the public; therefore, the patient should be covered if they are: (a) Within direct view of the public and/or family (roadway, clubs, stores, living room, etc.); (b) Totally nude; and/or (c) There is the potential for further debris contamination to occur (leaves, rain, dirt, etc.). When covering a body, the use of a disposable patient sheet or a burn sheet is the preferred method as any blankets, sheets, or covers found at the scene could be contaminated and later complicate forensic investigation.

Anytime a body was moved to facilitate resuscitation or to help determine if resuscitation should occur, the following information must be thoroughly documented in the Patient Care Record/Report (PCR): (a) Initial patient position when found; (b) Who was at the scene when you arrived; (c) Position of any objects in relationship to the patient; and (d) Position of any weapons and state of clothing (including knife or bullet holes, etc.)

Chronically or terminally ill patients within a private setting placed on the floor for resuscitation purposes and subsequently pronounced may be placed back in their original location only if a crime scene or abnormal death is **not** suspected.

If the patient was pronounced after resuscitative attempts and an unknown or suspicious factor is surrounding the death you must:

- Leave and secure any IV or IO catheters in place.
- Leave all endotracheal tubes, surgical airways and/or pleural decompression catheters in place.
- Circle, using a pen or marker, all unsuccessful IV, IO, and/or pleural decompression attempts for Medical Examiner identification (especially antecubital fossa IV/IO attempts to rule out an overdose).

SUGGESTED OPERATING GUIDELINES

MEDICAL DIRECTOR NOTIFICATION

Any incident which has, or potentially has had, an adverse impact on patient care and/or the CareFlite System as a whole, should be reported to the Medical Director via the CareFlite Administrator on Call as soon as practical after call completion.

Notification of the Medical Director via the CareFlite Administrator on Call should occur when:

- Observation of action and/or inaction of an CareFlite provider that could possibly lead to the injury or death of a patient.
- Performance/administration of any evaluations, interventions, procedures, medications, and/or therapies outside the scope of credentials and/or qualifications of an CareFlite provider.
- Missing controlled substances and/or evidence of controlled medications being tampered with or abused
- Sudden and/or unanticipated cardiac arrest occurs after the use of:
    - An anti-arrhythmic or vasodilator in a previously hemodynamically-stable patient.
    - Physical, mechanical, or chemical restraint.
    - Sedation (midazolam, ketamine).
    - Analgesia (morphine, fentanyl).
    - Neuromuscular blockade (RSI vecuronium, rocuronium, succinylcholine).
    - An electronic control device by law enforcement (e.g., Taser).

REFERENCES

FAILED AIRWAY REFERENCE

If first intubation attempt fails, make adjustments and try again. Make a maximum of two attempts per patient.

Consider:

- Apply the BURP (Back Up Right Posterior) maneuver.
- If there are no contraindications, change patient's head position.
- Change Endotracheal Tube (ET) size.
- Use a Bougie.
- Change-out CareFlite provider attempting intubation.

Maintaining SpO2 > 90% is the key. Because "can't intubate" and "can't ventilate" = 100% mortality, if you cannot intubate after two attempts, proceed to a King Airway.

Confirm tube placement after initial intubation and every time the patient is moved. Use as many of the following as possible:

- Visualizing the tube passing through the vocal cords.
- Observation of rise and fall of the chest.
- Auscultation of the lungs and epigastrium.
- Misting on the interior of the endotracheal tube.
- Capnometer measurements.
- Capnography waveform strip printed and attached to the patient report.

As soon as possible after intubation, attach waveform capnography.

Transport any patient with an unstable airway to the closest receiving facility. A King Airway with oxygen saturation greater than 90% is **not** considered an unstable airway.

KING AIRWAY REFERENCE

Indications:	Cardiac or respiratory arrest. Unresponsive patient with potential for aspiration or airway obstruction without a gag reflex. When oral or nasal intubations have been unsuccessful after 2 attempts.
Contraindications:	Patient with esophageal disease (esophageal cancer, varices, surgery, etc.). Patients who have ingested a caustic substance. Patient with suspected narcotic overdose prior to Narcan administration.

1. Choose the correct size airway, based on patient's height:
    - Size 3 **(Yellow)** 4-5 feet tall.
    - Size 4 **(Red)** 5-6 feet tall.
    - Size 5 **(Purple)** over 6 feet tall.
2. Test the cuff inflation system by injecting the maximum recommended volume of air (marked on syringe) into the cuff.
3. Remove all air from cuff prior to insertion.
4. Lubricate the proximal distal end of the tube with a water soluble jelly such as KY Jelly.
5. Position the head. The ideal position is the "sniffing position" (unless trauma indicated).
6. Hold the airway at the connector with the dominant hand. With non-dominant hand, hold mouth open and apply chin lift.
7. Place the flat edge of the airway's tip against the hard palate. The tube should be in the corner of the mouth with the tube rotated laterally (outward). When the tip passes under the tongue, rotate it medially to midline. Continue until the base of the connector is aligned with teeth or gums. If resistance is met when advancing the tube, discontinue the attempt.
8. Inflate the cuff with air as directed by pre-packaged syringe. Cuff volume is dependant on size of King tube utilized.
9. Attach BVM to connector. While bagging patient, assess ventilations while simultaneously withdrawing the airway until ventilation is easy and free flowing (Large tidal volume with minimal airway pressure).
10. Secure the King tube.

Clinical Notes:

- The King LTS-D will enter the esophagus the majority of the time; however, if tracheal intubation is suspected, pull back on airway and reassess.
- When utilizing the King Airway device, consider insertion of a NG/OG Tube through the King Airway suction port in order to control gastric contents.
- If removal of the King airway is necessary, do so with the patient on his/her side with suction immediately available.
- **Patients with a King airway successfully placed are considered to be successfully intubated.**

REFERENCES

END-TIDAL CO2 DETECTION AND MONITORING REFERENCE

The amount of CO2 that is eliminated from the lungs can be measured by the placement of a CO2 sensor at the patient's airway. The amount of CO2 detected at the end of exhalation is referred to as "End-Tidal CO2" or "EtCO2". A normal EtCO2 value is between 35-45 mmHg. Readings above 45 mmHg (hypercarbia) are indicative of CO2 retention. Readings below 35 mmHg (hypocarbia) often indicate low perfusion and/or hyperventilation.

End-Tidal CO2 detectors MUST be used to verify and monitor all tracheal tube placements.

CareFlite recognizes two approved methods of EtCO2 detection/monitoring: (a) **Colorimetric**; and (b) **Electronic**.

Colorimetric EtCO2 Detector: The Colorimetric EtCO2 detector uses a disc coated with a material that combines with CO2 to form hydrogen ions. When the pH decreases, disc color changes from purple to tan. Detectors are normally purple in the absence of CO2 and change to tan or yellow in the presence of elevated concentrations of CO2. The best known devices are the Easy Cap II and Pedi-Cap...but they may also be found built-in to certain BVM devices.

Electronic EtCO2 Detector: The Electronic EtCO2 detector uses a capnometer to measure CO2 and display a waveform called a capnogram. The shape of the capnogram, and the values obtained from it, are useful guides for providing therapy. Capnographs are useful for ensuring ET tube placement and monitoring of a patient's ventilatory status. If available, Electronic EtCO2 detector is the CareFlite preferred method of EtCO2 detection.

USE INDICATIONS BY DEVICE TYPE	COLORIMETRIC	ELECTRONIC
VERIFICATION OF ET TUBE PLACEMENT (MANDATORY)	X	X
MONITORING OF ET TUBE PLACEMENT DURING MOVEMENT/TRANSPORT	X	X
ASSESSMENT OF BLOOD FLOW IN P.E.A. OR R.O.S.C.		X
EVALUATING SEVERITY OF HYPERCARBIA IN RESPIRATORY EMERGENCY		X
DURING/AFTER ADMINISTRATION OF ANY DRUG AFFECTING RESPIRATION		X
DURING/AFTER UTILIZATION OF "PAIN MANAGEMENT" PROTOCOL		X
MONITOR VENTILATORY STATUS (NON-INTUBATED PATIENT)		X
MONITOR VENTILATORY STATUS (INTUBATED PATIENT)	X	X
VENTILATION OF THE TRAUMATIC BRAIN INJURY (TBI) PATIENT		X
MONITORING FOR SIGNS OF REDUCTION IN SEDATION		X

COLORIMETRIC ETCO2 DETECTION REFERENCE

The color of the detector will fall into 1 of 3 ranges depending on the CO2 concentration. Colors and their associated ranges of CO2 are as follows:

Color Range A (PURPLE): EtCO2 level is less than 4 mmHg.

- A continued color of purple ***after 6 breaths*** in the patient with adequate blood flow typically indicates that an esophageal intubation has occurred; or the tube is actually in the trachea, but a very low flow-state exists that is not producing CO2.
- A continuous color of purple may also be seen during cardiac arrest without CPR, or during ineffective ventilations, even if correctly intubated.

Color Range B (TAN): EtCO2 level is from 4 mmHg to less than 15 mmHg.

- When blood flow to the lungs is decreased or CO2 production is reduced, the detector may change to tan at the end of exhalation.
- The tan color may also initially appear within the first six breaths if CO2 is still present in the stomach; but this should clear up once six breaths have been delivered and the CO2 is "washed out".

Color Range C (YELLOW): EtCO2 level is from 15 mmHg to 38 mmHg.

- If the trachea is intubated and blood flow to the lungs is adequate, the CO2 detector will change to a yellow color during exhalation. This indicates that the lungs are being ventilated.

During cardiac arrest, a sudden improvement in ETCO2 may indicate ROSC.

REFERENCES

ELECTRONIC ETCO2 DETECTION REFERENCE

The Electronic EtCO2 detector uses a capnometer to measure CO2 and display a waveform called a capnogram. The shape of the capnogram, and the values obtained from it, are useful guides for providing therapy.

Description	Common Waveform	Possible Causes
Sustained low $EtCO_2$ without alveolar plateau (shark *fin* appearance)		• Bronchospasm from asthma or COPD • Partially obstructed or kinked ET tube • Incomplete exhalation • Mucous plugging
Sudden decrease in $EtCO_2$ to low, non-zero value		• Leak in airway system • ET tube in hypopharynx • Partial airway obstruction • Partial disconnect from vent circuit
Elevated $EtCO_2$ with good alveolar plateau		• Hypoventilation • Hyperthermia • Respiratory depressant drugs • Shivering • Inadequate minute ventilation
Exponential decrease in $EtCO_2$		• Cardiopulmonary arrest occurring • Pulmonary embolism • Sudden hypotension • Massive blood loss
Gradually increasing level of $EtCO_2$		• Hypoventilation or sedation • Elevated body temperature • Increased metabolism • Partial airway obstruction • Absorption of CO_2 from outside source
Sustained low $EtCO_2$ with good alveolar plateau		• Hyperventilation • Hyperthermia • Dead space ventilation

END-TIDAL CO2 DETECTION AND MONITORING REFERENCE

- Any loss of EtCO2 detection and/or a sudden color change must be documented along with all procedures used to verify and correct the problem.
- A colorimetric detector may only be used for up to two hours, after that it must be replaced.
- Reflux of stomach contents, edema, fluid, and/or the administration of a medication into or through a colorimetric detector will cause a persistent color change which does not vary with the respiratory cycle. Contamination of this type can greatly increase airway resistance and affect ventilation. When contamination is present, you should discard the device and attach a new detector.
- During Cardiac Arrest management, ETCO2 readings of less than 10mmHg may indicate poor BLS CPR.
- During Cardiac Arrest management, a sudden increase of ETCO2 to > 35mmHg may indicate ROSC.

End-Tidal CO2 detectors MUST be used to verify and monitor *all* tracheal tube placements.

REFERENCES

TRACHEOSTOMY TUBE AND STOMA MANAGEMENT REFERENCE

A patient with a partial laryngectomy has only part of the larynx removed, and often breathes through the nose and mouth with some change in speech quality; however, surgery can affect the functioning of their epiglottis, so care must be taken to prevent aspiration. A patient with a total or complete laryngectomy has their entire larynx completely removed and the trachea brought to the front of the neck, creating a stoma through which the patient breathes. In a complete laryngectomy there is no longer any connection between the upper and lower airways.

BVM ventilation of the laryngectomy patient:

- Use appropriate BSI precautions.
- Leave the head and neck in a neutral position. Do not allow excessive forward flexion to occur which may cause the chin to occlude the stoma opening.
- Clear any mucous plugs or secretions from the stoma.
- Ascertain if the patient has a total or partial laryngectomy, or a tracheoesophageal puncture (TEP), as each requires a different approach for initial ventilation:
    - o Total laryngectomies require mask-to-stoma ventilation (round pediatric mask provides the best fit).
    - o Patients with TEPs and partial laryngectomies often must have their noses and mouths securely sealed to prevent air leakage during mask-to-stoma ventilation.
    - o If ventilating a stoma and air escapes from the mouth/nose, close the mouth and pinch the nostrils.
    - o Partial laryngectomies and patients with TEPs may ultimately require stomal intubation to achieve adequately sealed airways for ventilation.
- Use a round infant mask to establish a seal over the stoma if the absence of a patent artificial airway.
- If unable to ventilate through the stoma, consider sealing the stoma and attempt to ventilate through the mouth and nose.

BVM ventilation via tracheostomy tube:

- Use appropriate BSI precautions.
- Clear any mucous plugs or secretions from the tube.
- If the patient has a double-cannula tracheostomy tube, the inner cannula must be in place (inner cannulas are uncommon in infants due to the size of their airway).
- Remove the mask from a bag-valve device and attach it to the tracheostomy tube.
- Follow normal procedures for assisted ventilation.

If breathing is still inadequate and/or ineffective after BVM ventilation, the tracheostomy tube may be occluded and/or dislodged, requiring its removal and replacement. Dislodged tubes should be inspected and reinserted, as long as the cannula and stoma are open and/or can be cleared. Most parents or home care providers are trained in this procedure; ask them to help when possible.

- Use appropriate BSI practices.
- Try suctioning the tube first. If suctioning fails to clear the occlusion, remove the tube and replace.
- Connect a syringe (6 cc) to the pilot balloon and remove all air until the balloon is flat.
- Cut the ties and remove old trach tube with one hand using an up and-out motion (follow angle of tube). Suction as needed.
- Gently insert the new tube with the curved end pointed downward.
- In double cannula tubes, remove the inner cannula, clean and reinsert - or remove and replace it.
- If replacing the inner cannula fails to clear the airway, remove the outer cannula as well, and then replace both.
- If the tube cannot be easily inserted, withdraw and try again (a suction catheter may be used as a guide). Try a smaller tube if still unsuccessful.
- If the smaller tube fails, try to insert an endotracheal tube (ETT) of appropriate size. Select a tube with an inner diameter equal to or smaller than the inner diameter of the last tube. Upon insertion, the tip is aimed downward after entering the stoma. Do not insert the tube more than 2 inches into the opening. Do not cut the tube to shorten it.
- Always verify for proper placement after replacing a trach tube or inserting an ETT. **Proper placement** - equal chest rise and breath sounds on both sides of the chest. **Improper placement** - resistance during insertion, bleeding at the insertion site, bleeding through the tube, lack of chest rise, unusual resistance during assisted ventilation, or signs of subcutaneous air in the tissues.
- Secure the tube once it is correctly in place.
- After changing a trach tube, it is common for an increase in secretions to occur over several hours and for the tube change to cause slight irritation to the airway with pinkish secretions commonly seen.

Do not force the tube. The airway can be worsened by tubes being forced or inserted into the wrong space. If you cannot insert a tube or catheter into the stoma, and the patient is adequately breathing, initiate transport to the closest ED and contact an CareFlite Medical Control Physician for further guidance.

REFERENCES

VENTRICULAR-ASSIST DEVICE REFERENCE

The Ventricular-Assist Device (VAD) is a mechanical device implanted in the chest to partially or completely replace the function of a failing heart. VADs are designed to assist either the right or left ventricle, or both. The typical VAD setup consists of a pump, a controller, and an energy supply. The most common VAD is the "Heart Mate I", a "pulsatile" pump that pumps blood in a cycle of pump/relax, pump/relax; giving the patient a palpable pulse. **Compressions in the patient with a "Heart Mate I" are contraindicated and are replaced by a manual hand pump as an emergency means for powering the pump pneumatically.**

"Heart Mate I" hand-pumping instructions:

1.Disconnect system controller from power source. ALWAYS disconnect from power source before pumping.
2. Remove vent filter from vent port.
3. Connect hand pump to vent port.
4. Press and hold down white purge valve on hand pump.
5. Collapse and hold bulb using your thumb.
6. Release white purge valve and then release bulb.
7. Wait about 10 seconds, then press the white purge valve again and let the bulb fully inflate.
8. Separate and swing around handles.
9. Begin hand pumping by bringing together handles and releasing them at a rate of 60 - 90 pumps a minute.
   -Note: Ensure the bulb inflates completely after each squeeze and do **NOT** exceed 90 pumps per minute.

"Heart Mate I" controller malfunction:

1. If the pump is not working, reassess all connections and power sources between patient, controller, and power source. A care giver should be available to assist you with this.
2. If connections are okay, change the batteries. You must use the hand pump while changing batteries.
3. If pump function returns after changing batteries, immediately stop hand pumping. **OR**
4. If pump is non-operational after checking connections and changing batteries, initiate hand pumping.
5. Disconnect patient from batteries or PBU Cable.
6. Attach pump to vent port, prime pump, and begin pumping.
7. Continue hand pumping during patient transport.

Defibrillation/Cardioversion:

- Note: a carotid pulse may be felt even if the patient is in arrest from VF or VT.
- Disconnect system controller from power, and then disconnect system controller from patient.
- Follow hand pumping instructions (Heart Mate I) as above while preparing for shock.
- Defibrillate or cardiovert patient. Avoid placing pads or paddles directly over device.
- Reconnect system controller to patient, and then connect system controller to power.

A newer VAD is the "Heart Mate II", which uses a rotary action to create a constant blood flow instead of the pumping action seen with the " Heart Mate I". Because of this you will not be able to palpate a "pulse wave" in these patients.

The "Heart Mate II" (Rotary VAD)

The Heart Mate II is a VAD consisting of an internal pump, controller, batteries, power base unit, and cables. A critical difference between the Heart Mate II and the Heart Mate I is that the Heart Mate II does not utilize a hand pump and it will not produce a pulse wave (a physical pulse). The Heart Mate II is a continuous flow pump and therefore, **you will not be able to hear a BP or feel a pulse.** *It is not necessary to remove the control device prior to defibrillation when required.*

Contact CareFlite Medical Control for guidance if you are unsure of how to proceed in any situation involving a VAD.

STROKE TRANSPORT CRITERIA (NCTTRAC)

Goal

Patients will be identified, rapidly and accurately assessed, and based on identification of their actual or suspected onset of symptoms, will be transported to the nearest appropriate NCTTRAC stroke facility.

Committee Charge

Responsibilities charged to the NCTTRAC Emergency Medical Services Committee, Emergency Medical Services Physicians Advisory Group , Systems Development Committee, and Stroke Physician's Advisory Group.

Purpose

The pre-hospital triage plan serves to direct the regional triage of adult stroke patients to the facility most appropriate based upon the duration of stroke symptoms. This plan instructs EMS to transport patients to the highest level stroke facility, if available, within the region (or adjacent region, if a higher level stroke center in the adjacent region is closer than a lower level stroke facility in the region). In making this determination, distance and time parameters should be considered and there should be no more than a 15 minute delay caused by taking a patient to the next highest level of stroke care.
In order to ensure the prompt availability of medical resources needed for optimal patient care, each patient will be assessed for the onset of stroke symptoms/last known normal time, abnormal vital signs, Cincinnati Stroke Scale, and concurrent disease/ predisposing factors.

System Triage

• Stroke patients are classified based upon time from stroke symptom onset:

- o Level A Stroke – Stroke symptom onset of less than 3.5 hours
- o Level B Stroke – Stroke symptom onset of greater than 3.5 and less than 12 hours
- o Level C Stroke – Stroke symptom onset of greater than 12 hours

• Unless immediate intervention (ABC's, cardiac arrest, etc.) is required, Level A and B stroke patients should be taken to the closest NCTTRAC stroke facility (Level 1, 2 or 3). Transport to the highest level facility available is permitted, but not mandated, as long as transport to higher level facility required < 15 minutes additional transport time. Paramedic and EMS Medical Control discretion should be based upon clinical scenario (time of onset and clinical deficit) and regional stroke facility capabilities.

• Unless immediate intervention (ABC's, cardiac arrest, etc.) is required, Level B stroke patients should preferentially be taken to a Level 1 (comprehensive) facility, if available with < 15 minutes additional transport time. The preferential transport to Level 1 (comprehensive) facility is most applicable to Level B stroke patients with severe deficit (for example, NIHSS > 10) since these patients may be the best candidates for endovascular therapy.

• Level C stroke patients should be taken to the closest acute care facility for treatment.

• If the ground transportation to a Level 1 or Level 2 adds > 15 minutes to the transport time, if ground transportation time is greater than 30 minutes or if lifesaving interventions (e.g. airway stabilization, control of hypertensive crisis, etc.) are required for safe transport, call for helicopter transport to meet you at the nearest agreed upon landing zone or take the patient to the nearest medical facility to arrange for helicopter transport.

NCTTRAC Stroke Center bypass may only occur for the following reasons: (A) Patient preference; (B) Physician Preference; and/or (C) Paramedic Discretion.

North Central Texas Trauma Regional Advisory Council (NCTTRAC)
2015 Trauma Triage and Transport Guidelines

I. Introduction

Texas Administrative Code, Title 25, Part 1, Chapter 157, Subchapter G, Rule §157.123 establishes the legal framework of the Emergency Medical Services (EMS) Trauma System in the State of Texas; which includes the creation of Regional Advisory Councils and their respective authority to develop an EMS/Trauma System plan based on standard guidelines for comprehensive system development, to include prehospital triage criteria, diversion protocols, bypass protocols, and regional trauma treatment guidelines. As such, the North Central Texas Trauma Regional Advisory Council (NCTTRAC) has developed, vetted, and approved the following Trauma Triage and Transport Guidelines for use by North Central Texas EMS providers licensed by the Texas Department of State Health Services (TDSHS).

II. Overview

A For the trauma patient, as for other critically ill patients, assessment is the foundation on which all management and transportation decisions are based.

B. The survival of the trauma patient is dependent upon rapid recognition/management of life-threatening injuries and rapid transport to an appropriate facility, as outlined on Page 2 of this document. Scene times should be kept to a minimum with only the necessary interventions made to correct immediate life threats. All secondary interventions should be performed enroute to an appropriate facility or while awaiting aeromedical evacuation.

C. The first step in trauma assessment is the **Scene Assessment** / Scene Size-Up. As you approach the scene, assure safety for yourself and the patient while taking BSI precautions. Rapidly identify the number/type of patients and request additional resources as appropriate.
   1. Additional resources (e.g. aeromedical evacuation, special rescue, additional ambulances) should be notified based off of dispatch information; and requested to proceed with arrival/landing on scene during scene assessment / scene size-up.
   2. Recognition of multi-patient incidents and mass-casualty incidents is critical. In these incidents, priority shifts from focusing all resources on the most injured patient to providing the greatest good to the greatest number of patients.

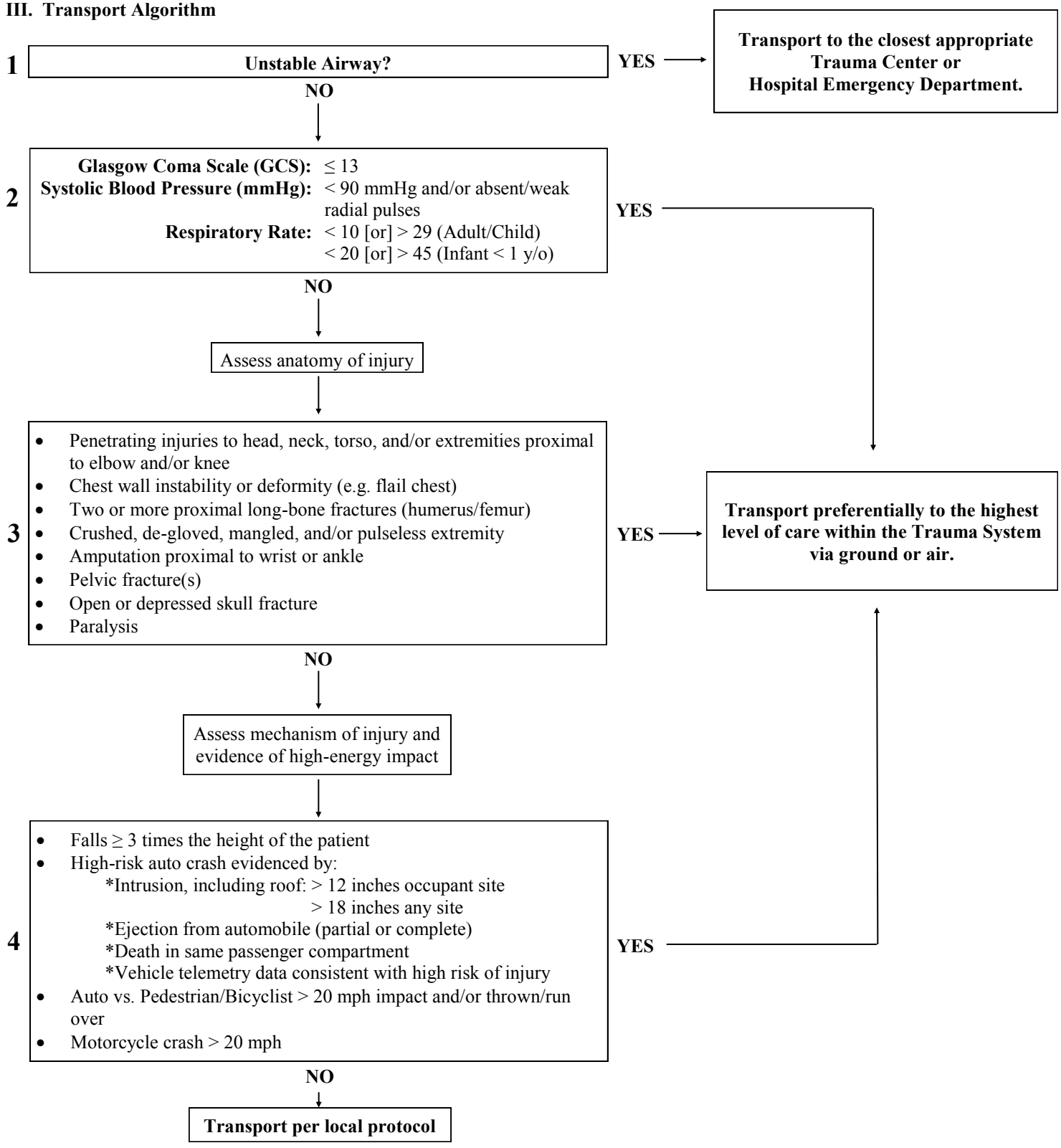
D. Once a brief scene assessment / scene size-up has been performed, which may include rapid triage of multiple patients, attention should focus on evaluating individual patients. Individual patients should be assessed/treated based off of initial triage priority.

E. The **Primary Assessment** begins with a simultaneous, or *global*, overview of the status of the patient's respiratory, circulatory, and neurological systems to identify obvious, significant problems with oxygenation, circulation, hemorrhage, or gross deformities; followed by a rapid focused assessment of Airway, Breathing/Ventilation, Circulation/Bleeding, Disability, and Expose/Environment.
   1. Make immediate interventions to correct life-threats in the order found. Progress from BLS (least invasive) to ALS (most invasive), utilizing the most appropriate intervention warranted in a given situation.
   2. **Assess the Patient's Mental Status:** If unresponsive, check for a pulse. If no pulse, initiate CPR per local protocol.
   4. **Airway:** While simultaneously applying C-spine precautions (if able), the provider should establish/ensure a patent airway by opening (e.g. jaw-thrust), clearing (e.g. suction), assessing, and intervening (e.g. OPA/NPA, King LTD-S, ET Tube).
   4. **Breathing:** Ensure adequate oxygenation and ventilation of the lungs utilizing appropriate oxygen-delivery devices. If abnormal ventilation is present, expose the chest and visually assess for trauma while obtaining breath sounds. If an open pneumothorax is present, cover with an occlusive dressing. If a tension pneumothorax is suspected, rapidly decompress the affected side.
   5. **Circulation:** Control massive hemorrhage utilizing appropriate hemorrhage control devices. Observe the color, temperature, and moisture of the skin while rapidly assessing for the presence/location/quality of pulses (e.g. carotid, femoral, radial) to estimate Blood Pressure and/or perfusion. IV access and fluid administration is secondary to initiation of Rapid Transport.
   6. **Disability:** Rapidly assess Level of Consciousness, pupils, and motor/sensory responses. If Central Nervous System injury suspected, utilize appropriate devices to restrict spinal motion. Observe for increased ICP and signs/symptoms of impending brain-stem herniation (e.g. unequal pupils, bradycardia, hypertension, irregular respirations).
   7. **Expose/Environment:** Rapidly extricate/remove patients from dangerous environments (e.g. fire, snow, pool, etc.). Remove patients clothing in order to fully assess for injury. After assessing, cover patient to maintain body heat.

F. The **Secondary Assessment** begins after the recognition/management of life-threatening injuries found in the Primary Assessment, and after a transport decision has been made. The objective of the Secondary Assessment is to identify injuries not initially found.
   1. Reassess/Confirm Airway, Breathing, and Circulation. Make appropriate interventions as necessary.
   2. Obtain full/detailed vital signs utilizing available equipment.
   3. Obtain vascular access and administer appropriate fluid boluses to restore/maintain a radial pulse and/or SBP > 90 mmHg. Do not over-infuse fluids in trauma patients. Do not attempt to restore baseline vital signs.
   4. Perform a detailed head-to-toe physical examination.
   5. Immobilize/Splint suspected fractures and dress secondary wounds.
   6. Obtain SAMPLE history if able.

G. Continuously **Reassess** airway, breathing, circulation, and disability. Document vital signs frequently. Make appropriate interventions as necessary.

III. Transport Algorithm



- ◊ Level 1 and Level 2 Trauma Centers are regarded as having equal capabilities.
- ◊ Per the NCTTRAC Physician Advisory Group, the higher the level of Trauma Center, the better the outcome.
- ◊ Trauma Centers in Active Pursuit (IAP) are regarded as having the capabilities of the level of pursuit.
- ◊ Pediatric patients should be triaged preferentially to a Pediatric Trauma Center.
- ◊ Geriatric patients, pregnant patients, and/or patients with pre-existing medical conditions may require higher-level triage and/or care at an appropriate specialty center.
- ◊ **Ultimately, the final transport decision rests with the individual EMS personnel directing patient care at the scene, in consultation with local protocol and/or local medical direction.**

IV. Special Considerations

A. Aeromedical Evacuation: When requesting aeromedical assets, confirm the aircraft's Estimated Time of Arrival (ETA) to the scene, in addition to the aircraft's Total Time for transport (start-up, take-off, move to scene, land, load patient, take-off, move to hospital, land).

1. If the aircraft's ETA is greater than the time it would take to transport by ground to the closest appropriate facility, initiate ground transport and direct the aircraft to change heading to the respective facility.
2. If the aircraft's Total Time is greater than the time it would take to transport by ground to a Level 1 or Level 2 Trauma Center, initiate ground transport.
4. Aeromedical assets may be utilized to deliver higher echelons of care and/or specialty services when indicated (e.g. need for advanced airway management, surgical amputation teams, delivery of blood products).

B. Burns: Life threatening traumatic injuries should be identified and treated prior to burns. The following patients generally require treatment at a designated Burn Center as per the American College of Surgeons. In addition, treatment of these conditions at other facilities often results in transfer to a Burn Center and an overall delay in care.

1. >10% Partial-thickness burns.
2. Full-thickness burns.
3. Electrical burns.
4. Chemical burns.
5. Inhalation injury.
6. Burns to the face, hands, feet, genitalia, and/or major joints.

C. Cardiac Arrest: If patients are found to meet one or more the following criteria, CPR may be withheld and the patient declared dead if in accordance with local protocol.

1. Pulseless and apneic in addition to signs incompatible with life (e.g. decapitation, dependent lividity, rigor mortis, and decomposition).
2. No pupillary reflexes, no spontaneous movement, and no organized cardiac rhythm on the ECG greater than 40 complexes per minute.

D. Geriatrics: Consider transport to a facility with a specialty Geriatric Trauma Team/Program if/when appropriate.

E. Obstetrics: Trauma has become the leading cause of maternal death in the U.S.; therefore, the main principle guiding therapy must be aimed towards aggressive resuscitation of the mother.

1. Any pregnant woman who has reached 20 weeks gestation or more, who has been involved in any trauma, especially a motor vehicular crash, regardless of the absence of any perceived contractions or pain, should be evaluated at the nearest trauma center that has OB capabilities.
2. Carbon monoxide exposure in a pregnant female should be considered a mandatory transport.
3. Pregnant patients should not be supine for long periods. Left uterine displacement can be achieved by placing the patient on their left side.
4. Hypoxemia of the fetus may go unnoticed in the injured pregnant patient. Treatment should include high-flow oxygen.
5. Stretching of the peritoneum during the third trimester of pregnancy blunts the normal perception of pain. Therefore, relying on complaints of abdominal pain in the pregnant woman to alert the care provider to possible injury is unreliable.

F. Pediatrics: Pediatric patients should be triaged preferentially to a Pediatric Trauma Center.

1. If the term "lethargic" is used by the caregiver, the term needs to be described.
2. When evaluating a patient that has experienced a possible life threatening event and the parents/guardians refuse medical treatment or transport, contact medical control.

G. **Transfer of Patient Care Info:** The regional standard for Patient Care Report (PCR/ePCR) handoff communication is as follows:

1. The receiving facility should be notified of patient and patient status prior to EMS arrival.
2. At the time of transfer of patient care, at a minimum, verbal communication will occur, and a paper short-list and/or electronic draft-report will be delivered.
3. A final written or electronic full care report will be available within one business day.
4. *This regional standard expounds upon the minimum requirements set-forth in TDSHS EMS Rule §157.11(m).*

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CareFlite Drug Formulary

Table of Contents:

ADENOSINE

Adenocard®

CLASS:

Antidysrhythmic

ACTIONS:

Slows conduction through the AV node; can interrupt re-entrant pathways; slows heart rate by acting directly on the sinus pacemaker cells by slowing impulse formation.

INDICATIONS:

- Narrow-Complex Tachycardia

ADMINISTRATION:

- Adult: Follow each dose of adenosine with a 20 mL bolus of normal saline
- Pediatric: Follow each dose of adenosine with a 10 mL bolus of normal saline

SIDE EFFECTS:

- Dyspnea
- Chest Pain
- Hypotension
- Transient asystole and varying degrees of AV block often occur, resolving within seconds

CONTRAINDICATIONS:

- Known/Confirmed Wolff-Parkinson-White and/or Lown-Ganong-Levine syndrome
- Second- or third-degree AV block
- Sinus node disease
- Poison or drug-induced tachycardia

PRECAUTIONS:

- The short duration of action (<10 seconds) requires a rapid flush using the port closest to the vascular access site to be certain the solution reaches the systemic circulation
- Drug Interactions:
  - Methylxanthines, such as caffeine and theophylline, inhibit the effects of adenosine.
  - Concurrent use with calcium channel blockers may cause VF. Monitor ECG closely.
  - Dipryidamole (persantine) may increase the effects of adenosine
  - Concurrent use with carbamazepine may produce higher degree of AV block.

ALBUTEROL

Proventil®, Ventolin®

CLASS:

Sympathomimetic, Bronchodilator

ACTIONS:

Selective beta-2 agonist that stimulates adrenergic receptors of the sympathomimetic nervous system. Results in smooth-muscle relaxation in the bronchial tree and peripheral vasculature.

INDICATIONS:

- Bronchoconstriction/Bronchospasm
- Dyspnea

ADMINISTRATION:

- The EMT should assist in the self-administration of other physician-prescribed, patient-use Beta-2 agonists. Do not assist in administering steroidal or non-Beta-2 agonist inhalers.

SIDE EFFECTS:

- Tremors, headache, hyperactivity
- Tachycardia, palpitations
- Nausea, vomiting
- Increased sputum

CONTRAINDICATIONS:

- Known hypersensitivity

PRECAUTIONS:

- Should be used with caution in patients with cardiovascular disease, especially coronary insufficiency, cardiac arrhythmias, and hypertension convulsive disorders and hyperthyroidism or patients being treated with tricyclic antidepressants.
- Beta blockers and albuterol inhibit the effect of each other.
- May be mixed in the medication nebulizer chamber with ipratropium bromide.

AMIODARONE HYDROCHLORIDE

Cordarone®

CLASS:

Antidysrhythmic

ACTIONS:

Blocks sodium channels and myocardial potassium channels, delaying repolarization and increasing duration of action potential.

INDICATIONS:

- Ventricular fibrillation
- Ventricular tachycardia

SIDE EFFECTS:

- Dizziness, malaise, fatigue
- Ataxia, loss of coordination
- Bradycardia, hypotension, arrhythmias, heart failure, heart block, sinus arrest
- Nausea, vomiting
- Acute respiratory distress syndrome, severe pulmonary toxicity

CONTRAINDICATIONS:

- Known hypersensitivity
- Cardiogenic shock
- Bradycardia
- Second– or Third– Degree AV block
- Sick sinus syndrome

PRECAUTIONS:

- QT prolongation may be exaggerated in patients with hypokalemia or hypomagnesemia, increasing the potential for the development of Torsades de Pointes
- Use with beta blockers and calcium channel blockers may increase risk of hypotension and bradycardia
- Use with fentanyl may cause hypotension, bradycardia, and decreased cardiac output.
- Use with antihypertensives may increase the hypotensive effect

mg

DOSE	150mg OVER 10min - Run 10 drop tubing @:
150mg/100cc	100 gtts/min

Adult Infusion (150 in 100cc over 10 min)

Pediatric Infusion (5 mg/kg)

Patient Weight	Inject 5mg/kg (150 mg Max) Amiodarone into 100cc NS	5 mg/kg OVER 10min—Run 10 Drop tubing @:
5 kg / 11 lbs	**25mg**	100 gtts/min
10 kg / 22 lbs	**50mg**	100 gtts/min
15 kg / 33 lbs	**75mg**	100 gtts/min
20 kg / 44 lbs	**100mg**	100 gtts/min
25 kg / 55 lbs	**125mg**	100 gtts/min
30 kg / 66 lbs	**150mg**	100 gtts/min

ASPIRIN

CLASS:
- Platelet inhibitor, anti-inflammatory agent

ACTIONS:
- Prevents platelets from clumping together, or aggregating, and forming emboli.

INDICATIONS:
- Suspected ACS
- Chest Pain

SIDE EFFECTS:
- None pertinent to EMS

CONTRAINDICATIONS:
- Allergies to aspirin
- Active, or very recent history of, GI bleed
- Stroke

PRECAUTIONS:
- None pertinent to EMS

ATROPINE SULFATE

CLASS:

Anticholinergic agent

ACTIONS:

Inhibits the action of acetylcholine at postganglionic parasympathetic neuroeffector sites, blocks normal vagal inhibition of the heart, positive chronotropic effect, increasing SA node automaticity, increases AV node conduction.

INDICATIONS:

- Symptomatic Bradycardia
- Organophosphate Poisoning
- Nerve agent exposure
- Beta blocker or calcium channel blocker overdose
- PAI in pediatric patients

SIDE EFFECTS:

- Headache, restlessness, dizziness
- Tachycardia

CONTRAINDICATIONS:

- None in cardiac arrest
- Tachycardia (with a pulse)
- Hypothermic bradycardia
- Myocardial ischemia
- Narrow-angle glaucoma

PRECAUTIONS:

- Do not use doses < 0.5 mg in the adult due to possible paradoxical bradycardia
- Use cautiously in patients with Down syndrome as they may be more sensitive to its effects.

CALCIUM CHLORIDE

CLASS:

Electrolyte

ACTIONS:

Increases cardiac contractile state (positive inotropic effect). Enhances ventricular auto maticity.

INDICATIONS:

- Hypocalcemia
- Hyperkalemia
- Magnesium toxicity/overdose
- Beta blocker and calcium channel blocker toxicity

SIDE EFFECTS:

- Arrhythmias
- Bradycardia
- Syncope
- Peripheral vasodilation
- Cardiac arrest can ensue if given too fast
- Local reactions including but not limited to burning, necrosis, or cellulitis.

CONTRAINDICATIONS:

- Hypercalcemia
- Ventricular fibrillation
- Digitalis toxicity

PRECAUTIONS:

- Administer slowly to decrease the chances of vein irritation
- Use cautiously in pregnancy

CALCIUM GLUCONATE

CLASS:

Electrolyte

ACTIONS:

Increases cardiac contractile state (positive inotropic effect). Enhances ventricular auto maticity.

INDICATIONS:

- Hypocalcemia
- Hyperkalemia
- Magnesium toxicity/overdose
- Beta blocker and **calcium channel blocker toxicity**

SIDE EFFECTS:

- Arrhythmias
- Heart block
- Bradycardia
- Nausea & Vomiting
- Shortened QT
- Syncope
- Peripheral vasodilation
- Cardiac arrest can ensue if given too fast
- Local reactions including but not limited to burning at injection site, necrosis, or cellulitis.

CONTRAINDICATIONS:

- Hypercalcemia
- Ventricular fibrillation
- Digitalis toxicity

PRECAUTIONS:

- Administer slowly to decrease the chances of vein irritation
- Use cautiously in pregnancy (C)

CAPTOPRIL
Capoten®

CLASS:
Angiotensin Converting Enzyme (ACE) Inhibitor

ACTIONS:
Prevents conversion of angiotensin I to angiotensin II.

INDICATIONS:
- CHF

SIDE EFFECTS:
- Dizziness, fainting, headache, fatigue, fever
- Angioedema
- Tachycardia
- Hypotension
- Angina
- Abdominal pain
- Dry mouth, nausea, vomiting, dry cough

CONTRAINDICATIONS:
- Pregnancy
- Hypersensitivity to drug or other ACE inhibitors

PRECAUTIONS:
- Use cautiously in patients with impaired renal function or serious autoimmune disease.

DEXTROSE/INSTAGLUCOSE

CLASS:

Carbohydrate, antihypoglycemic

ACTIONS:

Rapidly increases serum glucose levels. Short-term osmotic diuresis.

INDICATIONS:

- Hypoglycemia

SIDE EFFECTS:

- Extravasation leads to tissue necrosis
- Hyperglycemia
- Pulmonary edema
- May precipitate severe neurological symptoms in alcoholics

CONTRAINDICATIONS:

- Intracranial hemorrhage

PRECAUTIONS:

- Dextrose is a hypotonic solution. Use cautiously in patients with renal insufficiency, urinary obstruction, or hypovolemia.
- Do not mix with sodium bicarbonate or warfarin (Coumadin).

DIPHENHYDRAMINE HYDROCHLORIDE

Benadryl®

CLASS:

Antihistamine, anticholinergic

ACTIONS:

Blocks cellular histamine receptors; decreases vasodilation; decreases motion sickness. Reverses extrapyramidal reactions.

INDICATIONS:

- Allergic reaction
- Motion sickness
- Relief of acute dystonic reactions

SIDE EFFECTS:

- Sedation, sleepiness, dizziness
- Seizures
- Nausea, dry mouth, epigastric discomfort
- Thickening of bronchial secretions
- Hypotension

CONTRAINDICATIONS:

- Asthma
- Glaucoma
- Pregnancy
- Hypertension
- Narrow-angle glaucoma
- Infants
- Patients taking MAOIs

PRECAUTIONS:

- Use cautiously in patients who have recently consumed alcohol, taken sedatives, or anticholinergics as it potentiates their effects.

DOPAMINE HYDROCHLORIDE

INTROPIN ©

CLASS:

Sympathomimetic

ACTIONS:

Immediate metabolic precursor to norepinephrine. Produces positive inotropic and chronotropic effects. Dilates renal and splanchnic vasculature. Constricts systemic vasculature, increasing blood pressure and preload. Increases myocardial contractility and stroke volume.

INDICATIONS:

- Cardiogenic and septic shock
- Hypotension with low cardiac output
- Second-line drug for symptomatic bradycardia

SIDE EFFECTS:

- Extravasation may cause tissue necrosis
- Headache
- Anxiety
- Dyspnea
- Dysrhythmias, PVCs
- Hypertension, hypotension
- Chest pain, palpitations
- Nausea, vomiting

CONTRAINDICATIONS:

- Hypovolemic shock
- Tachydysrhythmias, V-fib
- Pheochromocytoma

PRECAUTIONS:

- Should only be administered as a drip/infusion.

ENALAPRILAT

CLASS:

Angiotensin Converting Enzyme (ACE) Inhibitor

ACTIONS:

Prevents conversion of angiotensin I to angiotensin II

INDICATIONS:

- CHF

SIDE EFFECTS:

- Dizziness, fainting, headache, fatigue, fever
- Angioedema
- Tachycardia
- Hypotension
- Angina
- Abdominal pain
- Dry mouth, nausea, vomiting, dry cough

CONTRAINDICATIONS:

- Pregnancy
- Hypersensitivity to drug or other ACE inhibitors

PRECAUTIONS:

- Concurrent administration with diuretics may cause excessive hypotension. Monitor blood pressure and heart rate closely.
- Use cautiously in patients with impaired renal function or serious autoimmune disease.

EPINEPHRINE HYDROCHLORIDE

CLASS:

Sympathomimetic

ACTIONS:

Direct-acting alpha and beta agonist. Alpha: vasoconstriction. Beta-1: positive inotropic, chronotropic, and dromotropic effects. Beta-2: bronchial smooth muscle relaxation and dilation of peripheral vasculature. Blocks histamine receptors.

INDICATIONS:

- Cardiac Arrest (all arrhythmias)
- Anaphylaxis
- Bronchoconstriction / severe asthma
- An Epinephrine infusion may be ordered by online Medical Control if profound hypotension or bradycardia fails to respond to standard measures. For proper concentration, add epinephrine 2 mg (1:1000) to NS 500 mL to achieve 4 mcg/mL.

SIDE EFFECTS:

- Nervousness, restlessness, tremor
- Pulmonary edema
- Tachycardia, arrhythmia
- Chest pain
- Hypertension
- Nausea, vomiting

CONTRAINDICATIONS:

- Hypothermia
- Myocardial ischemia

PRECAUTIONS:

- If epinephrine is being used to treat a reaction caused by another drug given IM or SQ, inject epinephrine into the site where the other drug was given to minimize further absorption.
- Use with caution when administering to:
  - Patients with narrow angle glaucoma.
  - Perfusing patients over 50 years of age
  - Pregnant patients
  - Asthma patients with a history of severe hypotension or CAD
  - Hypotension or circulatory collapse resulting from a phenothiazine overdose

FENTANYL CITRATE

Fentanyl®

CLASS:

Opioid analgesic, schedule II narcotic

ACTIONS:

Binds to opiate receptors, producing analgesia and euphoria.

INDICATIONS:

- Pain
- Sedation maintenance

SIDE EFFECTS:

- Sedation, somnolence, confusion
- Seizures
- Arrhythmias
- Respiratory depression, apnea
- Syncope
- Nausea, vomiting

CONTRAINDICATIONS:

- Hypersensitivity to opioids
- Pregnancy or in nursing women
- SBP < 110 [Cardiac]
- SBP < 90 [Trauma]

PRECAUTIONS:

- Unlike morphine sulfate, fentanyl citrate does not cause a histamine release and, therefore, will not typically result in decreased blood pressure.
- Use with caution in patients with head injury, increased CSF pressure, COPD, respiratory depression, or bradydysrhythmias.
- Effects may be increased with concomitant use of other CNS depressants, alcohol, sedatives, antipsychotics, skeletal muscle relaxants
- Pulse oximetry and cardiac monitoring must be in place as well as continuous monitoring of respiratory status

GLUCAGON (*Optional based on Provider Needs)

CLASS:

Hyperglycemic agent, pancreatic hormone, insulin antagonist

ACTIONS:

Increases blood glucose level by stimulating glycogenisis. Unknown mechanism of stabilizing cardiac rhythm in beta blocker overdose. Minimal positive inotropic and chronotropic response. Decrease gastrointestinal motility and secretions.

INDICATIONS:

- Hypoglycemia
- Beta-blocker overdose

SIDE EFFECTS:

- Dizziness
- Headache
- Hypertension
- Tachycardia
- Rebound hypoglycemia
- Nausea, vomiting

CONTRAINDICATIONS:

- Hyperglycemia

PRECAUTIONS:

- Supplemental carbohydrates should be given to prevent secondary hypoglycemia as soon as the patient is conscious and able to tolerate oral administration

HALOPERIDOL
Haldol®

CLASS:
Tranquilizer, antipsychotic

ACTIONS:
Inhibits central nervous system catecholamine receptors: strong antidopaminergic and weak anticholinergic. Acts on CNS to depress subcortial areas, mid-brain, and ascending reticular activating system in the brain.

INDICATIONS:
- Acute psychotic episodes

SIDE EFFECTS:
- Seizure
- Sedation
- Dystonic and/or extrapyramidal reactions
- Respiratory depression
- Orthostatic hypotension

CONTRAINDICATIONS:
- Hypersensitivity to drug
- Parkinson's Disease
- CNS depression
- Agitation secondary to shock and/or hypoxia

PRECAUTIONS:
- Use cautiously in elderly and/or debilitated patients, and patients with history of seizures, CV dysfunction, or glaucoma.

IPRATOPIUM BROMIDE
Atrovent®

CLASS:
Anticholinergic, bronchodilator

ACTIONS:
Inhibits interaction of acetylcholine at receptor sites of bronchial smooth muscle, resulting in decreased guanosine monophosphate and bronchodilation.

INDICATIONS:
- Persistent bronchospasm
- COPD exacerbation
- Allergic reaction/anaphylaxis

SIDE EFFECTS:
- Headache, dizziness, nervousness, tremor
- Dyspnea
- Tachycardia, palpitations
- Dry mouth, GI distress

CONTRAINDICATIONS:
- Hypersensitivity to atropine
- Hypersensitivity to alkoloids
- Hypersensitivity to peanut or soy products

PRECAUTIONS:
- Use with caution in patients with angle-closure glaucoma.
- If a face mask is being used for administration, take care to prevent leakage around the mask because eye pain or temporary blurred vision may occur.
- May be mixed in the medication nebulizer chamber with albuterol sulfate.

KETAMINE HYDROCHLORIDE

Ketalar©

CLASS:

General Anesthetic

ACTIONS:

Induction and maintenance of general anesthesia.

INDICATIONS:

- Sedation
- PAI for unstable airway

SIDE EFFECTS:

- Nausea, Vomiting
- Hallucinations

CONTRAINDICATIONS:

- Hypersensitivity to Ketamine.

PRECAUTIONS:

- Use in conjunction with Amiodarone may cause arrhythmias.
- May be used in combination with anticholinergic agents to decrease hypersalivation.

LIDOCAINE HYDROCHLORIDE

Xylocaine®

CLASS:

Antidysrhythmic

ACTIONS:

Decreases cardiac automaticity by slowing the rate of spontaneous phase 4 depolarization.

INDICATIONS:

- PAI preparation
- Ventricular arrhythmias

SIDE EFFECTS:

- Lidocaine is a CNS depressant that produces sedative, analgesic, and anticonvulsant effects (in therapeutic ranges)
- Clinical indicators of toxicity include: drowsiness, altered LOC, agitation, slurred speech, tinnitus, paresthesias, visual disturbances, hallucinations, muscle twitching, and seizures.
- CV: (higher doses) hypotension, bradycardia, and cardiovascular collapse

CONTRAINDICATIONS:

- Hypersensitivity to lidocaine or other amides
- Second- or Third– Degree AV block in the absence of an artificial pacemaker
- Myocardial infarction
- Bradycardic ventricular escape beats

PRECAUTIONS:

- High doses can result in coma or death.

MAGNESIUM SULFATE

CLASS:

Electrolyte, anti-inflammatory

ACTIONS:

Reduces striated muscle contractions and blocks peripheral neuromuscular transmission by reducing acetylcholine release at the myoneural junction. Manages seizures in toxemia of pregnancy. Induces uterine relaxation. Can cause bronchodilation after beta-agonists and anti-cholinergics have been administered.

INDICATIONS:

- Seizures of eclampsia (toxemia of pregnancy)
- Torsades de Pointes (TDP)
- Ventricular fibrillation or pulseless ventricular tachycardia that is refractory to amiodarone
- Dysrhythmias due to digitalis toxicity

SIDE EFFECTS:

- Drowsiness, CNS Depression
- Respiratory depression
- AV Block
- Hypotension
- Depressed reflexes

CONTRAINDICATIONS:

- Heart block
- Myocardial damage

PRECAUTIONS:

- Use with caution in patients with impaired renal function
- Use with caution in pregnant women during labor or within two hours preceding delivery
- Ensure calcium chloride is readily available to counteract magnesium sulfate if needed

METHYLPREDISOLONE
SOLU-MEDROL®

CLASS:

Glucocorticoid, Synthetic Corticosteroid

ACTIONS:

Decreases inflammation by suppression of migration of polymorphonuclear leukocytes, fibroblasts, reversal of increased capillary permeability and lysosomal stabilization.

INDICATIONS:

- Severe inflammation
- Moderate to severe allergic reaction
- Shock

SIDE EFFECTS:

- Flushing
- Sweating
- Headache
- Mood changes
- Depression
- Thrombophlebitis
- HTN, tachycardia
- Nausea, Diarrhea
- Abdominal distension
- Thrombocytopenia
- Poor wound healing

CONTRAINDICATIONS:

- Known hypersensitivity to this medication
- Cushing's syndrome
- Measles, Varicella, and fungal infections

PRECAUTIONS:

- Class (C) pregnancy precaution
- Breast feeding
- Diabetes Mellitus
- Glaucoma
- Renal disease
- Decreases effects of antidiabetic medications and some vaccines

MIDAZOLAM HYDROCHLORIDE

Versed®

CLASS:

Benzodiazepine, short/intermediate acting; schedule IV drug

ACTIONS:

Reversibly interacts with gamma-amino butyric acid (GABA) receptors in the central nervous system causing sedative, anxiolytic, amnesic, and hypnotic effects.

INDICATIONS:

- Sedation related to cardioversion or intubation
- Behavioral emergency
- Seizure

SIDE EFFECTS:

- Headache
- Respiratory depression, apnea
- Hypotension
- Cardiac arrest
- Nausea, vomiting
- Pain at the injection site

CONTRAINDICATIONS:

- Acute narrow-angle glaucoma
- Shock
- Alcohol intoxication
- Depressed vital signs

PRECAUTIONS:

- Lower doses should be give to patients at or over 60 years of age and/or patients who are chronically ill.
- Pulse oximetry and cardiac monitoring must be in place as well as continuous monitoring of respiratory status

MORPHINE SULFATE

CLASS:

Opioid analgesic (schedule II narcotic)

ACTIONS:

Alleviates pain through CNS action. Suppresses fear and anxiety centers in the brain. Depresses brainstem respiratory centers. Increases peripheral venous capacitance and decreases venous return. Decreases preload and afterload, which decreases myocardial oxygen demand.

INDICATIONS:

- Severe CHF
- Acute cardiogenic pulmonary edema
- Chest pain associated with acute myocardial infarction
- Analgesia for moderate to severe acute and chronic pain

SIDE EFFECTS:

- Confusion
- Sedation
- Headache
- CNS depression
- Respiratory depression, apnea
- Hypotension
- Syncope
- Bradycardia
- Tachycardia
- Nausea, vomiting, dry mouth

CONTRAINDICATIONS:

- Hypersensitivity to opioids
- Head injury
- Altered LOC
- Undiagnosed abdominal pain
- Exacerbated COPD
- Respiratory depression
- SBP < 110 [Cardiac]
- SBP < 90 [Trauma]

PRECAUTIONS:

- Unlike fentanyl, morphine sulfate causes a histamine release and will result in a drop in blood pressure.
- Do not administer unless naloxone and definitive airway control are readily available
- Use precaution when administering to the pregnant female as morphine rapidly crosses the placenta.

NALOXONE HYDROCHLORIDE

Narcan®

CLASS:

Opioid antagonist, antidote

ACTIONS:

Competitive inhibition at narcotic receptor sites. Reverses respiratory depression secondary to opiate drugs. Completely inhibits the effect of morphine.

INDICATIONS:

- Suspected opiate/narcotic overdose
- Unresponsiveness of unknown origin

SIDE EFFECTS:

- Restlessness
- Seizures
- Dyspnea
- Hypertension
- Tachycardia
- Nausea, vomiting

CONTRAINDICATIONS:

- Hypersensitivity

PRECAUTIONS:

- Use with caution in opiate/narcotic-dependant patients and be prepared to manage acute withdrawal symptoms.

NITROGLYCERIN

Nitrolingual Spray®

CLASS:

Vasodilator

ACTIONS:

Smooth muscle relaxant acting on vasculature, bronchial, uterine, intestinal smooth muscle. Dilation of arterioles and veins in the periphery. Reduces preload and afterload, decreasing workload of the heart and thereby myocardial oxygen demand.

INDICATIONS:

- Acute angina pectoris
- Ischemic chest pain
- CHF
- Pulmonary edema

ADMINISTRATION:

- Nitroglycerin spray may be administered either supralingual or sublingual

SIDE EFFECTS:

- Headache, dizziness, syncope
- Weakness
- Reflex tachycardia
- Hypotension
- Nausea, vomiting, dry mounth
- Skin flushing

CONTRAINDICATIONS:

- Hypersensitivity to nitrates
- Right Ventricular Infarct (RVI)
- SBP < 110 mm Hg
- Head injury
- Increased intracranial pressure
- Pericardial tamponade
- Phosphodiesterase inhibitor or other erectile dysfunction agent use within the past 48 hours (tadanifil/Cialis, vardenafil/Levitra, sildenafil/Viagra)

PRECAUTIONS:

- Do not shake the aerosol container before administration as bubbling within the canister impairs release of the drug
- Blood pressure must be monitored before and after administration.
- Nitroglycerine decomposes when exposed to light and/or heat.

ONDANSETRON HYDROCHLORIDE

Zofran®

CLASS:

Serotonin receptor antagonist; antiemetic

ACTIONS:

Blocks action of serotonin, which is a natural substance that causes nausea and vomiting.

INDICATIONS:

- Prevention and/or control of nausea and/or vomiting

SIDE EFFECTS:

- Headache
- Malaise, fatigue, sedation
- Cardiac arrhythmias
- Diarrhea, constipation

CONTRAINDICATIONS:

- Known allergy
- Pediatrics less than 2 years of age

PRECAUTIONS:

- Use cautiously in patients with impaired renal function

OXYGEN

CLASS:

Naturally occurring atmospheric gas

ACTIONS:

- Oxygen is required to enable cells to break down glucose into a usable energy form
- Supplemental oxygen increases alveolar concentrations of oxygen and therefore arterial oxygen tension is increased

INDICATIONS:

- Suspected hypoxemia of any etiology (O2 saturation < 92%)
- Chest pain
- Respiratory insufficiency
- Suspected/confirmed carbon monoxide poisoning
- Altered LOC

SIDE EFFECTS:

- Decreased respiratory drive in COPD patients

CONTRAINDICATIONS:

- Hyperventilation

PRECAUTIONS:

- The tank containing oxygen is under great pressure - make sure the tank is secure at all times. Failure to do so may result in fire and/or explosion.

ROCURONIUM
ZEMURON®

CLASS:

Non-depolarizing Neuromuscular Blocker

ACTIONS:

- Inhibits transmission of nerve impulses by binding with cholinergic receptor sites, antagonizing action of acetylcholine

INDICATIONS:

- Facilitation of endotracheal intubation
- Ongoing paralysis post-intubation

SIDE EFFECTS:

- Prolonged Apnea
- Bronchospasm
- Respiratory depression
- Bradycardia/Tachycardia, changes in BP
- Pulmonary vascular resistance

CONTRAINDICATIONS:

- Unverified ETT placement
- Hypersensitivity

PRECAUTIONS:

- Pregnancy
- Geriatrics
- Electrolyte imbalances
- Respiratory/neuromuscular/cardiac/renal/hepatic disease

SODIUM BICARBONATE

CLASS:

Systemic hydrogen ion buffer, alkalizing agent

ACTIONS:

Buffers metabolic acidosis and lactic acid buildup in the body caused by anaerobic metabolism secondary to severe hypoxia by reacting with hydrogen ions to form water and carbon dioxide.

INDICATIONS:

- Metabolic acidosis during cardiac arrest
- Tricyclic antidepressant overdose
- Aspirin overdose
- Phenobarbital overdose
- Hyperkalemia
- Crush injury

SIDE EFFECTS:

- Metabolic alkalosis
- Hypernatremia
- Necrosis at injection site
- Hypokalemia
- Peripheral edema

CONTRAINDICATIONS:

- Metabolic or respiratory alkalosis

PRECAUTIONS:

- Shifts the oxyhemoglobin curve to the left, inhibiting the release of oxygen
- Do not mix with other drugs
- May deactivate sympathomimetics (dopamine, epinephrine, norepinephrine)

SODIUM CHLORIDE (0.9%)

Normal Saline, NS

CLASS:

Isotonic crystalloid solution

ACTIONS:

Replaces water and electrolytes and supplements vascular volume

INDICATIONS:

- Dehydration
- Heat cramps, heat exhaustion, heat stroke
- Hypovolemia
- Diabetic ketoacidosis
- Maintain patent vascular access route
- Flush medications through vascular lines
- To dilute medications for administration
- Fluid replacement for burn patients
- Saline lock flush

SIDE EFFECTS:

- None pertinent to EMS

CONTRAINDICATIONS:

- None pertinent to EMS

PRECAUTIONS:

- None pertinent to EMS

SUCCINYLCHOLINE

ANECTINE, SUXAMETHONIUM

CLASS:

Depolarizing Neuromuscular Blocking Agent

ACTIONS:

Inhibits transmission of nerve impulses by binding with cholinergic receptor sites, antagonizing the action of acetylcholine, leading to skeletal muscle relaxation (paralysis). Also causes release of histamine.

INDICATIONS:

- Facilitation of endotracheal intubation in rapid sequence intubation (RSI)

SIDE EFFECTS:

- Apnea
- Sinus arrest, dysrhythmia
- Bronchospasm
- Myoglobulinemia/Rhabdomyolysis
- Anaphylaxis/angioedema

CONTRAINDICATIONS:

- History of Malignant Hyperthermia
- Hypersensitivity

PRECAUTIONS:

- Severe burns
- Crush injuries
- Neuromuscular disease
- Hepatic/Cardiac/Renal disease
- Geriatrics or debilitated patients

TERBUTALINE SULFATE

BRETHINE ©

CLASS:

Beta-2 adrenergic agonist, bronchodilator

ACTIONS:

Selective beta-2 adrenergic receptor activity resulting in relaxation of smooth muscle of the bronchial tree and peripheral vasculature with minimal cardiac effects.

INDICATIONS:

- Bronchial asthma
- Reversible bronchospasm associated with exercise
- Chronic bronchitis

SIDE EFFECTS:

- CNS stimulation, restlessness, apprehension
- Headache
- Seizure
- Wheezing, coughing, bronchospasm
- Bradycardia, tachycardia, PVCs, PACs
- ST wave changes
- Chest pain

CONTRAINDICATIONS:

- Hypersensitivity
- Tachydysrhythmias

PRECAUTIONS:

- Use with caution in patients with cardiovascular disease, seizure disorder, hypertension, and diabetes.

VECURONIUM

CLASS:

Non-Depolarizing Neuromuscular Blocking Agent

ACTIONS:

Inhibits transmission of nerve impulses by binding with cholinergic receptor sites, antagonizing the action of acetylcholine, leading to skeletal muscle relaxation (paralysis).

INDICATIONS:

- Maintaining skeletal muscle relaxation after endotracheal intubation via rapid sequence intubation (RSI)

SIDE EFFECTS:

- Prolonged Apnea
- Skeletal muscle weakness/paralysis
- Bronchospasm
- Tachycardia
- Dyspnea
- Hypotension

CONTRAINDICATIONS:

- Hypersensitivity

PRECAUTIONS:

- Neuromuscular disease
- Hepatic/Cardiac disease
- Known electrolyte imbalances
- Children <2 y/o
- Concurrent Tehophylline administration

CareFlite Interfacility Drug Formulary Reference (Maintenance & Continuation only)

The following is a list of medications most commonly encountered during inter-facility patient transport. It is not meant to be an exhaustive list. You may be be called to transport patients on medications other than those listed below. The information that follows is for reference only.

The CareFlite Clinical Protocols for Emergency Medical Services **do not** permit the initiation of any of the following medications, however, CareFlite providers are permitted to monitor and transport patients with ongoing infusion of the following. Any alteration of an infusion not specifically identified in protocol may only be made after consultation with CareFlite Medical Control and/or in accordance with the sending physician's orders for the particular medication.

When in doubt, contact CareFlite Medical Control immediately.

MAINTENANCE AND CONTINUATION ONLY

- Blood Products
- Diltiazem (Cardizem ©)
- Dobutamine (Dobutrex ©)
- Esmolol (Brevibloc ©)
- Nicardipine (Cardene ©)
- Nitrogylcerin (NitroBid ©, Trdidil©)
- Nitroprusside (Nipride ©)
- Norepinephrine (Levophed ©)
- Phenylephrine (Neo-Synephrine ©)
- Propofol (Diprivan ©)

BLOOD PRODUCTS

TYPES:

Whole blood, red blood cells (PRBCs), Fresh Frozen Plasma (FFP), Cryoprecipitate, Albumin.

THERAPEUTIC EFFECTS:

Restore circulating blood volume, improve oxygen-carrying needs, and/or correct specific coagulation components.

INDICATIONS:

- Significant hypovolemia from acute blood loss
- Symptomatic anemia
- Decreased hemoglobin level
- Decreased hematocrit value
- Increase oxygen-carrying ability
- Decreased clotting factors
- Pre-surgical care in select cases

COMPLICATIONS:

- Anaphylaxis
- Hemolytic reaction
- DIC
- Transfusion reactions
- Infection

SIGNS OF COMPLICATIONS/REACTIONS

- Increase in body temperature greater than 2°F
- Hives, itching, or skin symptoms
- Swelling, soreness or hematoma at IV site
- Flank Pain
- Tachycardia
- Respiratory distress
- Hypotension
- Bleeding from multiple sites or previously clotted wounds
- Blood in urine
- Anaphylaxis
- Nausea and vomiting

CareFlite Drug Formulary (Maintenance & Continuation Only)

DILTIAZEM
CARDIZEM ©

Usual Dose Rate

5 - 15 mg/hr

CLASS:

Calcium Channel Blocker, Anti-arrhythmic (Class IV), Antihypertensive, Antianginal

ACTIONS:

An antianginal, antihypertensive, and antiarrhythmic agent that inhibits calcium movement across cardiac and vascular smooth-muscle cell membranes. This actions causes the dilation of coronary arteries, peripheral arteries, and arterioles.

THERAPEUTIC EFFECTS:

Decreases blood pressure, decreases heart rate, and decreases myocardial contractility. Slows SA and AV conduction; decreased peripheral vascular resistance by vasodilation

INDICATIONS:

- Angina related to coronary artery spasm
- Chronic stable angina
- Essential Hypertension
- Temporary control of rapid ventricular rate in atrial fibrillation or flutter
- Rapid conversion of paroxysmal supraventricular tachycardia to normal sinus rhythm

SIDE EFFECTS:

- Dizziness, light-headedness, headache
- Pain
- Bradycardia, AV Block, Hypotension
- Asthenia (loss of strength, weakness)
- Dyspepsia, Nausea, Constipation
- Flushing
- ECG changes
- Injection site reactions (burning, itching)
- Overdose produces nausea/vomiting, somnolence, confusion, slurred speech, and profound bradycardia.

INTERACTIONS:

- β-blocker—may have additive effect
- α-blocker—increased hypotensive effect

CONTRAINDICATIONS:

- Acute myocardial infarction
- Pulmonary congestion
- Severe hypotension (<90 systolic)
- Sick sinus syndrome
- Second or Third Degree AV block (except in presence of pacemaker)
- IV administration within one hour of IV β-blockers
- Ventricular tachycardia
- Known hypersensitivity

PRECAUTIONS:

- Abrupt withdrawal may increase frequency or duration of angina

DOBUTAMINE

DOBUTREX ©

Usual Dose Rate

2—20 mcg/kg/min
(up to 40 mcg/kg/min)

CLASS:

Adrenergic agonist and inotrope

ACTIONS:

A direct acting inotropic agent acting primarily on β_1-adrenegic receptors. Therapeutic effect: decreases preload and afterload, and enhances myocardial contractility, stroke volume, and cardiac output. Improve renal blood flow and urine output indirectly.

INDICATIONS:

- Short-term management of cardiac decompensation

SIDE EFFECTS:

- Increased heart rate
- Increased blood pressure
- Ventricular ectopy
- Bronchospasm
- Pain at injection site, phlebitis
- Overdose may lead to marked increase in HR and BP, angina, PVC's, VF, VT
- May cause hypotension in some patients

INTERACTIONS:

- B-blockers: may antagonize the effects of dobutamine
- Digoxin: may increase the risk of arrhythmias but enhance the inotropic effect of both drugs
- MAOIs, oxytocics, tricyclic antidepressants: may increase the adverse effects of dobuta mine, such as arrhythmias and hypertension

CONTRAINDICATIONS:

- Idiopathic hypertrophic subaortic stenosis
- Sulfite sensitivity

PRECAUTIONS:

- Use with caution in patients with atrial fibrillation, aortic stenosis, hypovolemia, post-myocardial infarction, and hypertension.
- Hypotension should be corrected with volume expanders.
- It is unknown whether Dobutamine crosses the placenta or is distributed in breast milk; therefore, it is not administered in pregnant women
- No age-related precautions have been noted in children or in elderly patients
- Notify the physician of chest pain or palpitations during infusion or pain or burning at IV site
- Cardiac monitoring should be performed continuously to check for arrhythmias
- BP, HR, RR, and urine output should be checked before and during infusion

ESMOLOL
BREVIBLOC ©

Usual Dose Rate

50 - 300 mcg/kg/min

CLASS:

Antiadrenergic, β-blocker, Antiarrhythmic (Class II)

ACTIONS:

An antiarrhythmic that selectively blocks β1-adrenergic receptors.

THERAPEUTIC EFFECTS:

Slows sinus heart rate, decreases cardiac output, and reduces blood pressure

INDICATIONS:

- Arrhythmia
- Heart rate control in Abdominal Aortic Aneurysm (AAA)

SIDE EFFECTS:

- CNS stimulation, restlessness, apprehension
- Headache
- Seizure
- Wheezing, coughing, bronchospasm
- Bradycardia, tachycardia, PVCs, PACs
- Hypotension
- ST wave changes
- Chest pain

CONTRAINDICATIONS:

- Hypersensitivity
- Bradycardia
- 2° or 3° degree AV block
- Asthma

PRECAUTIONS:

- Use with caution in patients with cardiovascular disease, seizure disorder, hypertension, and diabetes.
- Short duration of action

NICARDIPINE HYDROCHLORIDE

CARDENE ©

Usual Dose Rate

5 - 15 mg/hr

CLASS:

Calcium Channel Blocker (dihydropyridine group), Antihpertensive, Antianginal

ACTIONS:

An antianginal and antihypertensive agent that inhibits calcium ion movement across cell membranes, depressing contraction of cardiac and vascular smooth muscle.

THERAPEUTIC ACTION:

Decreases systemic vascular resistance and BP
Moderately increases heart rate and cardiac output

INDICATIONS:

- Short-term treatment of hypertension when oral therapy is not feasible or desirable
- Chronic stable (effort associated) angina
- Essential hypertension

SIDE EFFECTS:

- Headache
- Facial flushing
- Peripheral edema
- Light-headedness
- Dizziness
- Syncope
- Asthenia (loss of strength, energy)
- Palpitations
- Angina/Myocardial Infarction
- Tachycardia
- Nausea, abdominal cramps, dry mouth
- Rash
- Overdose produces somnolence, confusion, slurred speech, marked hypotension and profound bradycardia or progressive AV Block.

CONTRAINDICATIONS:

- Atrial fibrillation or Atrial flutter
- Cardiogenic shock
- Congestive heart failure
- Second– or Third– degree block
- Severe hypotension
- Sinus bradycardia
- Ventricular tachycardia
- Advanced aoritic stenosis

PRECAUTIONS:

- Use with caution in patients with cardiomyopathy, edema, hepatic or renal impairment, severe left ventricular dysfunction, sick sinus syndrome, and in those concurrently receiving β-blockers or digoxin.

NITROGLYCERIN IV

NITROBID ©, TRDIDIL©

Usual Dose Rate

5 - 100 mcg/min
(call CareFlite Medical Control if > 100 mcg/min)

CLASS:

Antianginal, Vasodilator

ACTIONS:

Nitrates decrease myocardial oxygen demand, reduce left ventricular preload and afterload

THERAPEUTIC EFFECT:

Dilates coronary arteries and improves collateral blood flow to ischemic areas within the myocardium. IV form produces rapid vasodilation.

INDICATIONS:

- Acute relief of angina pectoris, acute prophylaxis
- Long-term prophylaxis of angina
- Congestive heart failure (CHF) associated with acute myocardial infarction (MI)

SIDE EFFECTS:

- Headache (possibly severe)
- Transient flushing of face and neck
- Dizziness (especially if patient is standing or is in warm environment)
- Weakness
- Orthostatic hypotension
- Syncope
- Nausea, Vomiting
- Sweating

CONTRAINDICATIONS:

- Allergic reaction to organic nitrates
- Pericardial tamponade
- Restrictive cardiomyopathy
- Constrictive pericarditis
- Increased intracranial pressure
- Where cardiac output is dependent on venous return
- Phosphodiesterase (PDE-5) inhibitors: Viagra, Cialis, Levitra

PRECAUTIONS:

- High doses of Nitroglycerin tend to produce severe headache
- Caution is warranted in patients with acute MI, blood volume depletion, glaucoma, hepatic or renal disease, or systolic BP < 90 mm HG.
- Elderly patients may be more susceptible to the hypotensive effects of Nitroglycerin

NITROPRUSSIDE
NIPRIDE ©

Average Dose Rate

3 mcg/kg/min
(0.5 - 10 mcg/kg/min)

CLASS:
Antihypertensive agent, vasodilator

ACTIONS:
A potent vasodilator used to treat emergent hypertensive conditions; acts directly on arterial and venous smooth muscle. Decreases peripheral vascular resistance, preload and afterload.

THERAPEUTIC ACTION:
Dilates coronary arteries, decreases oxygen consumption, and relieves persistent chest pain.

INDICATIONS:
- Immediate reduction of BP in hypertensive crisis
- To produce controlled hypotension in surgical procedures to reduce bleeding
- Treatment of acute congestive heart failure

SIDE EFFECTS:
- CNS stimulation, restlessness, apprehension, headache
- Increased intracranial pressure
- Flushing of skin
- Increased intracranial pressure
- Rash
- Pain or redness at injection site
- Too-rapid infusion reduces BP precipitously
- Nausea, vomiting, diaphoresis, apprehension, headache, restlessness, muscle twitching, blurred vision, dizziness, palpitations, retrosternal pain, and abdominal pain may occur. (Those s/s disappear rapidly if rate of administration is slowed or drug is discontinued.)
- Overdose produces: excess hypotension, metabolic acidosis, and cyanide toxicity (rare)

CONTRAINDICATIONS:
- Compensatory hypertension (atrioventricular shunt or coarctation of aorta)
- Inadequate cerebral circulation or in the presence of increased ICP
- Acute CHF with reduced PVR
- Pre-existing cyanide toxicity

PRECAUTIONS:
- Sodium nitroprusside gives rise to important quantities of cyanide ion, which can reach toxic, potentially lethal levels except when used briefly or at low (<2 mcg/kg/min) infusion rates
- Solution will be light brown in color. Protect solution by wrapping bag and tubing with Opaque material such as aluminum foil or foil-lined bag.

CareFlite Drug Formulary (Maintenance & Continuation Only)

NOREPINEPHRINE BITARTRATE
LEVOPHED ©

Usual Dose Rate

0.5 - 30 mcg/min

CLASS:

Adrenergic agonist, vasopressor, inotrope

ACTIONS:

A sympathomimetic that stimulates β1-adrenergic receptors and α-adrenergic receptors, increasing peripheral vascular resistance. Enhances contractile myocardial force, increase cardiac output. Constricts resistance and capacitance vessels.

THERAPEUTIC ACTION:

Increases systemic blood pressure and coronary blood flow.

INDICATIONS:

- Acute hypotension unresponsive to fluid volume replacement

SIDE EFFECTS:

- Anxiety
- Palpitations
- Nausea
- Angina
- Shortness of breath
- Fever
- Bradycardia, Tachycardia, VF, VT
- Hypertension
- Extravasation may produce tissue necrosis and sloughing
- Overdose produces: severe hypertension with violent headache (which may be the first clinical sign of overdose), arrhythmias, photophobia, retrosternal or pharyngeal pain,
- pallor, excessive sweating, and vomiting.

INTERACTIONS:

- β-blockers may have mutually inhibitory effects
- Digoxin may increase risk of arrhythmia
- Oxytocin, Ergonovine may increase vasoconstriction

CONTRAINDICATIONS:

- Hypovolemic states (unless as an emergency measure)
- Mesenteric or peripheral vascular thrombosis
- Profound hypoxia

PRECAUTIONS:

- Be alert to any complaint of headache. Plan to maintain a BP of 80-100 mm/Hg in previously normotensive patients. Reduce infusion gradually, as prescribed. Avoid abrupt withdrawal.
- If IV solution infiltrates, notify accepting physician for Phentolamine injection into extravasation area.

CareFlite Drug Formulary (Maintenance & Continuation Only)

PHENLYEPHRINE
NEO-SYNEPHRINE ©

Usual Dose Rate

40 - 60 mcg/min

CLASS:

Vasopressor, decongestant, α-adrenergic agonist, sympathomimetic

ACTIONS:

Pheylephrine is a powerful postsynaptic α-receptor stimulant that acts on the α-adrenergic receptors of vascular smooth muscle, with little effect on β-receptors of the heart, lacking chronotropic and inotropic actions on the heart. Causes vasoconstriction of arterioles of nasal mucosa or conjunctiva, activates dilator muscles of pupil to cause contraction, and produces systemic arterial vasoconstriction.

THERAPEUTIC ACTION:

Vasoconstriction, increases stroke output, increases blood pressure, decreases mucosal blood flow and relieves congestion, and increases systolic BP.

INDICATIONS:

- Mild to moderate hypotension
- Severe hypotension or shock
- Hypotensive emergencies during spinal anesthesia
- Prolongation of spinal anesthesia
- Paroxysmal Supraventricular Tachycardia (PSVT)

SIDE EFFECTS:

- Central Nervous System stimulation (restlessness, nervousness, tremors, insomnia)
- Headache
- Reflex bradycardia
- Arrhythmias
- Overdose may induce ventricular ectopy, hypertension, and tingling in extremities

INTERACTIONS:

- β-blockers may risk of bradycardia with systemic absorption
- MAO Inhibitors potentiate vasopressor and adrenergic effects
- Tricyclic Antidepressant increases risk of dysrhythmias and hypertension

CONTRAINDICATIONS:

- Should be not used in patients with severe hypertension, V-tach, V-fib, AMI, A-fib, A-flutter Cardiac arrhythmias, cardiac disease, cardiomyopathy, closed angle glaucoma, coronary artery disease, women who are in labor, during obstetric delivery, or in patients who have a known hypersensitivity to phenylephrine, sulfites, or to any one of its components.

PRECAUTIONS:

- Be alert to any complaint of headache. Plan to maintain a BP of 80-100 mm/Hg in previously normotensive patients. Reduce infusion gradually, as prescribed. Avoid abrupt withdrawal.
- Be alert for extravasation as peripheral vasoconstriction, limb ischemia and limb gangrene could result; if IV solution infiltrates, notify accepting physician for Phentolamine injection into extravasation area.

CareFlite Drug Formulary (Maintenance & Continuation Only)

PROPOFOL
DIPRIVAN ©

Usual Dose Rate

5 - 50 mcg/kg/min
(max dose 100 mcg unless directed by Medical Control)

CLASS:
General Anesthetic

ACTIONS:
A rapidly acting general anesthetic with short half-life.

THERAPEUTIC EFFECTS:
Inhibits sympathetic vasoconstrictor nerve activity and decreases vascular resistance. Produces hypnosis rapidly.

INDICATIONS:
- Intensive Care Sedation
- Anesthesia

SIDE EFFECTS:
- Apnea (common during induction; lasts longer than 60 seconds)
- Involuntary muscle movements, twitching, bucking, jerking, thrashing
- Hypotension
- Nausea, Vomiting
- IV site burning or stinging or phlebitis
- Headache, Dizziness, Facial Flushing
- Fever
- Abdominal Cramps
- Paresthesia
- Coldness
- Cough, Hiccups
- Greenish-colored urine

SERIOUS REACTIONS
- Propofol Infusion Syndrome
  (associated with high-dose infusions: severe metabolic acidosis, hyperkalemia, lipemia, rhabdomyolysis, hepatomegaly, cardiac and renal failure)
- Acute Allergic Reaction
- Decreased Intracranial Pressure / Blood Pressure (associated with too-rapid infusion)

CONTRAINDICATIONS:
- Known hypersensitivity to Propofol emulsion or any of its components, including eggs, egg products, soybeans, or soy products.

PRECAUTIONS:
- Use with caution in patients with circulatory, hepatic, lipid metabolism, renal, or respiratory disorder, history of pancreatitis, history of epilepsy, and in debilitated patients. Propofol crosses the placenta and is not recommended for obstetric use. Propofol is distributed in breast milk and is not recommended for breastfeeding women. The safety and efficacy of Propofol have not been established in children, however, the FDA has approved for use in children > 3 years old. Lower Propofol dosages are recommended for elderly patients.