EAST BATON ROUGE PARISH
Department of
EMERGENCY MEDICAL SERVICES

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Standing Order Clinical Guidelines

Revised 2024.03.25

COMMISSION ON ACCREDITATION OF AMBULANCE SERVICES
CAAS
ACCREDITED

American Heart Association.
2022
Mission: Lifeline®
GOLD PLUS
EMS

MEDICAL DIRECTOR GUIDELINE APPROVAL

Department of Emergency Medical Services

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Parish of East Baton Rouge

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Michael Denicola
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Medical Director Guideline Approval

The clinical treatment guidelines contained in this document are approved for use effective March 25, 2024 by Dr. Dan Godbee, M.D., the Medical Director for East Baton Rouge Emergency Medical Services.

Signed: Dan Godbee Date: 22 March 2024

Interim Updates

Each revision listed below was individually approved by Dr. Dan Godbee, M.D., with approval signatures on file outside the normal quarterly updates:

- Remove – Dopamine
- Remove – Etomidate
- Chemical Sedation Guideline – Reducing Midazolam to 2.5mg IV/IO/IM for RASS +2 and RASS +3

Cc: Otha Schamburg, Training Director

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PREFACE

The following pages are to serve as a guideline to all EMS clinicians (EMTs, advanced EMTs and Paramedics), for the treatment of patients in the out-of-hospital setting, within the boundaries of East Baton Rouge Parish. As a guide, this manual will serve as a common point of reference between an EMS clinician and a physician acting as medical control. The EMS clinician is expected to possess and practice sound clinical judgment, excellent critical thinking skills, an ethical and a professional demeanor, at all times.

These guidelines are to be used by all levels of certification. However, at no time do these guidelines give any healthcare practitioner permission to perform skills or administer medications outside the scope of practice for their designated provider level. East Baton Rouge Parish EMS has adopted the Louisiana Scope of Practice for licensed EMS practitioners. The Louisiana EMS Scope of Practice Matrix is provided in the Reference section of this Guideline.

The medical treatments contained in this document are based on current evidenced based medicine including the current National EMS Education Standards. Materials utilized to supplement the Education Standards include but are not limited to the American Heart Association, Emergency Cardiac Care Guidelines, the National Association of EMT's (NAEMT) Advanced Prehospital Trauma Life Support, the current national pediatric curriculum, and the NAEMT Advanced Medical Life Support.

The patient care guidelines in this manual have been approved by the Capital Area Medical Society. It is possible and often occurs where a patient will present in such a manner as to require treatment under one or more guideline(s) simultaneously. The EMS clinician will therefore utilize all standing orders, in their entirety, as long as the patient's condition meets the criteria under which those orders were indicated. The EMS clinician will also contact medical control after completing the standing orders, as long as the condition still exists. Certain medications (i.e., pain medications) should be titrated to the patient's response as different patients have different thresholds to certain medications. Treatment for critical patients should be initiated on scene unless there is a situation that proves hazardous to the patient or EMS clinician.

If the presenting condition is alleviated by the clinician's care, the clinician may at his/her discretion discontinue the standing order guideline. The clinician should document this fact clearly on the department EHR. The clinician will follow any order directed by a medical control physician, as long as the order is within the lawful scope of practice for the clinician and whether or not the order is delineated as a technique in this manual. These deviations will be recorded on the Clinical Guidelines Deviation Report and routed to the Medical Director for review. The clinician should not routinely contact a medical control physician to request any alterations to the treatments and techniques outlined in this manual. However, if a situation arises that is not covered by a guideline in this manual, the clinician should contact medical control for advice, if needed, and offer suggestions based on the tools available to them; and/or document the situation thoroughly on the EHR. Novel treatments or techniques should be presented to the Clinical Guidelines Committee chairperson for consideration in future updates.

The official Guidelines are only available on ESO, the EMS homepage (intranet), the BRLA.gov website, the PPP app, and on Handtevy. These locations will have the most current version available. Any copies that are printed or saved are not official copies.

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Goals

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Adult Medications

E	**Adult** Medication	Adult medication that can be administered by an EMT
A	**Adult** Medication	Adult medication that can be administered by an Advanced EMT
P	**Adult** Medication	Adult medication that can be administered by a Paramedic

Pediatric Medication

E	**Pediatric** Medication	Pediatric medication that can be administered by an EMT
A	**Pediatric** Medication	Pediatric medication that can be administered by an Advanced EMT
P	**Pediatric** Medication	Pediatric medication that can be administered by a Paramedic

Standing Order Procedures

E	Procedure	Procedure that can be performed by an EMT
A	Procedure	Procedure that can be performed by an Advanced EMT
P	Procedure	Procedure that can be performed by a Paramedic

Med Control Procedures

E	Procedure	Procedure that can be performed by an EMT with Med Control approval
A	Procedure	Procedure that can be performed by an Advanced EMT with Med Control approval
P	Procedure	Procedure that can be performed by an Paramedic with Med Control approval

CT Capable ED
(new onset seizures)

Directive Node

Assessment Tools:

GoTo Node

Callout — Additional Guidance

! Important consideration

Decision Node

And/Or — Multiple Options

Pearls:

- Important points to consider

LEGEND

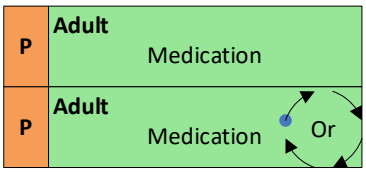
Definition

GOALS

Goals

Information Box

Provider Discretion between multiple medications



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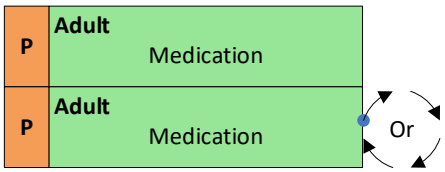
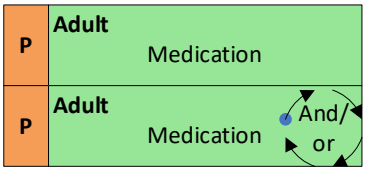


Provider Discretion between multiple medications



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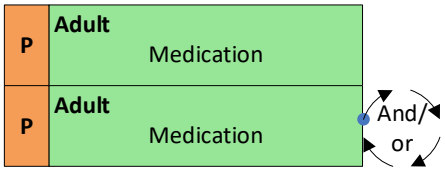

Pearls:

- Important points to consider

INITIAL PATIENT ASSESSMENT

I. Scene Size-up

A. Review dispatch information
B. Assess need for BSI
C. Assess scene safety
D. Determine mechanism of injury/illness
E. Determine number and location of patients
F. Determine need for additional resources

II. Initial Assessment

A. General impression of patient
B. Assess AVPU
C. Assess C-circulation (pulse, major bleeding, skin color, capillary refill)
D. Assess A-airway
E. Assess B-breathing (mechanical "ventilation" and gaseous "respiration")
F. Assess D-disability (Stroke/Neurological assessment as needed)
G. Expose/Examine/Exposures (Rapid assessment of head, neck, chest/back, abdomen, pelvis, extremities & prevent hypothermia as needed)
H. Identify priority patients (rapid scene time and transport)

III. Initial Management

A. Adult Medical Care
B. Adult Trauma Care
    1. Trauma Score
    2. GCS
C. Pediatric Medical Care
D. Pediatric Trauma Care
    1. Trauma Score
    2. GCS

IV. Secondary Assessment

A. Medical Assessment
        1. Detailed Exam - when chief complaint or presenting problem cant be established
        2. Focused Exam - when chief complaint or presenting problem can be established
B. Trauma Assessment
    1. Detailed Exam - when chief complaint or presenting problem cant be established
    2. Focused Exam - when chief complaint or presenting problem can be established
C. Assess vital signs
    1. Respirations
    2. Pulse
    3. Blood pressure
    4. Capillary refill time
    5. Skin condition (color, temperature, moisture)
    6. Lung sounds

D. Obtain medical history (SAMPLE)
   1. S-symptoms (OPQRST)
      a. O-onset
      b. P-provocation/palliation
      c. Q-quality
      d. R-radiation, referred
      e. S-severity
      f. T-time
   2. A-allergies
   3. M-medications
   4. P-past medical history (pertinent)
   5. L-last oral intake
   6. E-events leading to illness or injury

V. Other assessment techniques

A. ECG monitoring (ZOLL)
B. Continuous 12-lead monitoring and analysis (ZOLL)
C. SpO2 monitoring (ZOLL)
D. Capillary Blood Glucose
E. Temperature monitoring (ZOLL)
F. $EtCO_2$ (ZOLL)
G. $SpCO_2$ monitoring (ZOLL)
H. Non-Invasive Blood Pressure monitoring (ZOLL)
I. CPR monitoring (ZOLL)
J. Respiration monitoring (ZOLL)

ADULT ROUTINE MEDICAL CARE

1. Complete "Initial Patient Assessment"
2. Universal Patient Care/Initial patient contact guideline
    a. Obtain and document vital signs (minimum of 2 on all patient encounters)
    b. To include at a minimum
        i. BP
        ii. Pulse rate and quality
        iii. Respiratory rate and quality
        iv. Pain scale
        v. GCS

        to include as appropriate
        vi. SpO_2
        vii. $EtCO_2$
        viii. CBG
        ix. Temperature
        x. Capillary refill time
        xi. Skin condition
3. Other assessment techniques "Initial Patient Assessment"
4. ECG as indicated, 12-Lead on all suspected AMI and any patient >35 y/o with CAD risk factors
5. Vascular access:
    a. By standing order
    b. At the discretion of the EMS clinician
    c. A saline lock or an infusion
    d. IO in place of IV per "EZIO™ Procedure"
    e. Infusions are recommended in cardiac arrests or any situation that could potentially require a fluid resuscitation (i.e. trauma, shock, OB)
6. Medications are administered by the most appropriate route, but can be administered by any route listed "for that medication, "in the formulary as the patient's situation may dictate. The use of an alternate route is by standing order
    a. All patients receiving medications will be monitored. In addition to clinical monitoring, you may use any tools appropriate for monitoring, e.g. ECG, NIBP, SPO2, ETCO2.
    b. Medication will be administered by the clinician preparing the dosage to be given
    c. The clinician will verify that the patient is receiving the right medication, at the right time, via the right route and in the correct dose
7. While treating under a standing order guideline, if the prevailing condition resolves, it is not necessary to contact medical control to discontinue treatments as long as cessation of the condition is well documented.
8. While treating under a standing order guideline, if the prevailing condition does not resolve after all "standing orders" have been accomplished, contact medical control for advice or additional orders
9. All patients are to be transported to the hospital of their choice unless their condition warrants the nearest and/or more appropriate medical facility. LERN shall determine destinations on all Trauma and Stroke patients that meet LERN entry criteria. LERN should also be informed of all STEMI alerts if time permits.
10. An EHR will be completed at the conclusion of each patient encounter when a medical evaluation for any illness or injury was performed.
11. Consider abuse/neglect in any case of unexplained or suspicious trauma.
12. It is the clinician's legal responsibility to report suspected abuse or neglect to a protective service.
13. All policies and procedures outlined in the Operations Policy and Procedure Manual apply to all Clinical Guidelines.

Pediatric Routine Medical Care

1. Complete "Initial Patient Assessment"
2. Pediatric guidelines will be applied to all patients 13years of age or younger, or less than 60kg. However, signs of puberty and the size and weight of the patient must be taken into consideration when determining whether to use "adult" or "pediatric" treatment schemes
3. A length-based resuscitation tape or pediatric resuscitation system will be utilized to determine equipment size, medication doses, and weight estimates on pediatric patients (Broselow, Handtevy).
4. Universal Patient Care/Initial patient contact guideline
    a. Obtain and document vital signs (minimum of 2 on all patient encounters)
    b. To include at a minimum
        i. BP
        ii. Pulse rate and quality
        iii. Respiratory rate and quality
        iv. Pain scale
        v. GCS
    c. Also to include as appropriate
        i. SpO_2
        ii. $EtCO_2$
        iii. CBG
        iv. Temperature
        v. Capillary refill time
        vi. Skin condition
5. ECG as indicated
6. Vascular access:
    a. By standing order
    b. At the discretion of the EMS clinician
    c. A saline lock or an infusion
    d. Fluid boluses are 10 ml/kg for 0-1 months, and 20 ml/kg for 1 month and older
    e. IO in place of IV per "EZIO™ Procedure"
    f. Infusions are recommended in cardiac arrests or any situation that could potentially require a fluid resuscitation (i.e. trauma, shock)
7. Medications are administered by the most appropriate route but can be administered by any route listed "for that medication, "in the formulary as the patient's situation may dictate. The use of an alternate route is by standing order
    a. All patients receiving medications will be monitored. In addition to clinical monitoring, you may use any tools appropriate for monitoring, e.g. ECG, NIBP, SPO2, ETCO2.
    b. Medication will be administered by the clinician preparing the dosage to be given
    c. The clinician will verify that the patient is receiving the right medication, at the right time, via the right route and in the correct dose
8. While treating under a standing order guideline, if the prevailing condition resolves, it is not necessary to contact medical control to discontinue treatments as long as cessation of the condition is well documented.
9. While treating under a standing order guideline, if the prevailing condition does not resolve after all "standing orders" have been accomplished, contact medical control for advice or additional orders
10. All patients are to be transported to the hospital of their choice unless their condition warrants the nearest and/or more appropriate medical facility. LERN shall determine destinations on all Trauma and Stroke patients that meet LERN entry criteria. LERN should also be informed of all STEMI alerts if time permits.
11. An EHR will be completed at the conclusion of each patient encounter when a medical evaluation for any illness or injury was performed.
12. Consider abuse/neglect in any case of unexplained or suspicious trauma.
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14. All policies and procedures outlined in the Operations Policy and Procedure Manual apply to all Clinical Guidelines.

UNIVERSAL PATIENT CARE/INITIAL PATIENT CONTACT

This guideline is intended for ANY patient encounter where an assessment is performed. This guideline serves as a definitive approach encompassing various assessment tools and observations the medical clinician may use to provide treatment. Assessment tools are grouped into two Tiers. Tier one is a baseline, mandatory acquisition on all patient encounters. Tier two is an expanded group of assessment tools the clinician may use as clinically indicated dependent upon patient presentation, condition, or procedures/treatments rendered. These two tier groups define a patient's "vital sign". A Minimum (2) sets of Tier One Vital Signs are to be obtained on every patient encounter*

* Extenuating circumstance where (2) sets of V.S. are unable to be obtained may include: patient walk-off/refusal of care, MCI, and/or certain safety situations.

GOALS

- Scene size-up and determine need for additional resources
- Initial Patient Assessment to identify any compromise to airway, breathing, circulation
- Ongoing Patient Assessment to identify overall provider impression

Universal Assessment:

Scene size up: Evaluate for Hazards/precautions, Mass Casualty, Additional resources, Equipment required/needed.
Primary assessment: Evaluate General impression, Airway, Breathing, Circulation, Disability, Exposure and address threats to life
Secondary Medical assessment: History of present illness, Chief Complaint, Focused Exam versus Detailed Exam
Secondary Trauma assessment: Mechanism of Injury, Chief complaint, Focused Exam versus Detailed Exam

TIER ONE Assessment Tools:

AVPU scale	Respiratory Rate & Quality
Blood Pressure	GCS
Heart Rate/Pulse Rate	Pain Scale

TIER TWO Assessment Tools:

GCS indications: Any patient presenting with altered mental status, neurological insult, high index trauma requiring trauma center activation.
SPO2 indications: Patients presenting with hypoxia and/or hypercapnia in any form, patients suspected of presenting with hypoxia and/or hypercapnia in any form, any patient receiving respiratory drive altering medications, any patient receiving advanced airway interventions and/or requiring ventilation, and high index trauma requiring trauma center activation.
$EtCO_2$ indications: The same indications as SPO2 and/or, patients with acid/base disruptions, patients with circulation and/or metabolic disruptions.
CBG indications: Any patient that presents (or did present) with altered mental status, suspected stroke, shock, dizziness, syncope, near syncope, seizure, weakness leading up to 911 activation, or who is unresponsive. Known diabetic patients with a "diabetic complication complaint".
Temperature indications: Any patient exposed to environmental excessive heat/cold, R.O.S.C. achieved with targeted temperature management, burn patients, multi-systems trauma patients, suspicion of infection, excited delirium presentation, overdose patients, patients receiving paralysis/sedation induction agents, altered mental status, seizure.
CO indications: Patient with CO poisoning presentation/suspicion.
EKG 3 lead indications: Patients with a respiratory and/or possible cardiac complaint/presentation; typical, atypical, or contributing factors. Patients receiving medications that may have cardiovascular effects. Electrical insults (lightning strikes, electricity contact)
EKG 12 lead indications: Patients with a respiratory and/or possible cardiac complaint/presentation; typical, atypical, or contributing factors. Patient receiving medications known to cause cardiovascular effects. EVERY PATIENT THAT ACHIEVES R.O.S.C.
Revised Trauma Score indication: Any ADULT patient with high indexed trauma, requiring trauma center activation.
Pediatric Trauma Score indication: Any PEDIATRIC patient high indexed trauma, requiring trauma center activation.
Orthostatic BP/HR indication: Any patient suspicious of dehydration/hypovolemia.

VASCULAR ACCESS

A procedure to establish a portal of entry into the patient's vascular space. Vascular access indications include medication administration, volume replacement, or the anticipation that any of the before mentioned may become indicated. Vascular access sites may be initiated at the discretion of the clinician for any patient via Standing Order. Vascular access sites may be accompanied by either a Saline Lock or an infusion-maintained at a "KVO" rate. Acceptable vascular sites include extremity/ peripheral, intraosseous, and external jugular.

	Access Site Guidelines
A	**Extremity** - Any patient where vascular access is indicated. **Intraosseous** - Recommended for use on adult and pediatric patients any time vascular access is difficult to obtain in emergent, urgent or medically necessary situations - Lidocaine should be given as an anesthetic in patients as needed. Follow EZ-IO guideline recommendations
P	**External Jugular** - Critically ill patients who require rapid vascular access for fluid resuscitation or medication administration into central circulation or in whom an extremity site is unavailable, or site is non-suitable for correct bore size. - Any life threatening events where no obvious and/or adequate peripheral access site is available.

Pearls:

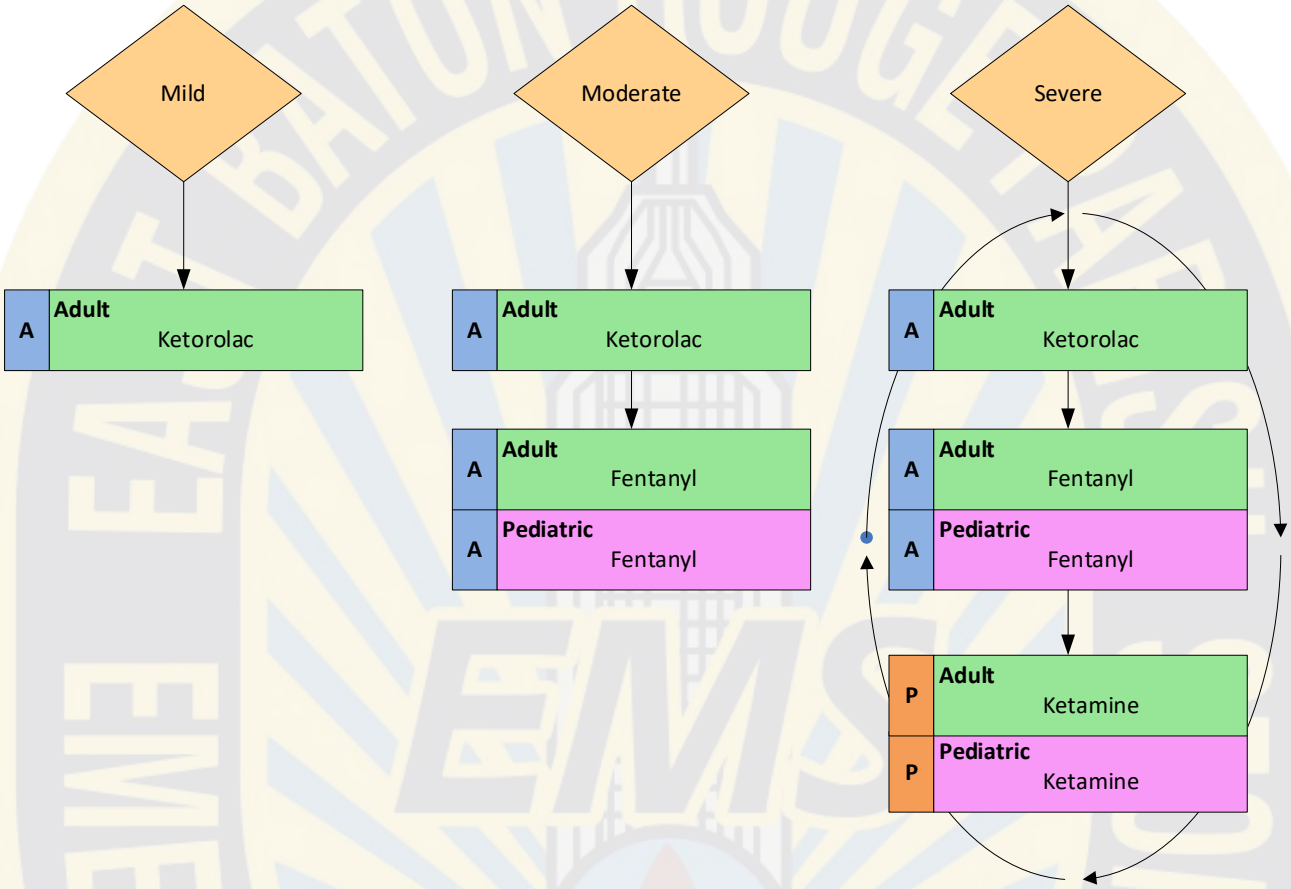
- The clinician must exhibit sound clinical judgment regarding access site with respect to patient pre-existing conditions. Some examples include but are not limited to: dialysis shunt, orthopedic surgeries, age of patient, cancers, etc.

PAIN MANAGEMENT

The process of medical care that alleviates or reduces all levels of pain

GOALS

- Reduction and Control of pain to an acceptable level
- Identify and address the pain source
- Treat non-invasively and invasively as MUCH as needed



Pearls:

PROVIDER MUST EXERCISE SOUND CLINICAL JUDGEMENT

- Ketorolac normally works best for "inflammatory" type pain
- Fentanyl is a great "dosing/titration" opioid for generalized complaints
- Ketamine should be reserved for patients that are **hemodynamically unstable** with major trauma (amputations, severe burns, impaling injuries)
- IN routes may be preferred route in children.
- Non-pharmacological methods of treating pain include: position of comfort, splinting, padding, ice, compression, elevation, distraction, etc.

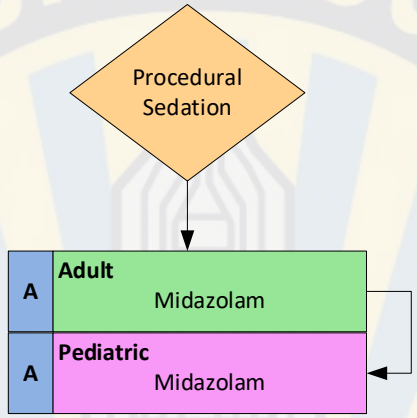
This guideline is a RELATIVE guideline allowing increase of provider response for patient care.

PROCEDURAL SEDATION

Procedural sedation may be necessary to reduce anxiety and discomfort during certain procedures such as Transcutaneous Pacing, Synchronized Cardioversion, Extrication, Splinting Fractures, etc.

GOALS

- Reduce/prevent procedure induced anxiety/discomfort.
- Appropriately sedate patient without compromising hemodynamic stability.
- Maintain independent ventilatory function and patent airway.



Pearls:

- Continuous assessment of patient's respiratory and perfusion status should be performed.
- If patients are hemodynamically compromised, exercise caution before administering medications that can suppress the central nervous system.
- When using Midazolam, the patient should be arousable. Avoid deep sedation.

EMS Explorers

Current members of the East Baton Rouge Emergency Medical Services Explorers Post who are credentialed at the EMR level are allowed to perform the following procedures at the direction of an EMS staff member credentialed at the EMT level or higher.

Airway

Airways: Nasal, Oral
Airway Maneuvers: Head Tilt-Chin Lift, Jaw Thrust
Airway Obstruction: Manual Dislodgement Techniques
Bag Valve Mask
Oxygen Therapy: Nasal Cannula, Non-Rebreather Mask
Pulse Oximetry
Suctioning: Upper Airway

Bleeding

Hemorrhage Control: Direct Pressure, Tourniquet, Wound Packing

Resuscitation

Cardiopulmonary Resuscitation (CPR)
Mechanical Cardiopulmonary Resuscitation (CPR) **

Splinting, Spinal Motion Restriction

Cervical Collar
Manual Cervical Stabilization
Extremity Stabilization – Manual
Extremity Splinting
Emergency Moves for Endangered Patients

Medication Administration

Oral Aspirin for Chest Pain of Suspected Ischemic Origin
Oral Glucose for Suspected Hypoglycemia

Miscellaneous

Assisted Delivery (Childbirth)
Blood Pressure: Automatedl
Blood Pressure: Manual
Blood Glucose Monitoring **
Eye Irrigation

****Must have documented training, every two years, on file with the Training Division**

Pearls:

- Consider an Explorer's previous experience, aptitude, and maturity when delegating care

BASIC LIFE SUPPORT EXCLUSION CRITERIA

An EMT cannot function as the sole patient care provider during patient transport or author a non-transport ePCR with the presence of a Paramedic or Advanced EMT assigned to the same EMS unit or EMS scene for the following:

Crashing patient
- Provider impression of extremis, including new onset altered mental status, airway issues, severe respiratory distress/ failure, signs and/or symptoms of shock/poor perfusion, or imminent cardiac or respiratory arrest

Airway
- Current or anticipated need for airway management

Breathing
- Respiratory failure or distress (RR < 10 or > 24)
- Hypoxia (SPO2 <90%) despite NRB (or higher)

Circulation
- Cardiac chest pain or anginal equivalent
- ECG with ischemia or infarct
- ECG with new or concerning dysrhythmia
- Current or anticipated need for IV fluids, vasopressors, or other IV medication
- Unstable bradycardia/tachycardia
- Hypotension (SBP < 90)

Disability
- Acute changes in mental status (GCS < 14)
- Positive stroke screen (or new neurologic deficit)
- Seizure not returned to baseline or multiple seizures
- Syncope
- Acute Agitation
- Severe intoxication/overdose

Everything Else
- Significant injuries or high mechanism trauma
- Hypoglycemia with AMS
- Hyperglycemia with AMS
- Pediatric patients with high-risk complaints or complex medical history
- EMT provider clinical concern
- ALS procedure performed (not including 12 Lead ECG interpretation)
- ALS medication administered

AIRWAY/OXYGENATION

This guideline is intended for ANY patient encounter whereas clinical signs and symptoms have supported the use of oxygen carrying applicators. Each oxygen applicator indication is based upon the type of hypoxia needing to be corrected (hypoxic, hypemic, histotoxic, stagnant) and/or hypercapnia. Furthermore, should the patient condition present and/or worsen, warranting airway stabilization, this guideline outlines various adjuncts available to support and/or maintain a patent airway. The airway adjuncts may be utilized by the trained clinician at his/her skill level based upon patient presentation, condition, or procedures/ treatment rendered via standing order.

Nasal Cannula Indication: Mild to moderate hypoxia correction applicator at flow rates of 2-6 lpm. Pre-intubation oxygenation using an apneic oxygenation technique at a flow rate of 15 lpm or higher; used in conjunction with another oxygen carrying applicator in the pre-oxygenation phase of elected intubations.
Nebulizer Indication: Mild to moderate hypercapnia correction applicator at flow rates of 6-8 lpm used to deliver bronchodilator and anti-cholinergic medications.
Non-Rebreather mask indication: Moderate to severe hypoxia correction applicator at flow rates of 10-15 lpm. Used in conjunction with a nasal cannula in the pre-oxygenation phase of elected intubations.
CPAP/Bi-Level indication: Moderate to severe hypoxia correction applicator at rates of 5-10 cmH_2O. Enables airway splinting to correct hypercapnia at low rate pressures. At higher pressures, physiologic changes occur at the cellular and end organ level within the pulmonary/ cardiovascular system resulting in increased surface area tension of the lungs, decreased preload to the heart due to intrathoracic pressure increase, and improved diffusion through a liquid median. Can be used in conjunction with a nasal cannula
Bag valve mask indication: Severe hypoxia, Respiratory arrest/failure, device used for positive pressure ventilation and the pre-oxygenation phase prior to advanced airway placement, may be used in conjunction with a nasal cannula

Head Tilt Chin Lift: A manual and simple technique for opening an airway in the medical patient.
Modified Jaw Thrust: A manual and simple technique for opening an airway in the trauma patient. Can cause fatigue for the clinician during long durations of application.
Nasopharyngeal Airway: A basic life support adjunct introduced nasally to displace and prevent the tongue from resting on the back of oropharynx.
Oropharyngeal Airway: A basic life support adjunct introduced via mouth to displace the tongue up and away from tracheal opening.
Supraglottic Airway: An advanced airway that is blindly introduced through the oropharynx passageway resting in the supraglottic space allowing ventilation to the trachea.
Nasotracheal Intubation: An advanced airway that is introduced nasally into the trachea in instances where orotracheal intubation is not possible.
Orotracheal Intubation: An advanced airway introduced via oropharynx passageway into the trachea.
Surgical Cricothyroidotomy: An advanced airway introduced via cricothyroid membrane incision and placement of an endotracheal tube.

Pearls:
Hypoxic Hypoxia- Failure of oxygen molecules from the atmosphere to diffuse in the lungs from alveoli to arterial blood. Think: CHF.
Hypemic Hypoxia- The capacity of blood to carry oxygen is reduced. Think: anemia, blood loss and CO poisoning.
Histotoxic Hypoxia- A failure of oxygen cellular delivery and/or exchange. Think: cyanide poisoning.
Stagnant Hypoxia- A failure of adequate blood circulation. Think: various forms of shock and increasing intrathoracic pressure.

Oxygenation: Oxygen is considered a drug for medical use. Hyperoxia is debated regarding its effects. Oxygen is proven to increase blood pressure by increasing total peripheral vascular resistance due to systemic peripheral vasoconstriction. It is also reported to decrease intracranial pressure. This improves brain oxidative metabolism in severe head injury patients. However, because of the systemic immune response, ischemic changes may occur regarding reperfusion mechanisms. Thus, because of the disparity with oxygen clinical indications, delivery methods, and body system changes, clinicians should strive for a SPO2 of between 94-99% with exception to Stroke/TIA, ACS, and patients with a lung disease history.

CRASH AIRWAY

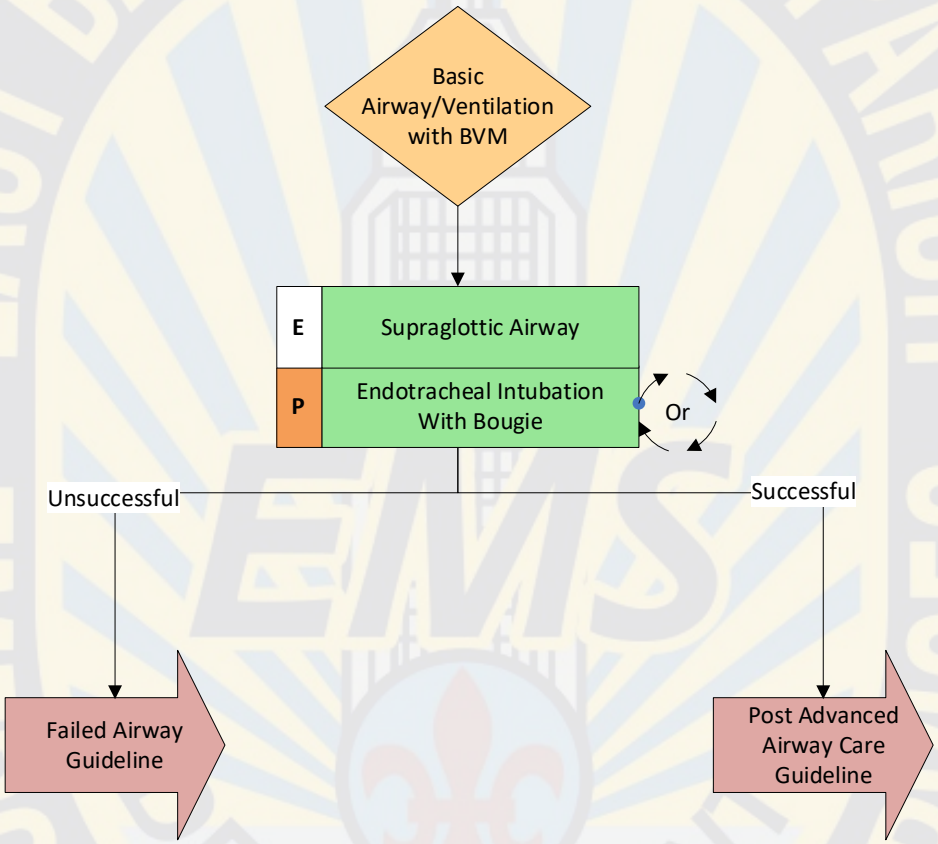
Unresponsive; Unreactive; Near-Death

GOALS

- Provide positive pressure ventilation.
- Secure and protect airway from aspiration.
- Ensure adequate oxygenation to maintain SpO2 above 90%.

Crash Airway Criteria:

- Inability to maintain airway patency.
- Inability to protect airway against aspiration.
- Failure to oxygenate/ventilate.



Pearls:

- If first attempt at endotracheal intubation is unsuccessful, proceed to Failed Airway Guideline.
- If patient is unable to be intubated due to airway reflexes, trismus, combativeness, etc., go to Delayed Sequence Intubation Guideline.
- Maintain *apneic oxygenation* with high flow nasal cannula until airway/ventilation can be established.

DELAYED SEQUENCE INTUBATION

Delayed Sequence Intubation is the use of pharmacologic agents to facilitate endotracheal intubation in patients where intubation may be difficult or impossible. This includes patients that are combative, have intact airway reflexes or other unfavorable conditions.

GOALS

- Preparation
- Pre-Oxygenation
- Paralysis with induction
- Placement with Proof
- Protection with positioning
- Post advanced airway management

- Increase Safe Apnea Time
  - -Pre-Oxygenate 5 min
  - -Apneic Oxygenation
- Premedicate PRN
- Fluid Resuscitation and Vasopressor PRN for Hemodynamic Instability

Pre-Medications
Not for Routine Use:

- Fentanyl for pain
- Lidocaine to blunt raising ICP
- Atropine to prevent bradycardia in children

Consider
Pre-Mixing Push-Dose Epinephrine for resuscitation prior to DSI and for transient hypotension / bradycardia encountered during DSI

E Pre / Apneic Oxygenation

P **Adult** Ketamine

P **Pediatric** Ketamine

E Pre / Apneic Oxygenation

Intubation may be achievable prior to paralytic administration

!!! 2 Advanced Airway Clinicians must be present at patient side **and** in agreement before using Neuromuscular Blockades !!!

P **Adult** Rocuronium

P **Pediatric** Rocuronium

P Endotracheal Intubation With Bougie

One Attempt

Success?

Yes → Post Advanced Airway Care Guideline

No → Failed Airway Guidline

Pearls:

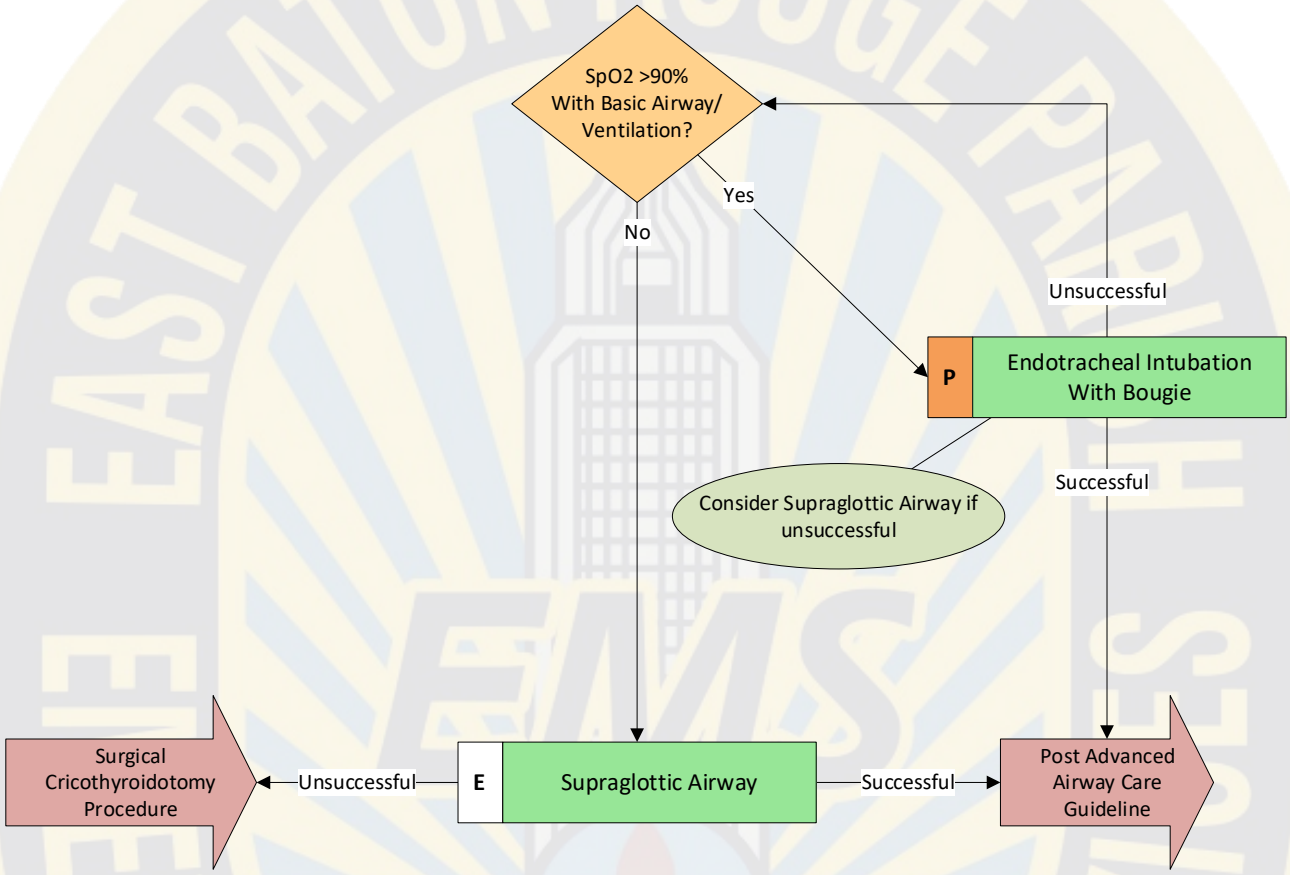
- **PROVIDER MUST EXERCISE SOUND CLINICAL JUDGEMENT**
- All advanced airway providers (minimum of two) must be in agreement with DSI ("Two to Fly with DSI")
- The use of neuromuscular blockers requires 2 advanced airway clinicians to be present before administration. Each clinician must be capable of performing endotracheal intubation, cricothyrotomy, and administration of IV medications.
- Not indicated for "crash" airway scenarios (unconscious, unreactive, near-death).
- Not all patients that have indications for this guideline are necessarily candidates.
- If the patient desaturates to <94% during the intubation attempt, stop and re oxygenate the patient to a Spo2 >97%. If the patient continues to desaturate, stop the attempt and proceed to failed airway guideline.

FAILED AIRWAY

Can't intubate. Can't oxygenate. Can't ventilate

GOALS

- Provide positive pressure ventilation.
- Secure and protect airway from aspiration.
- Ensure adequate oxygenation to maintain SpO2 above 90%.



Pearls:

- In some situations, the provider may elect to bypass certain airways when clinical presentation excludes their use. The provider may elect to go straight to a surgical cricothyroidotomy when clinical presentation dictates and when endotracheal intubation and supraglottic airway placement would most likely prove ineffective.
- It is also acceptable to maintain oxygenation/ventilation with basic airway equipment and bag valve mask if deemed effective.
- It is also acceptable to pause the algorithm if the patient's SpO2 is improving and restart it as needed.
- Maintain apneic oxygenation with high-flow nasal cannula until airway can be established.

POST ADVANCED AIRWAY CARE

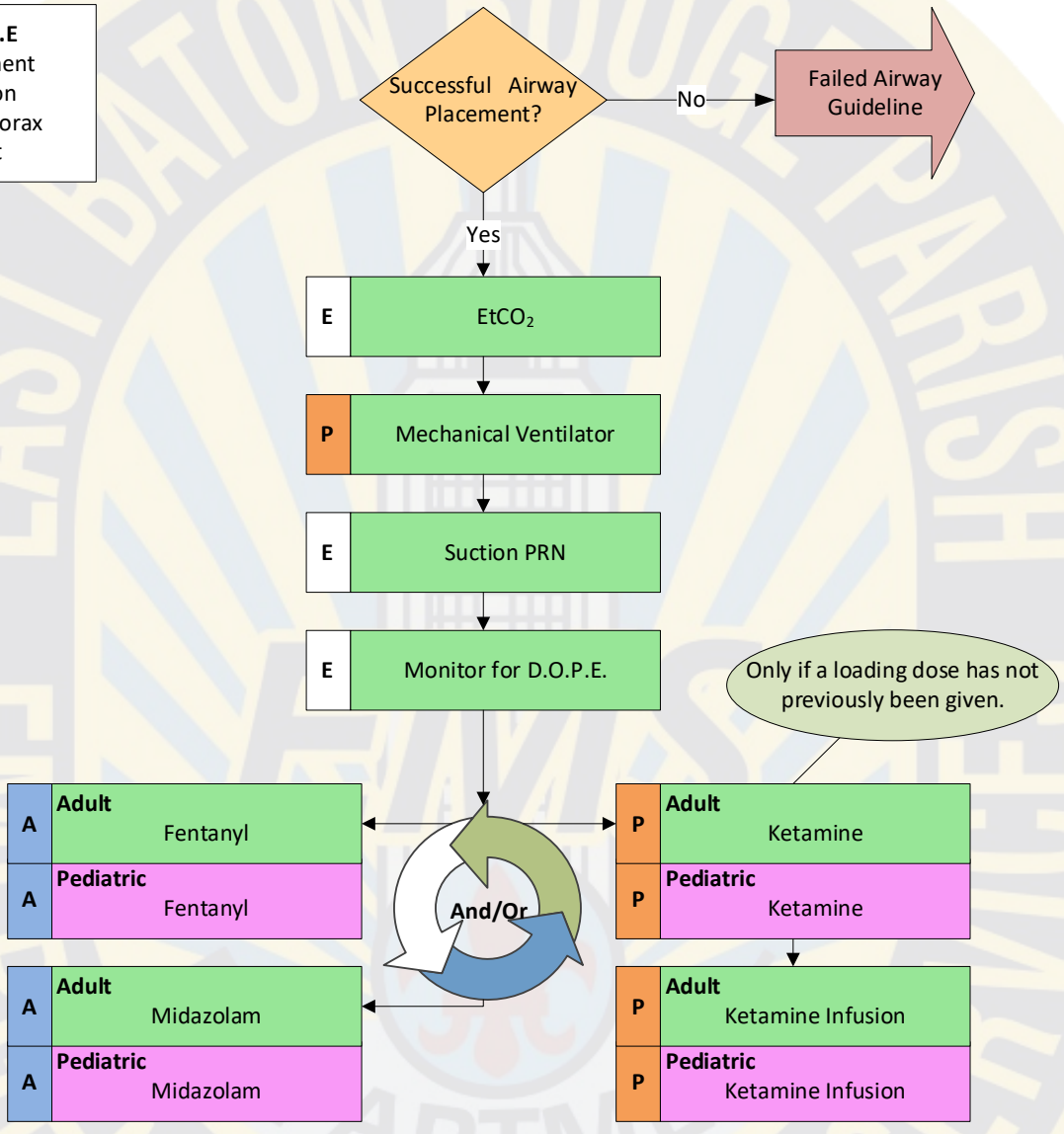
Patients with advanced airway placement requiring maintenance to ensure and maintain proper placement.

GOALS

- Confirmation and continuous monitoring of airway placement.
- Provide comfortability and tolerability to the patient requiring airway placement.

D.O.P.E

D- Dislodgement
O- Obstruction
P- Pneumothorax
E- Equipment



Pearls:

- EtCO2 monitoring should be applied on all intubated patients
- EtCO2 monitoring will not identify endobronchial intubation.
- ET Tube depth should be noted
- Use a commercial tube restraint and cervical collar to provide additional stabilization
- NG/OG tube placement can reduce intrathoracic pressure which will lead to improved circulation.
- Suction can be applied as needed for hypersalivation, blood, emesis
- Airway must be reassessed each time the patient is moved and frequently during patient care.
- It is imperative to use waveform capnography and capnometry when an advanced airway is placed to continuously monitor patency and appropriate placement.
- Unresponsive patients still have a physiological response to pain even though they cannot communicate painful stimulus. Pain management should be considered.

DO NOT RESUSCITATE

This guideline is to be used in the determination to withhold resuscitation in a patient with obvious signs of death or possible qualifying criteria.

GOALS

- Prevention of futile attempts at resuscitation when patients present clinically deceased.

Presumptive Signs of Death:

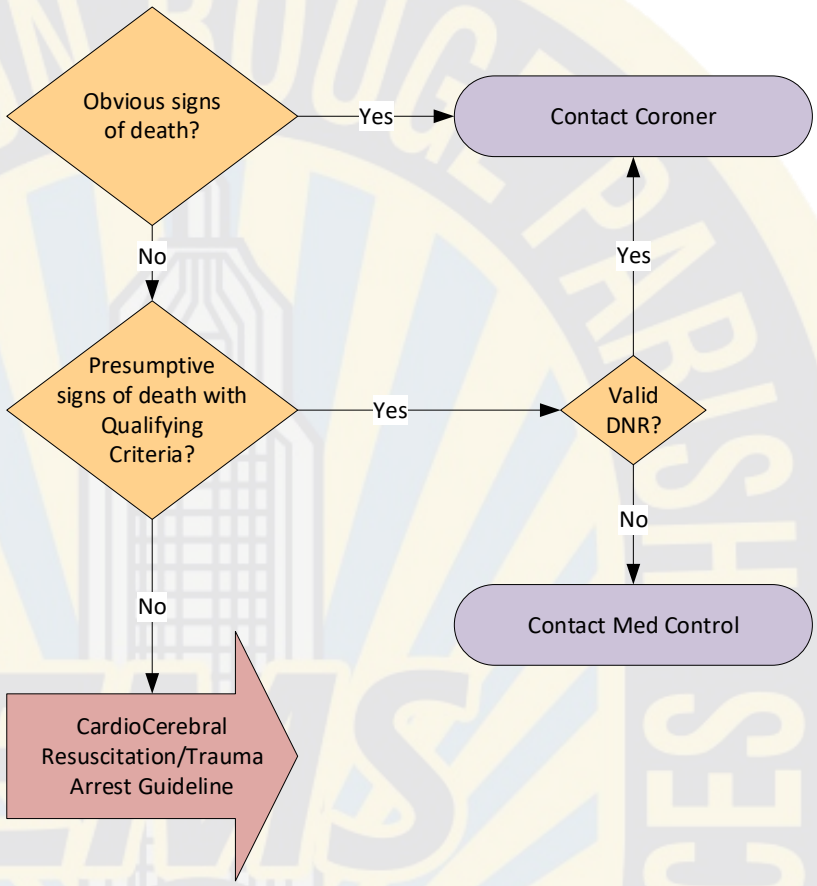
- Unresponsive
- Pulseless
- Apneic
- Fixed/Dilated Pupils

Obvious Signs of Death:

- Tissue Decomposition
- Lividity
- Rigor Mortis
- Injuries Incompatible with life including, but not limited to:
  - Decapitation
  - Catastrophic brain injury
  - Hemicorporectomy
  - Grossly obvious mortal wounds
  - Injuries that do not permit effective administration of CPR

Qualifying Criteria:

- DNR/Advanced Directives/Living Will/LaPOST
- End-Stage terminal illness
- Hospice
- Newborn w/confirmed gestation of <23 weeks
- When sound judgment indicates that resuscitation is unwarranted or futile



Pearls:

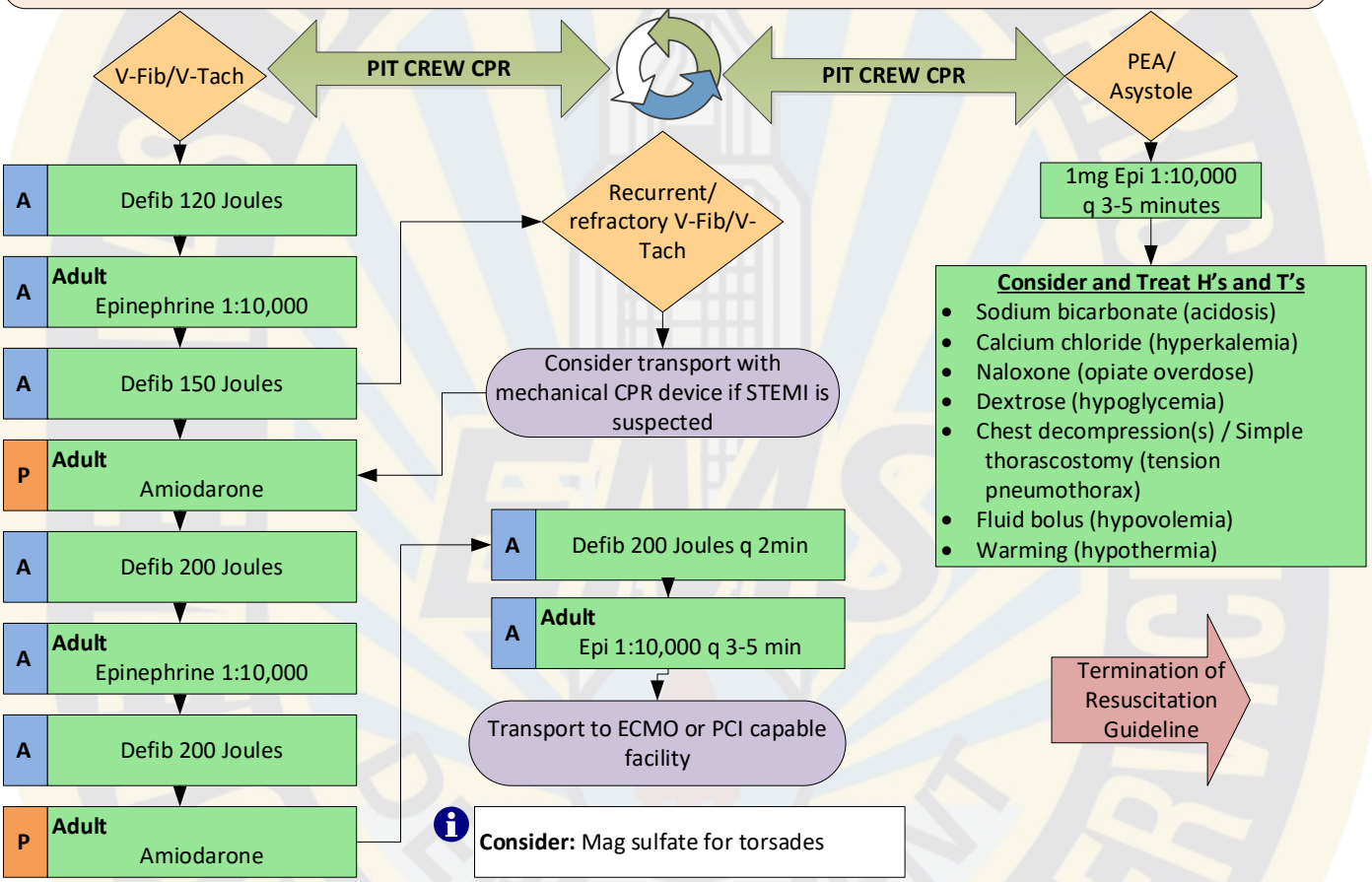
- If possible and appropriate, resuscitation should be initiated when obvious signs of death are not present until Medical Control advises to terminate resuscitation or an obvious sign of death is found after initiating resuscitation.
- If an obvious sign of death is found, the clinician can terminate the resuscitation. The clinician should then contact Medical Control to advise them of what was done.
- If the family's wishes are in conflict with the patient's DNR or living will, Medical Control should be consulted.
- In situations where resuscitation attempts are typically not warranted, clinicians can initiate/continue resuscitation and transport if they feel as if they are in danger. Medical Control can then be contacted for further orders to include continuing ALS care, performing only BLS care, or terminating care (if considered futile) during transport.
- CPR should be withheld if it places the rescuer at risk of physical injury or death.
- Exercise caution before deciding to not attempt resuscitation when in view of the public.
- Resuscitation may be considered if cardiac arrest is not related to DNR orders (trauma, anaphylaxis, choking, etc.). Contact Medical Control.

CARDIO-CEREBRAL RESUSCITATION (ADULT)

Patients that present pulseless and apneic in V-Fib/Pulseless V-Tach and Asystole/PEA.

GOALS

- BLS OWNS THE CODE! High quality chest compressions with early/frequent defibrillations take priority over all ALS treatment.
- Immediate chest compressions, limiting interruptions to 10 seconds or less.
- Compression rate of 100-120/minute
- 2 minute cycles with rhythm analysis and compressor change.
- Rapid identification of shockable rhythm.
- Charge defibrillator 15 seconds before end of cycle or utilize analysis mode with Zoll monitor.
- Peri-shock pause interval (10 seconds or less). Defibrillate or Dump Charge or follow Zoll monitor prompts.
- Limit ventilations to chest rise only at 10 bpm for reduction of intrathoracic pressure.



Pearls:

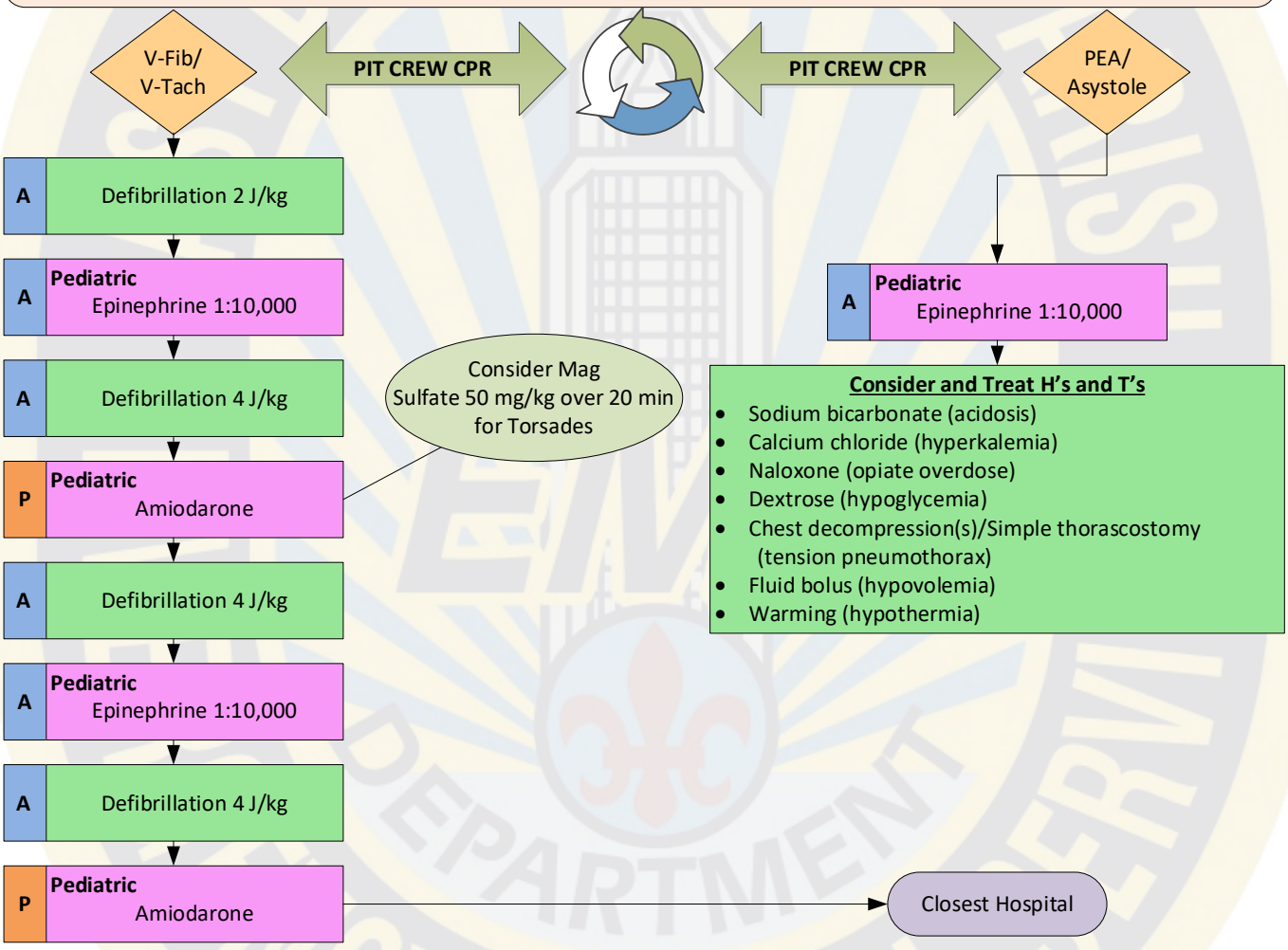
- Considerations: EtCO2, ITD, IV vs IO access, Basic vs advanced airway, NG Tube
- Mechanical Compression Device (rescuer fatigue or transport)
- Consider "Heads Up CPR" to promote cerebral perfusion
- For every interruption in CPR (EVEN ONE SECOND) it takes at least 30 seconds to regain adequate coronary and cerebral perfusion
- Cardiac arrest should be worked on scene, unless there is a treatment that can only be performed by a hospital or other circumstance that is in the best interest of the patient.
- Drownings: resuscitation efforts are encouraged for any patient submerged <60 minutes. AHA Guidelines dictate immediate focus of Airway/Breathing first vs C.A.B approach.
- In cases of patients who attain awareness from high-quality CPR, sedation with fentanyl or ketamine may be warranted.
- Peri-shock pause is defined as the specific interruption in chest compressions prior to and following defibrillatory shock.

CARDIO-CEREBRAL RESUSCITATION (PEDIATRIC)

Patients that present pulseless and apneic in V-Fib/Pulseless V-Tach and Asystole/PEA. Because cardiac arrest often interchanges between shockable and non-shockable rhythms, this guideline focuses on the interchangeability dependent upon rhythm.

GOALS

- BLS OWNS THE CODE! High quality chest compressions with early/frequent defibrillations take priority over all ALS treatment.
- Immediate chest compressions, limiting interruptions to 10 seconds or less.
- Compression rate of 100-120/minute
- 2 minute cycles with rhythm analysis and compressor change.
- Rapid identification of shockable rhythm.
- Charge defibrillator 15 seconds before end of cycle or utilize analysis mode with Zoll monitor.
- Peri-shock pause interval (10 seconds or less). Defibrillate or Dump Charge or follow Zoll monitor prompts.
- Limit ventilations to chest rise only at 10 bpm for reduction of intrathoracic pressure.



Pearls:

- **Considerations:** IV vs IO access, Basic vs Advanced airways, appropriate medications, $EtCO_2$
- Respiratory arrest is the leading cause of cardiac arrest in children
- For every interruption in CPR (EVEN ONE SECOND) it takes at least 30 seconds to regain adequate coronary and cerebral perfusion.
- Cardiac arrest should be worked on-scene, unless there is a treatment that can only be performed by a hospital or other circumstance that is in the best interest of the patient.
- Drowning's: resuscitation efforts are encouraged for any patient submerged <60 minutes
- Simple airways are often acceptable for ventilating pediatric patients.

NEONATAL RESUSCITATION

Complications of the newborn child

GOALS

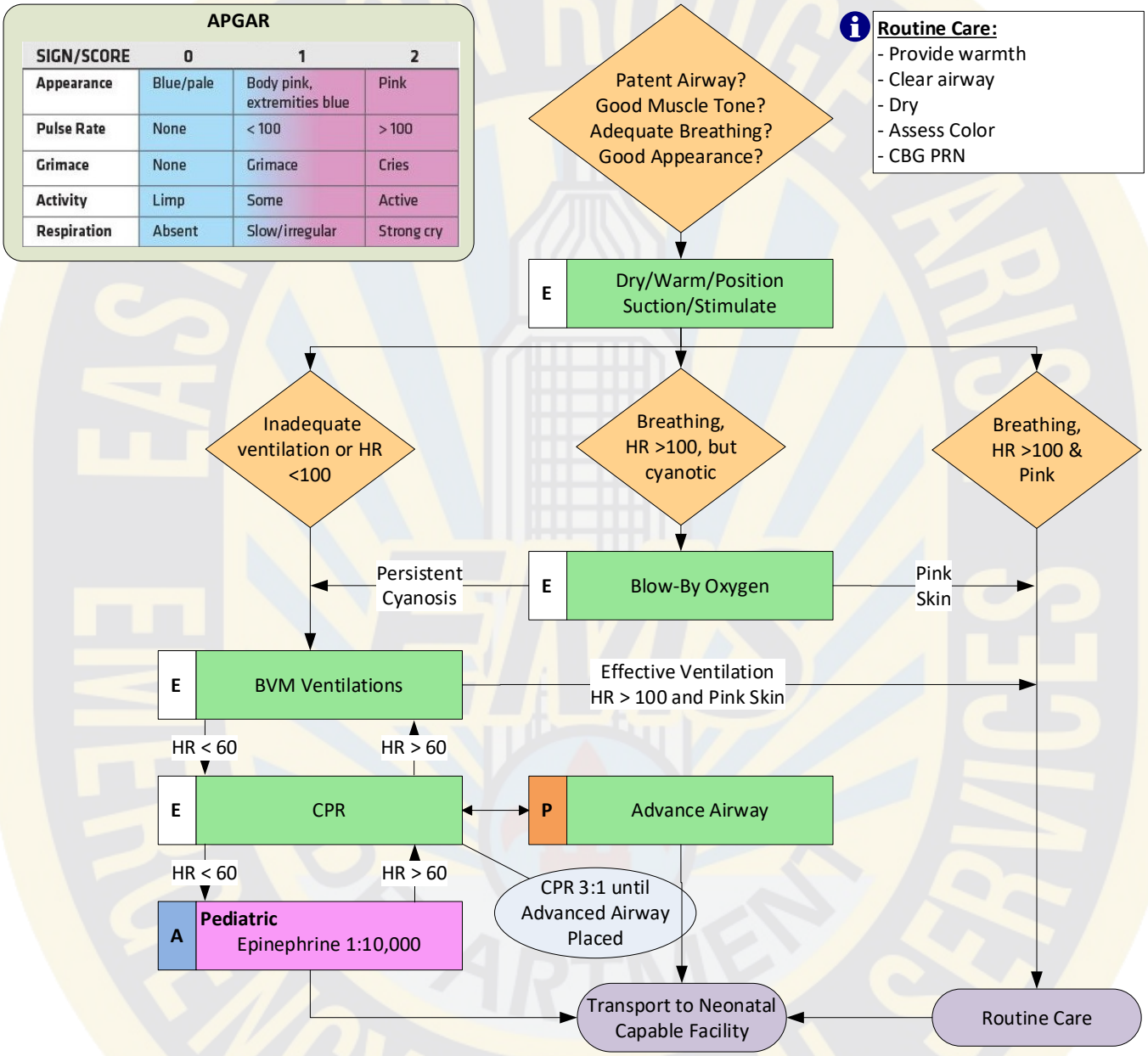
- Maintain/restore oxygenation/ventilation/perfusion of a newborn child.
- Assess APGAR at 1 and 5 minute intervals.

APGAR

SIGN/SCORE	0	1	2
Appearance	Blue/pale	Body pink, extremities blue	Pink
Pulse Rate	None	< 100	> 100
Grimace	None	Grimace	Cries
Activity	Limp	Some	Active
Respiration	Absent	Slow/irregular	Strong cry

Routine Care:

- Provide warmth
- Clear airway
- Dry
- Assess Color
- CBG PRN



Pearls:

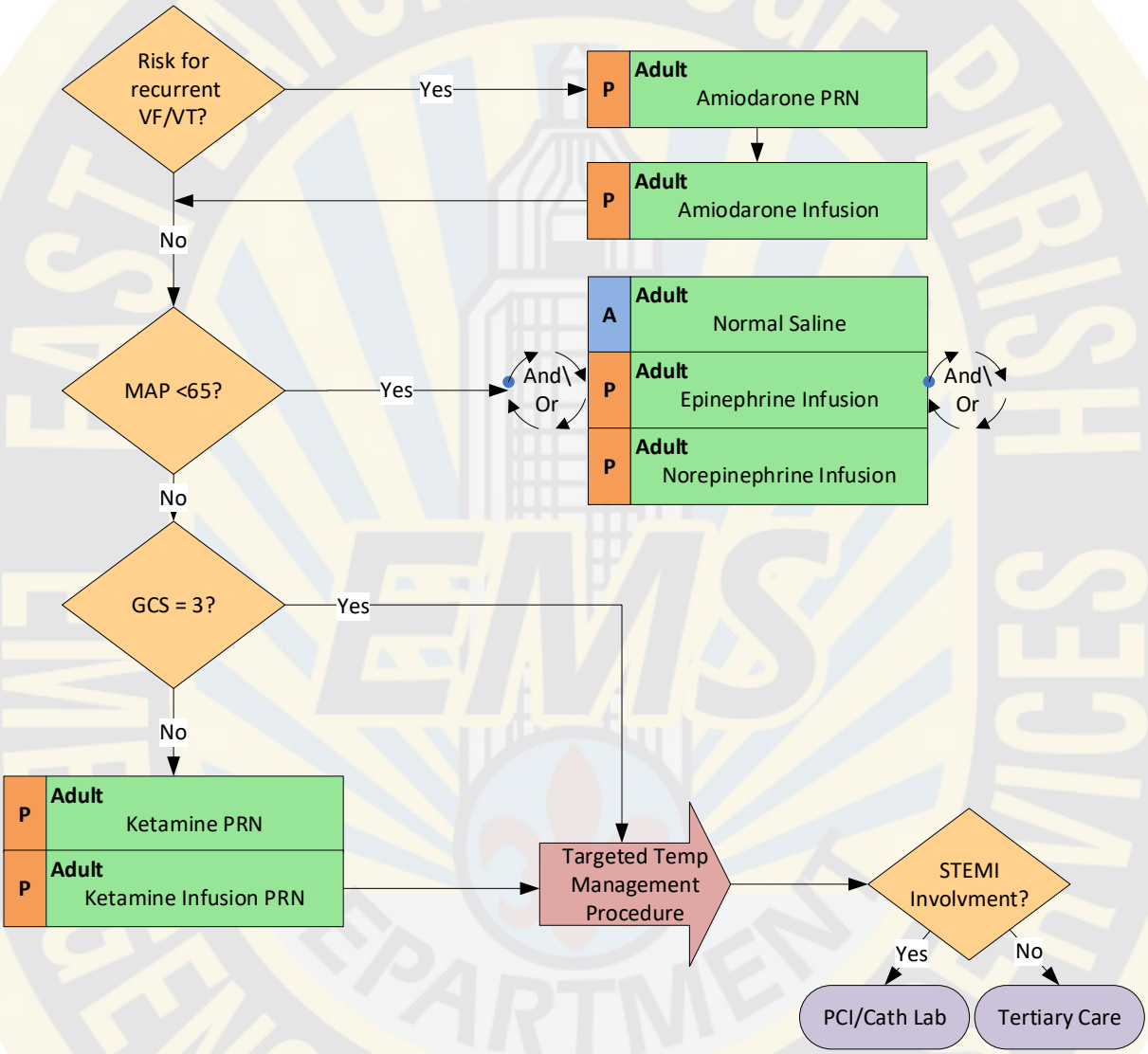
- Heat packs should not be placed directly against the skin
- Each intervention should be trialed for approximately 30 seconds
- Infants who require significant resuscitation should be monitored and treated to maintain glucose >40 mg/dl
- A majority of newborns respond to simple measures
- Cyanosis is determined by examining the face, trunk and mucous membranes
- Treat hypoglycemia for CBG of <40 mg/dl with $D_{10}W$ per Diabetic Guideline

POST RESUSCITATION CARE

Patients that achieve return of spontaneous circulation (ROSC).

GOALS

- REMAIN CALM!
- Maintain ventilation, cardiac and circulatory support
- Rapid identification of STEMI with early hospital notification
- Increase ventricular ectopy threshold
- Reduction of secondary brain injury risk



Pearls:

- Any GCS >3 suggests brain activity. Withhold hypothermia.
- Remove Impedance Threshold Device if it was placed.
- DO NOT HYPERVENTILATE! Maintain ventilations at 10 bpm. Titrate FiO_2 to maintain SpO2 between 90-96% to prevent oxygen toxicity. Maintain EtCO2 between 35-45 mmHg.
- A post-resuscitation patient's clinical presentation may change rapidly and frequently.
- Closely monitor patient trends (every 2-5 mins).
- Consider application of a cervical collar to prevent flexion/extension of neck (think distal tube placement).
- PEDIATRICS: Optimize oxygenation and ventilation. Fluids as needed. Contact Med Control PRN.

TERMINATION OF RESUSCITATION

Rules that apply for termination of resuscitation in non-traumatic cardiopulmonary arrest.

GOALS

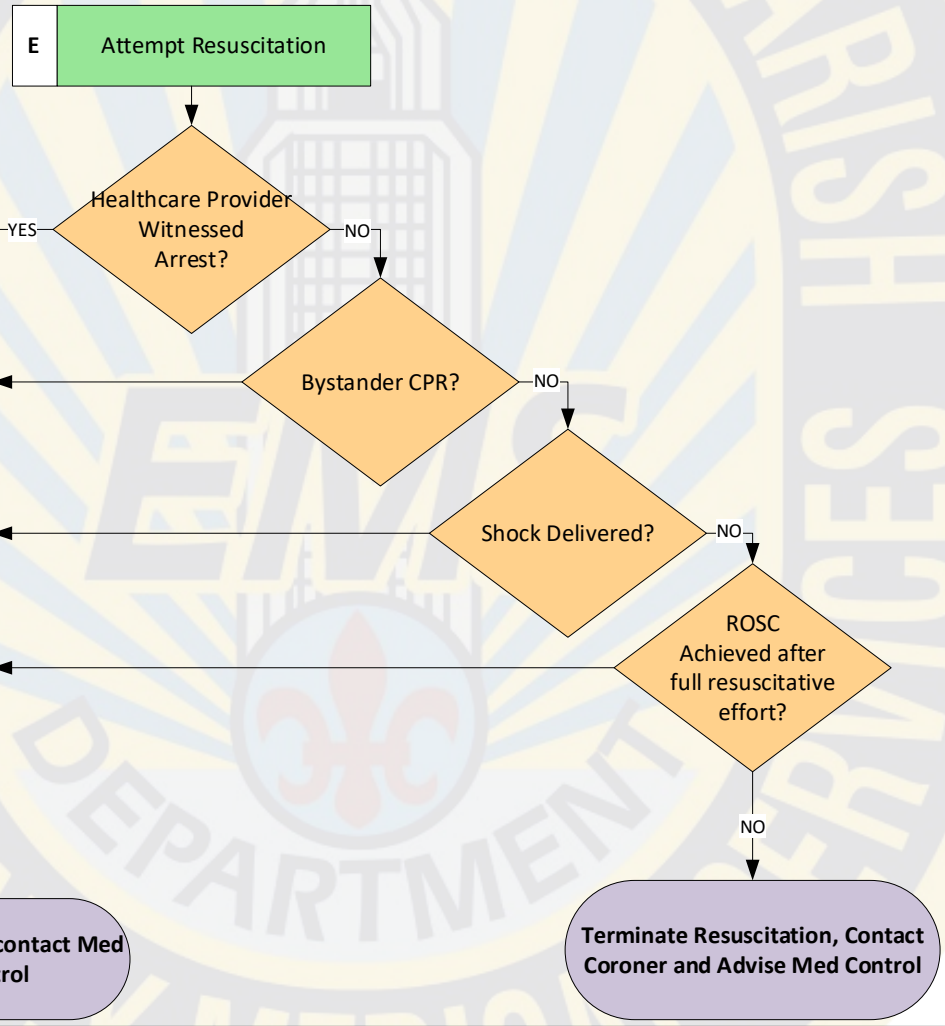
- Reduce the number of unnecessary ambulance transports of patients with no survival benefit
- Ensure appropriate management of the deceased patient
- Provide adequate support to patient's family

TOR Guideline should not be attempted in the following circumstances:

- Trauma
- Pediatrics
- Pregnancy
- Hypothermia
- Lightning Strikes
- Conditions unsafe for EMS Providers

Full Resuscitative Effort:

- Definitive airway
- Vascular Access
- Defibrillation as needed
- 20-30 minutes of treatment following ACLS Guidelines and/or CardioCerebral Resuscitation Guideline



Pearls:

- Patients who present with unwitnessed cardiac arrest, no bystander CPR, an un-shockable rhythm and no ROSC after prehospital care have greater than a 99% predictability of a very poor outcome.
- When TOR rules are implemented, we must ensure appropriate management of the deceased patient in the field and that we provide adequate support services for the patient's family.
- It may not be appropriate to terminate resuscitation when in view of the general public.
- TOR Guidelines should not be applied in situations involving an overdose or toxic exposure when there may be a reversal agent or other treatments available at a hospital not available to EMS.

ACS/STEMI/NSTEMI/ANGINA

ACS refers to a group of conditions due to decreased blood flow in the coronary arteries such that part of the heart muscle is unable to function properly or dies. ACS usually occurs as a result of one of three problems: STEMI, NSTEMI or unstable angina.

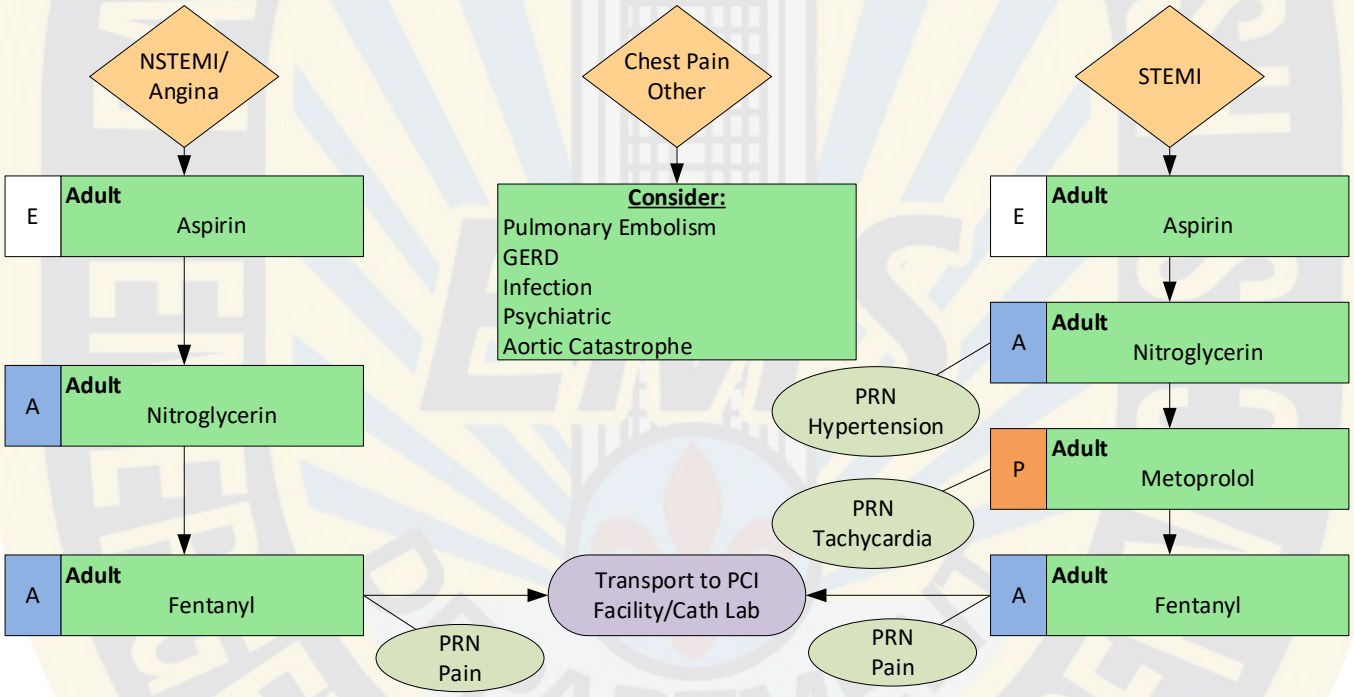
Based on pathology, the two main types of acute myocardial infarctions are:

STEMI: Transmural AMI is associated with a major coronary artery. It can be subclassified into anterior, posterior, inferior, lateral or septal. Transmural infarcts extend through the whole thickness of the heart muscle and are usually a result of complete occlusion of the area's blood supply. In addition, ST elevation and Q waves are seen on the ECG.

NSTEMI: Subendocardial AMI involves a small area in the subendocardial wall of the left ventricle, ventricular septum, or papillary muscles. The subendocardial area is particularly susceptible to ischemia. In addition, ST depression and possibly T wave changes may be seen on the ECG.

GOALS

- Reduction of platelet aggregation, cardiac workload, and cardiac oxygen demand. Control pain, blood pressure and heart rate
- Promote the body's natural clot lysis mechanisms to work normally.
- Rapid identification for STEMI to include continuous 12-lead monitoring and early notification to the receiving facility
- Reperfusion of occluded artery at a Primary PCI facility within 90 minutes of first EMS contact



Pearls:

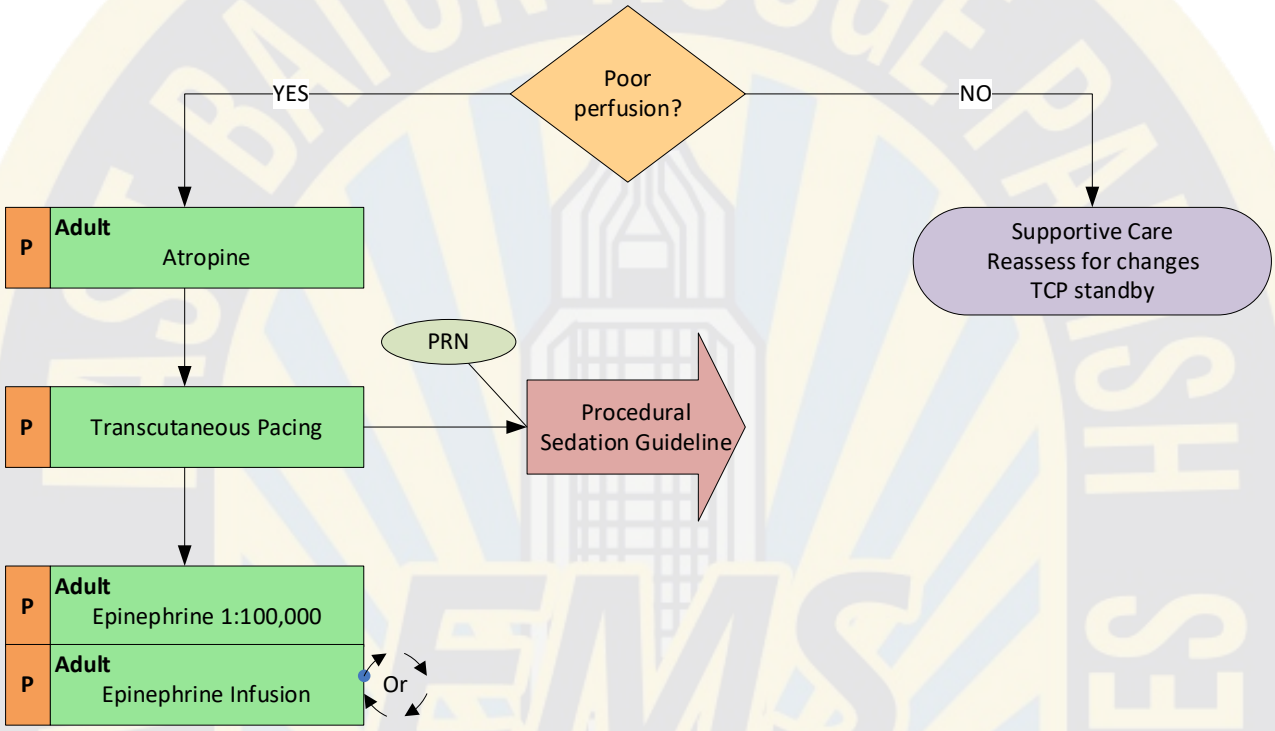
- **QI Metric:** 12 lead should be obtained within 10 minutes.
- **QI Metric:** Limit scene time to 15 minutes or less.
- **QI Metric:** Be mindful of the importance of early STEMI Alert to the receiving hospital.
- Be prepared for sudden ventricular fibrillation or pulseless ventricular tachycardia; defibrillate (Attach Defib Pads).
- Patients that present with hypotension or relative hypotension should not receive preload reducing medications and may need to be treated under the cardiogenic shock guideline
- Patients treated for ACS and initial EKG is negative for STEMI require continuous 12-Lead monitoring and/or serial 12-Lead EKG's at 5 minute intervals.
- Oxygen is not recommended for SPo2 ≥90% room air.
- Hypertension is defined as a systolic > 140mmHg and/or diastolic > 90 mmHg

BRADYCARDIA (ADULT)

Patients that present with a heart rate less than 60 bpm that is inadequate for clinical condition.

GOALS

- Increase cardiac output
- Increase intrinisic rate
- Improve organ perfusion



Pearls:

- Denervated transplanted hearts will not respond to atropine; TCP is the treatment of choice.
- TCP is the treatment of choice for high degree AV blocks (type II AV block and new Third Degree block with wide QRS complexes).
- DO NOT DELAY TCP for IV access if the patient is hemodynamically unstable.
- Use atropine with caution in patients with possible MI and/or ST segment changes.
- TCP STANDBY = Attach pacing pads anterior/posterior and observe for deterioration.

BRADYCARDIA (PEDIATRIC)

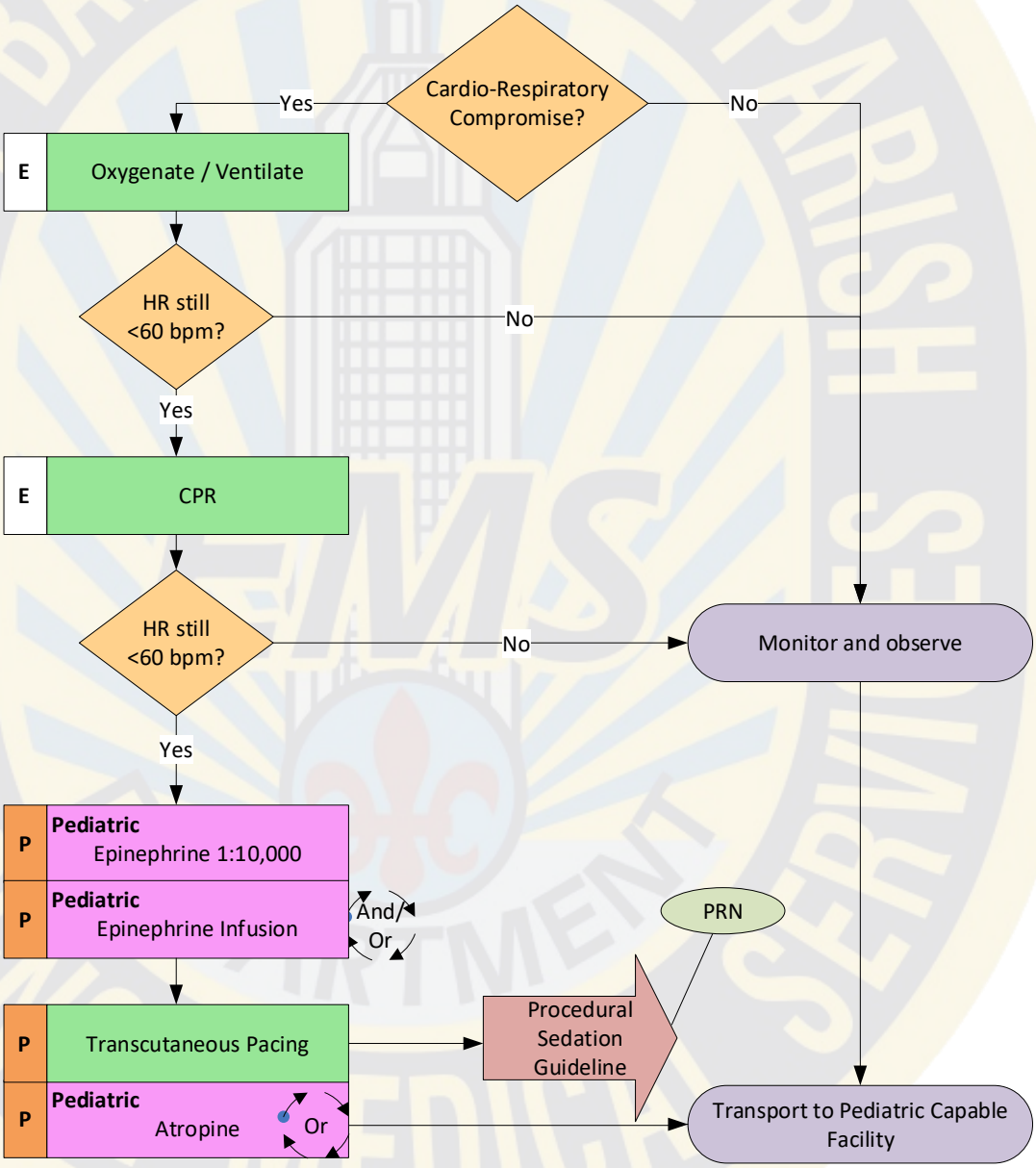
Patients that present with a heart rate less than 60 bpm that is inadequate for clinical condition.

GOALS

- Increase cardiac output
- Increase intrinisic rate
- Improve organ perfusion

Cardio-Respiratory Compromise:

- Decreased heart rate
- Increased work of breathing
- Core cyanosis
- Decreased LOC
- Delayed capillary refill
- Mottled cool skin



Pearls:

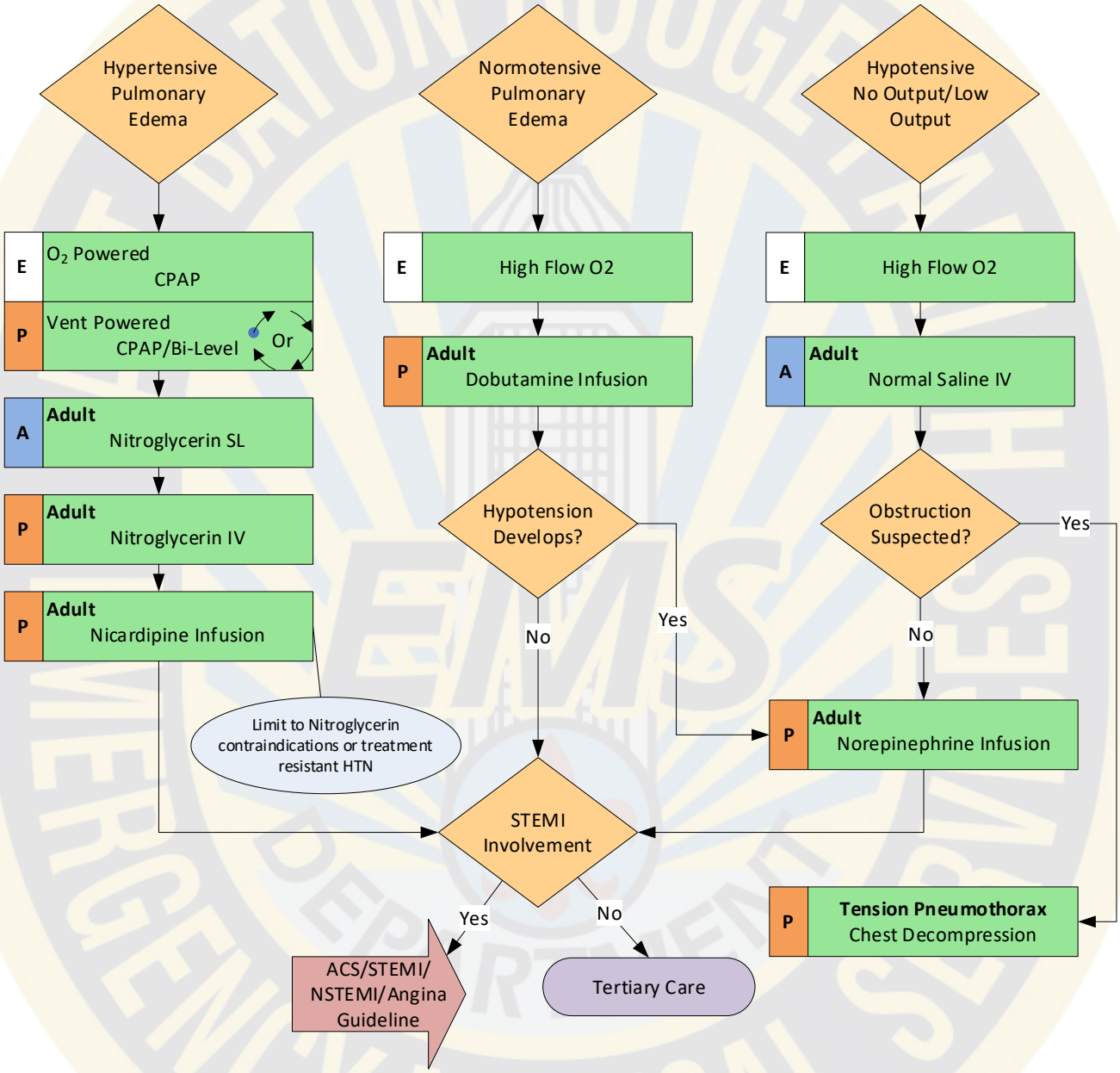
- Hypoxia due to respiratory complications is the most common reason for bradycardia and cardiac arrest in children
- Hypoglycemia, narcotic ingestion and severe dehydration may be the cause of bradycardia

CHF/Cardiogenic Shock

Patients that present with disruptive circulation caused by the heart or obstruction of the heart, resulting in respiratory failure and/or shock.

GOALS

- Improve cardiac contractility
- Correct hypoxia and ensure proper ventilation management
- Control blood pressure, pre-load and after-load



Pearls:

- Avoid interruptions in CPAP/Bi-Level when possible (IV NTG vs SL NTG).
- If the decision is made to initiate an IV infusion of NTG or nicardipine, you should discontinue SL and/or IV bolus doses
- Normotensive patients with pulmonary edema can deteriorate into cardiogenic shock rapidly
- Consider myocardial infarction in all of these patients. Aspirin 325 mg PO may be appropriate, if tolerable
- All efforts at verbal coaching should be utilized prior to Anxiolytic administration
- Patients that fail to respond to oxygen and/or NIPPV may require advanced airway management and ventilatory support.

TACHYCARDIA

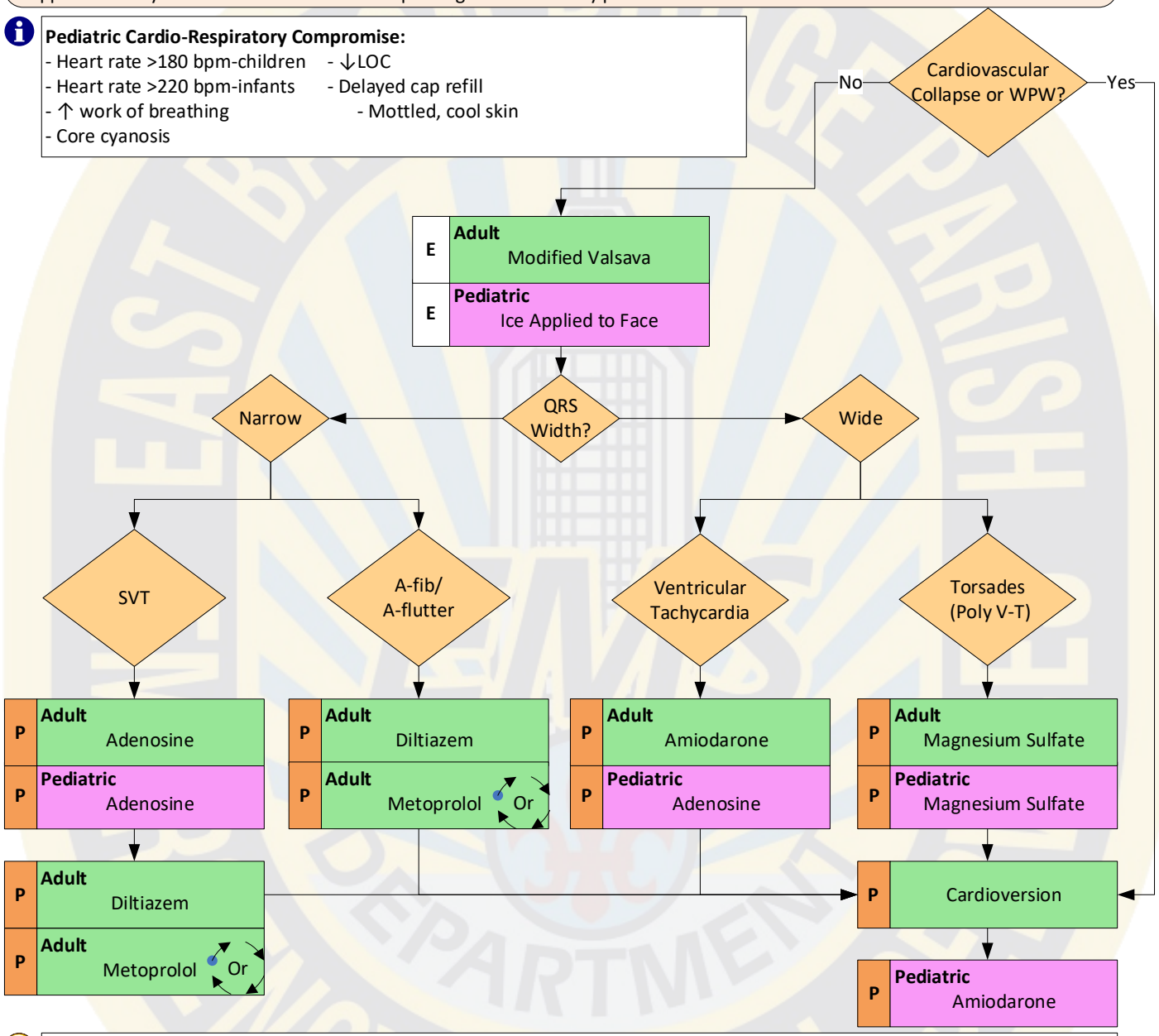
Tachycardias causing hemodynamic instability.

GOALS

- Increase diastole interval allowing adequate heart refill.
- Slow conduction time and interrupt re-entry pathways through the AV node.
- Suppress activity of the SA and AV nodes and prolong their refractory periods.

Pediatric Cardio-Respiratory Compromise:

- Heart rate >180 bpm-children
- Heart rate >220 bpm-infants
- ↑ work of breathing
- Core cyanosis
- ↓LOC
- Delayed cap refill
- Mottled, cool skin



Pearls:

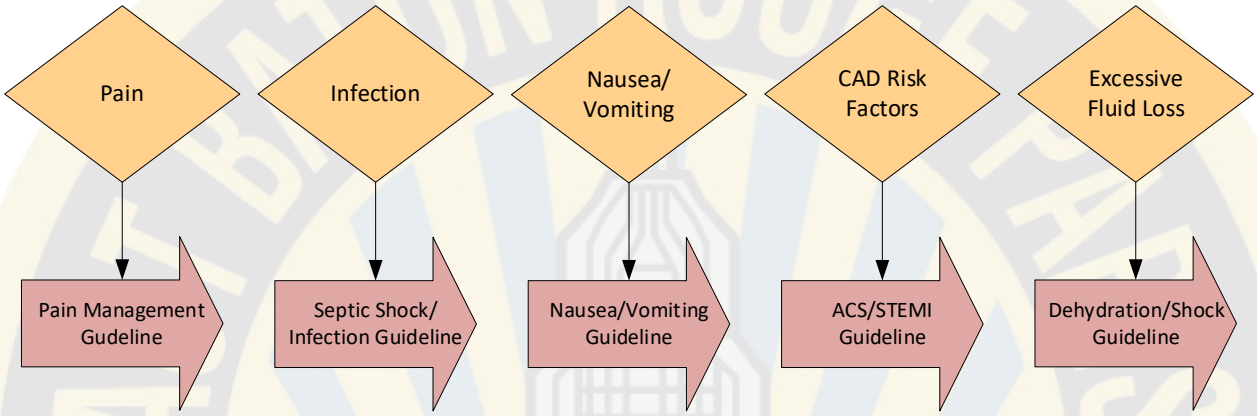
- Heart rates <150 bpm seldom cause cardiovascular compromise
- Sinus tachycardia suggests underlying medical condition. (Treat appropriately)
- Do not give calcium channel blockers (Diltiazem) to Wolff-Parkinson-White (WPW).
- If the pt has a history of WPW or a 12-lead showing WPW, withhold calcium channel blockers, beta blockers and adenosine. Treatment should only include Modified Valsalva, Cardioversion or Amiodarone.
- Use caution with adenosine in asthma patients.
- When rhythm regularity determination is not practical and the QRS is narrow, adenosine is acceptable to "slow the rate".
- Amiodarone may be used as an alternate treatment for tachyarrhythmias under medical control direction.

ABDOMINAL COMPLICATIONS

Abdominal cavity complications of a medical nature.

GOALS

- Manage pain/discomfort and nausea
- Manage fluid loss and or hemorrhage
- Complete OPQRST assessment



Pearls:
Abdominal Complications can include hemorrhage, infection, inflammation and obstruction to any of the various organs, vasculature and/or tissue. Pain is the most common complaint.

- Abdominal pain/discomfort may be the only symptom of a patient with Acute Myocardial Infarction
- Females of child bearing age should be suspected of ectopic pregnancy
- DKA can present with severe abdominal cramping due to hypovolemia
- Consider cardiac etiology inpatients >50 y/o, DM and/or female with increased abdominal complaints
- Consider Anaphylaxis in cases of abdominal cramps, vomiting and diarrhea in the presence of a possible trigger
- Consider Aortic Catastrophe in the elderly or over the age of 50 with CAD risk factors that present with hypotension/ hypovolemia and abdominal pain

ACTIVE SEIZURE(S)

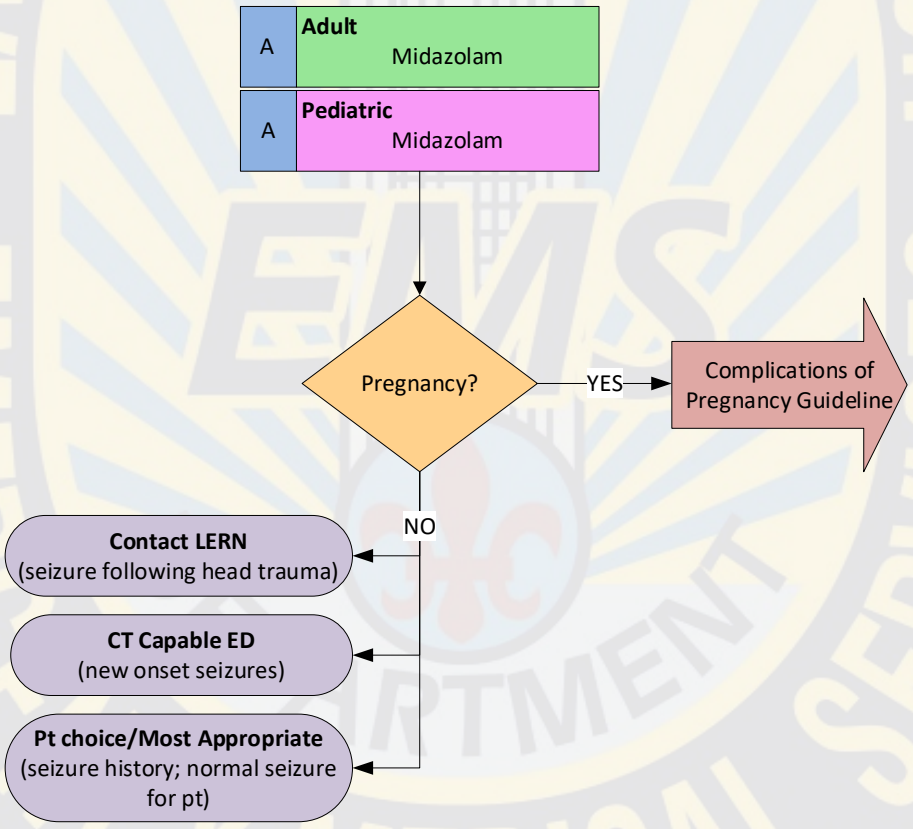
Varied observations of uncontrolled jerking movement (tonic/clonic seizure) to momentary loss of awareness (absent seizure), caused by the abnormal excessive or synchronous neuronal activity of the brain

GOALS

- Protect patient from further injury.
- Airway Maintenance.
- Reduce CNS response via benzodiazepine administration.

Status Epilepticus: A prolonged seizure (>5 minutes) or a series of repeated seizures without a return to consciousness within about 5 minutes.
Grand Mal Seizure: Associated with loss of consciousness, incontinence and tongue trauma.
Petit Mal Seizure (Absent Seizure): Brief period of loss of consciousness where patient appears awake. May include fluttering eyes or lip smacking.
Focal Seizure (Partial Seizure): Affects only one part of the body and is not usually associated with loss of consciousness.

Eclampsia: A severe hypertensive disorder (>140/90) of pregnancy characterized by **convulsions** and coma, occurring between 20 weeks gestation and up to 6-8 weeks postpartum.



Pearls:

- Midazolam IM is usually effective in terminating seizures. Do not delay IM route for failed IV/IO access.
- Anticipate airway problems and recurrent seizures.
- Treat hypoglycemia under diabetic guideline.

ADRENAL CRISIS

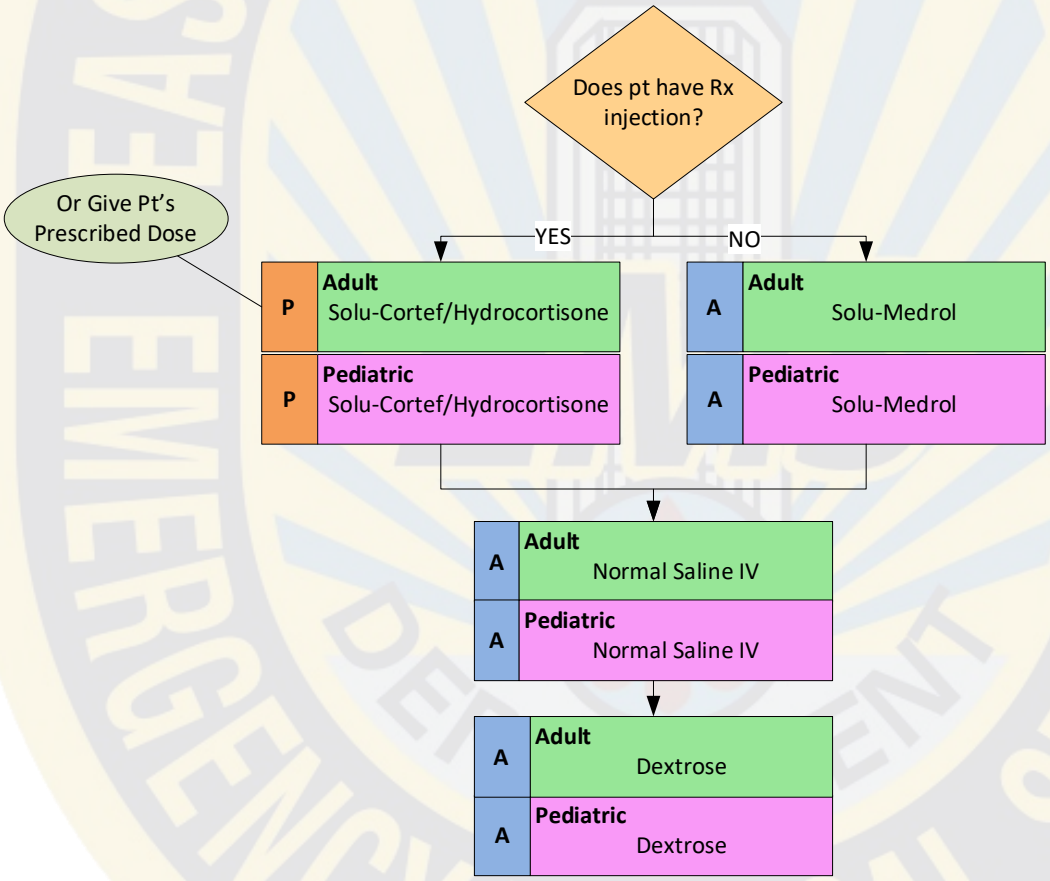
Acute adrenal insufficiency is a medical emergency and potentially life-threatening situation requiring immediate emergency treatment. It is a constellation of symptoms that indicate severe adrenal insufficiency caused by insufficient levels of the hormone cortisol.

GOALS

- Give injection of steroid, typically hydrocortisone.
- Treat hypoglycemia as needed.
- Fluid support

Signs/Symptoms

- Sudden penetrating pain in the legs, lower back or abdomen
- Confusion, psychosis, slurred speech
- Severe lethargy
- Convulsions
- Fever
- Hypothyroid
- Syncope
- Hypercalcemia
- Hyperkalemia
- Hypoglycemia
- Hyponatremia
- Hypotension
- Severe vomiting and diarrhea



Pearls:

- EMS will not carry this Solu-Cortef/Hydrocortisone, but if it is available then the Paramedic may administer it.
- Patients that are prone to Adrenal Crisis may have a prescription on hand.

ALLERGIC REACTION/ANAPHYLACTIC SHOCK

Sensitivity to allergens that come into contact with skin, nose, eyes, respiratory tract and/or GI tract resulting in misguided reaction of the immune system. These reactions may manifest from a mild local reaction and/or a moderate generalized reaction into anaphylactic shock. The severity of the reaction shall determine the level of treatment.

GOALS

- Histamine blockade - Bronchodilation - Inflammation control - Vasoconstriction for distributive shock

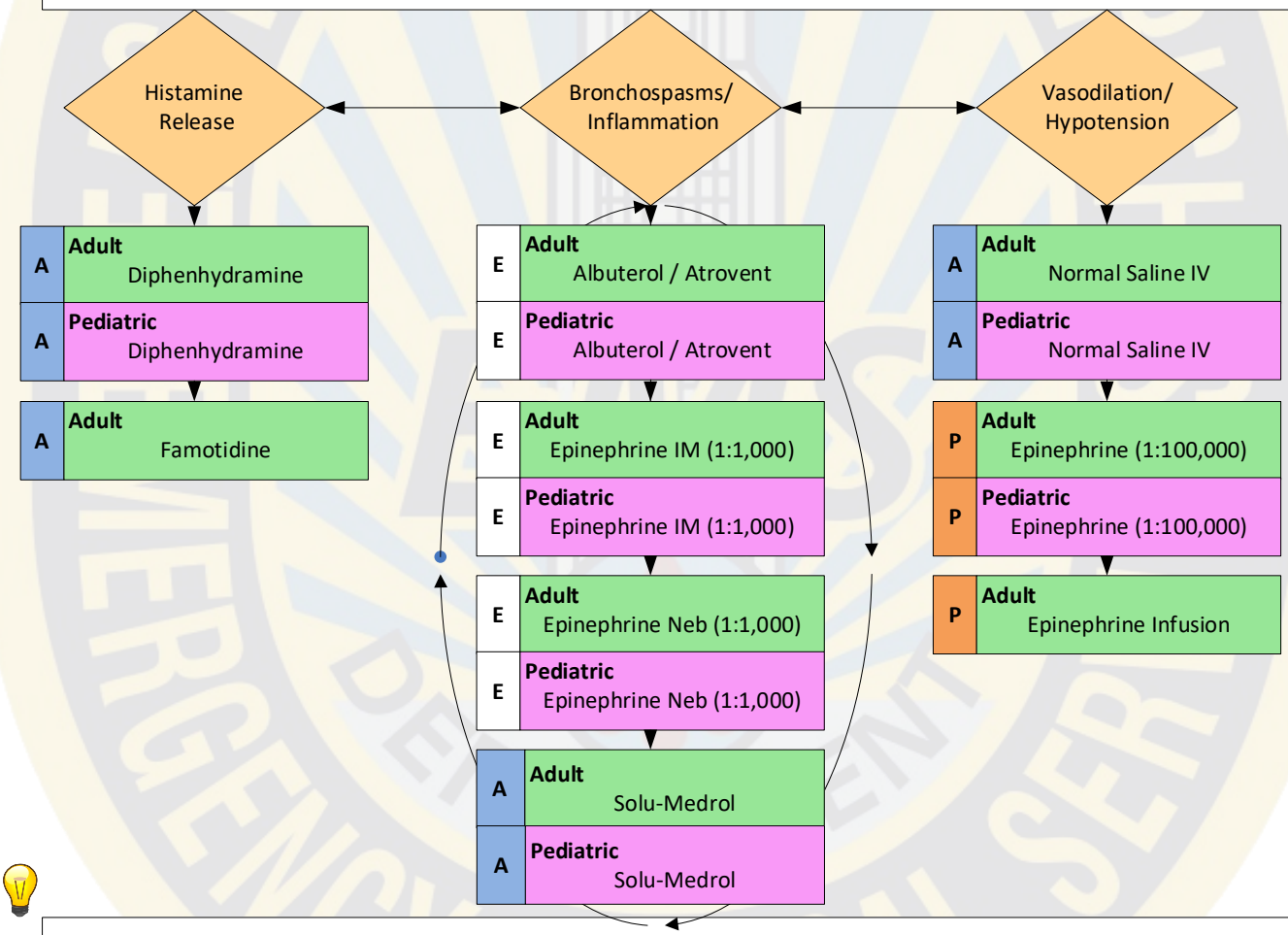
Reaction Severities

Mild: rash, pruritus, and urticaria; excluding the face

Moderate: "mild reaction" with "normal perfusion", angioedema without airway compromise. Urticaria and pruritus to the face, minor wheezing may be present. N/V and/or abdominal pain with associated GI symptoms.

Severe: Respiratory compromise, angioedema and wheezing.

Anaphylactic Shock: Hypotension with evidence of poor perfusion leading to cardiovascular collapse. Pruritus and uticaria may not be evident secondary to poor perfusion. Itching (pruritus) may not be experienced.



Pearls:

- Caution MUST be used in administering epinephrine to patients over the age of 50 and/or to patients with known cardiovascular disease, renal failure, and/or COPD. When treating these patients with epi, reduce the dose by half and monitor cardiac ischemia with continuous 12 Lead.
- Consider a severe reaction when responses from 2 or more body systems (cutaneous, respiratory, cardiovascular, neurologic orGI) are noted. Cardiovascular and respiratory systems may not always be involved in a severe reaction
- When 2 or more body systems are involved, Epinephrine should be administered.
- Isolated severe angioedema may be secondary to ACE Inhibitors and is NOT and allergic reaction.
- Cardiac arrest can occur as soon as 5 minutes after medication induced anaphylaxis; 15 minutes for insects and 30 minutes forfood.

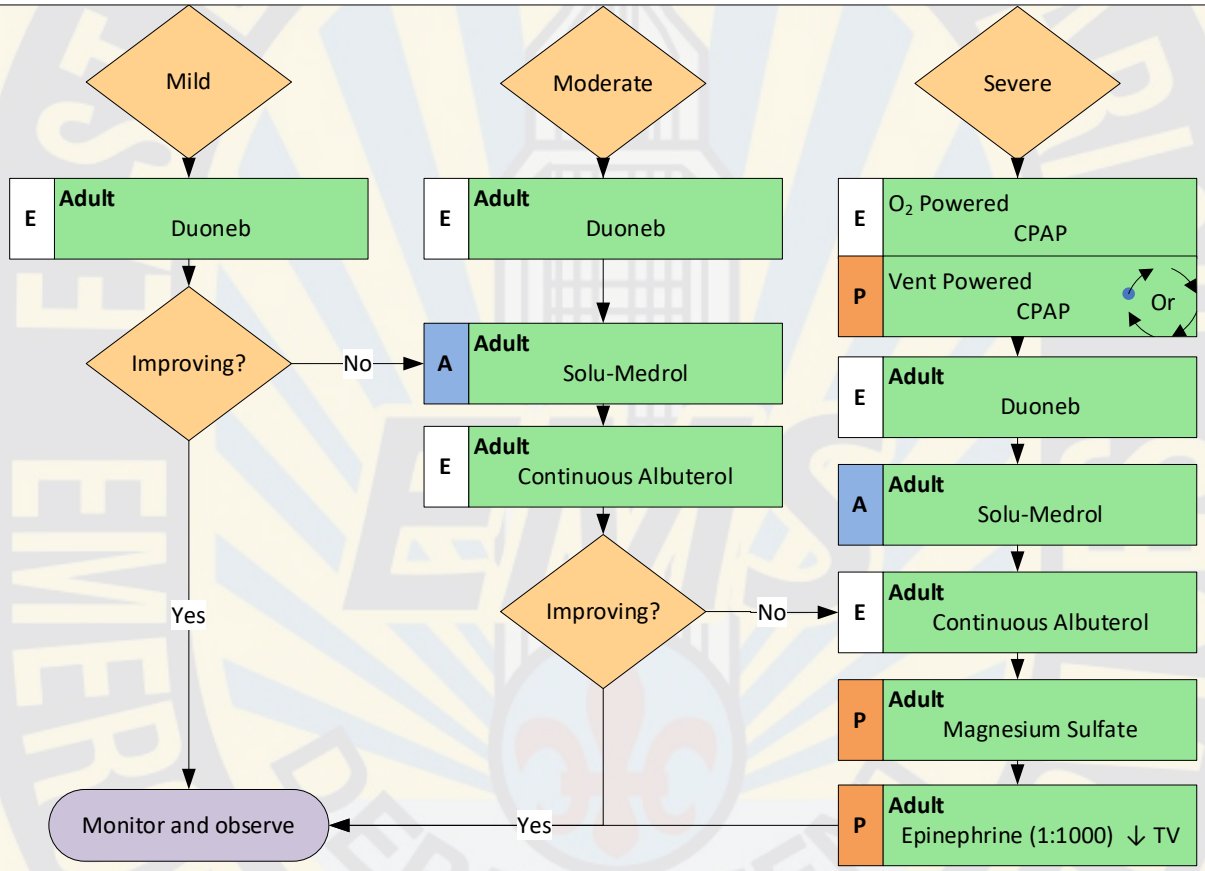
ASTHMA (ADULT)

A common inflammatory disease of the lungs characterized by airway obstruction secondary to narrowing of the bronchioles. The narrowing is caused by spasms of smooth muscle, edema of the small airways and presence of mucus in the airway resulting from an immunological reaction.

GOALS

- Bronchodilation
- Reduce hypercapnia and intrinsic peep
- Reduction of airway swelling

Levels of Severity:
Mild-Wheezing, no accessory muscle use, no nasal flaring, able to complete whole sentences.
Moderate-Wheezing, minimal accessory muscle use and nasal flaring, difficulty completing sentences, decreased peak flow.
Severe-Diffuse wheezing, or absence thereof with obvious dyspnea, full accessory muscle use, nasal flaring and decreased peak flow.



Pearls:

- Patients >60 years of age with a cardiac history and/or renal failure should use extreme caution if giving magnesium sulfate or epinephrine.
- Atrovent onset is 20 minutes with peak action 60-90 minutes and is limited to 1 dose
- Corticosteroids are one of the only proven treatments for inflammatory response in asthma. (6 hour effect window; aids in reducing the possibility of hospital admission).
- CPAP can be used to help splint airways open to allow for adequate exhalation.
- $EtCO_2$ is a great tool for measuring patient response to treatment.
- Consider continuous albuterol for moderate/severe patients
- Consider Epi IM 1st line in cases of decreased tidal volume or decreased mental status.
- Beta-blocker medication should be withheld when β agonist medication is being administered. Patients with significant hypertension may need to be treated with Mag Sulfate.
- Wheezing can also be a sign of pulmonary edema in CHF. Wheezing does not always equate to asthma or other obstructive airway disorders.

CHEMICAL SEDATION

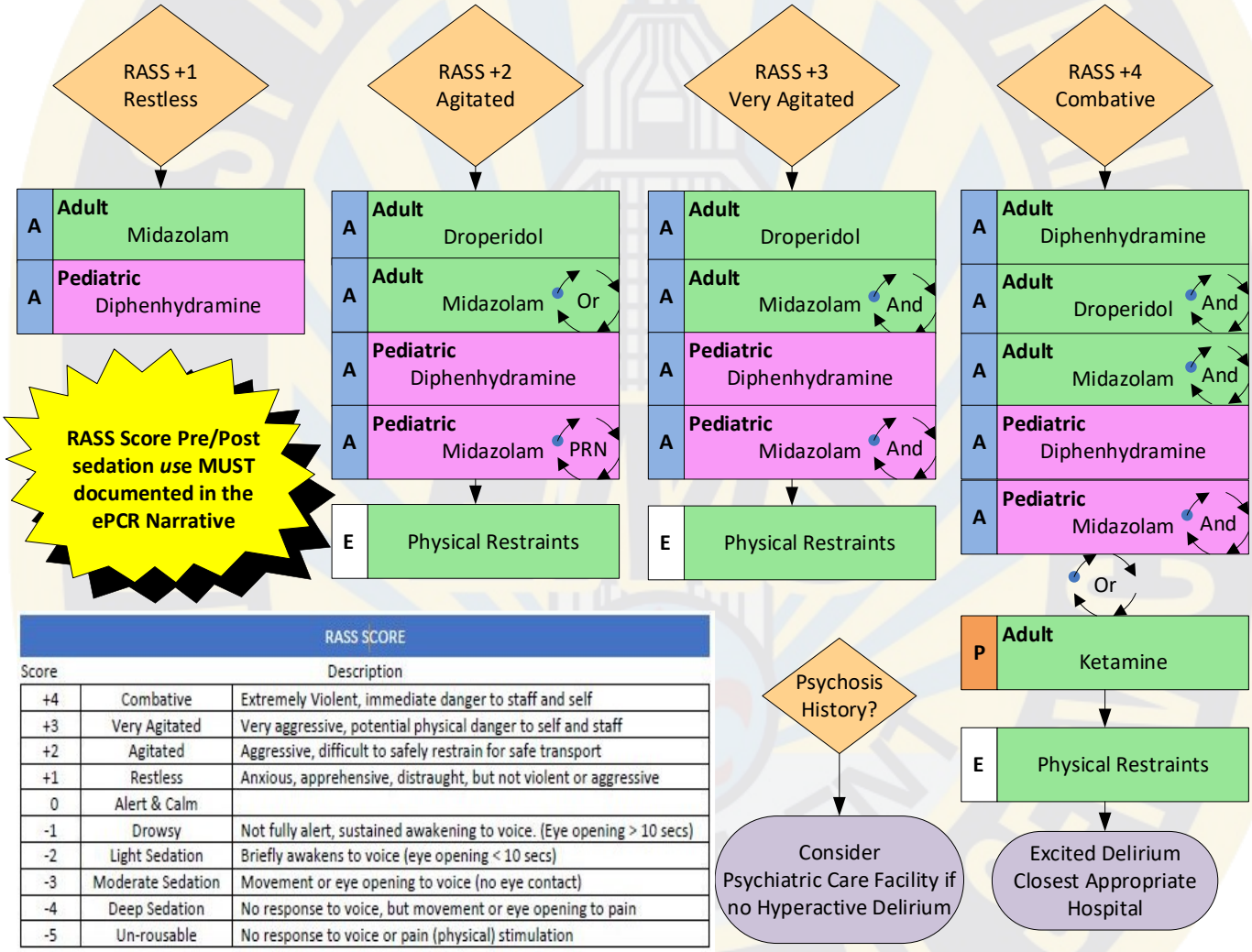
A patient who exhibits violent and/or agitated behavior where crew, public and/or patient safety is compromised. Focused assessments and patient care are unable to be adequately performed.

GOALS

- Physical and chemical restraints to prevent injury to providers and/or patient.
- Gain control of certain patient's requiring medical assessment and/or treatment
- Sedation based on RASS Score with the goal of RASS Score of "0"
- Rule out hidden, reversible causes
- Reduce patient anxiety during certain medical procedures

Hidden Causes:

- Neurological event (TBI, seizure, stroke)
- Non-compliance with psychiatric medications
- Hypo/Hyperglycemia
- Stimulant drug ingestion
- Hypoxia



RASS SCORE		
Score		Description
+4	Combative	Extremely Violent, immediate danger to staff and self
+3	Very Agitated	Very aggressive, potential physical danger to self and staff
+2	Agitated	Aggressive, difficult to safely restrain for safe transport
+1	Restless	Anxious, apprehensive, distraught, but not violent or aggressive
0	Alert & Calm	
-1	Drowsy	Not fully alert, sustained awakening to voice. (Eye opening > 10 secs)
-2	Light Sedation	Briefly awakens to voice (eye opening < 10 secs)
-3	Moderate Sedation	Movement or eye opening to voice (no eye contact)
-4	Deep Sedation	No response to voice, but movement or eye opening to pain
-5	Un-rousable	No response to voice or pain (physical) stimulation

Pearls:

- Never restrain patient face down!
- Hyperactive Delirium Syndrome signs include extreme agitation, delirium, anxiety, hallucinations, violent bizarre behavior paranoia, increased strength, hyperthermia, and incoherent speech or shouting.
- With Droperidol administration, monitor the ECG as soon as possible
- Ketamine should also be avoided in schizophrenics as it has been known to exacerbate psychotic symptoms
- IM Injections should always be administered in the thigh when possible. Medications can be mixed in a single syringe.

COMPLICATIONS OF PREGNANCY

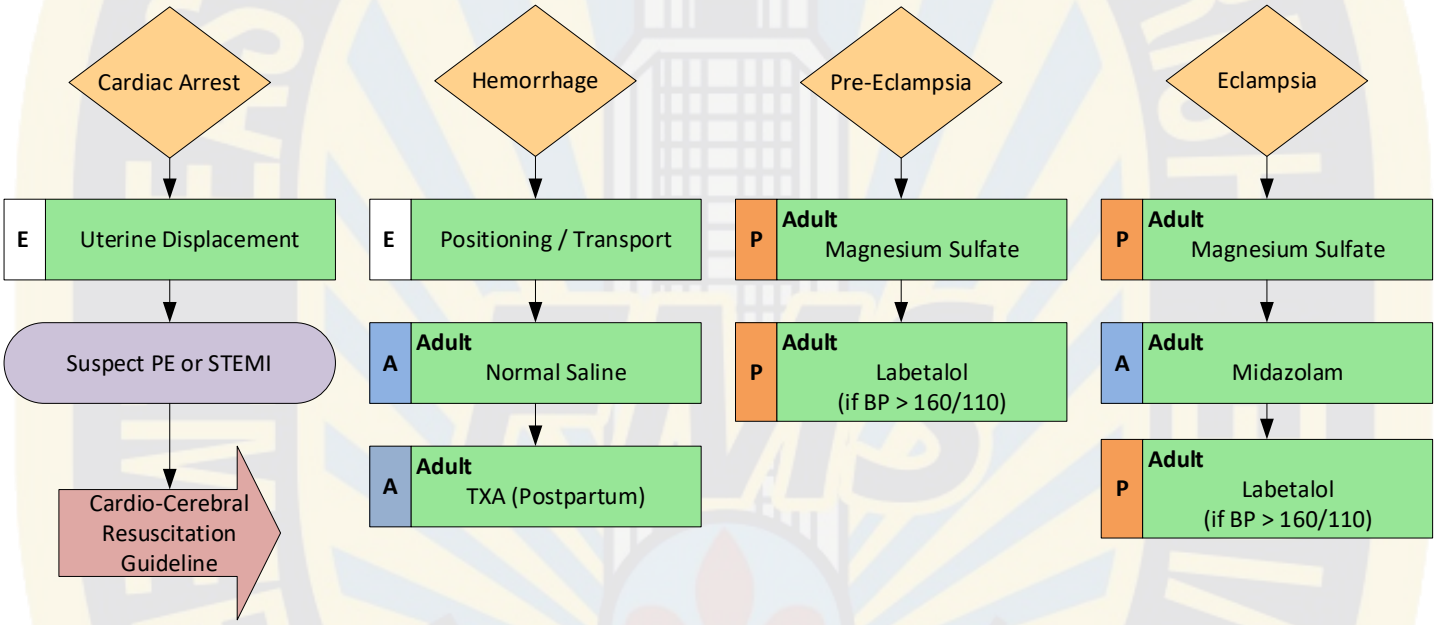
Complications that arise pre and post-partum.

GOALS

- Appropriately manage complications of pregnancy.
- Lower blood pressure in symptomatic pre-eclampsia and eclampsia to 140-150/90-100 mmHg.

Pre-Eclampsia S/S
Hypertension with:
- Edema
- Headache
- Nausea/vomiting
- Vision changes
- Shortness of breath
- RUQ pain

Eclampsia – A severe hypertensive disorder of pregnancy characterized by convulsions and coma, occurring between 20 weeks gestation and 6 to 8 weeks post-partum.



Pearls:

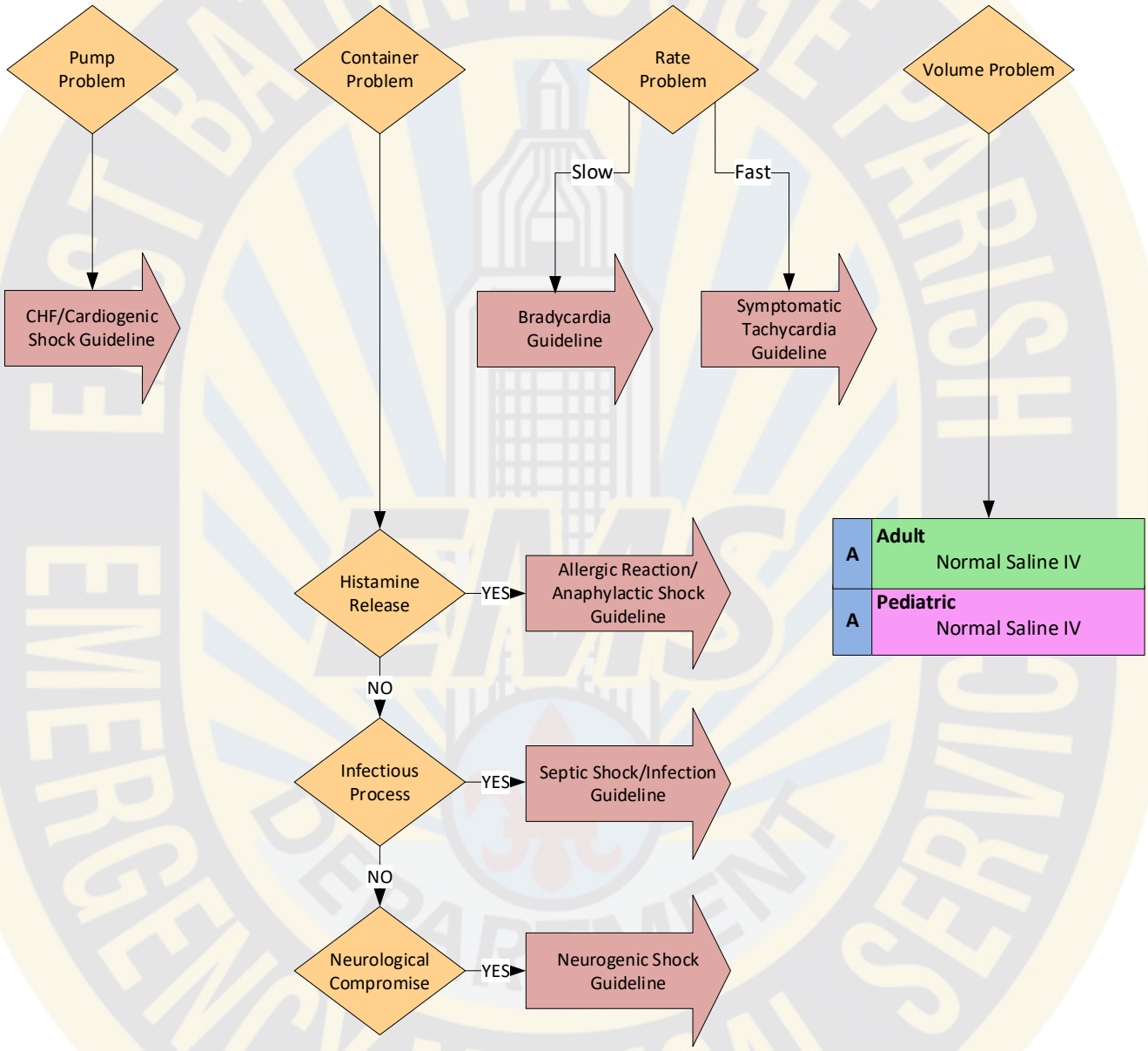
- Monitor blood pressure closely. Magnesium Sulfate also has anti-hypertensive properties. Ensure that blood pressure is not excessively lowered.
- Placenta Previa occurs in the last trimester or late mid-trimester and is characterized by painless bright red vaginal hemorrhage
- Abruptio Placentae occurs between 20 weeks of gestation and birth and is characterized by painful venous or arterial minor to heavy vaginal hemorrhage
- Ectopic pregnancy occurs in the early stages of pregnancy and are most commonly implanted in the fallopian tube. Characterized by painful hemorrhage of varying degrees
- Consider transporting the OB patient in the Left Lateral Recumbent position to prevent supine hypotension or if hypotension is present.
- A fundal height at the umbilicus is approximately 20-24 weeks gestation and at the xiphoid process is approximately 36 weeks gestation.

DEHYDRATION/SHOCK

A potentially life threatening condition secondary to a loss of blood products or free water which leads to end organ failure. Blood products include plasma, whole blood, and/or sodium.

GOALS

- Maximize oxygen delivery and ventilation
- Restore blood flow
- Fluid resuscitation



Pearls:

- Hypovolemic/Hemorrhagic (Non-traumatic) shock: is a VOLUME PROBLEM. Causes include excessive vomiting, diarrhea, polyuria, excessive sweating, burns, internal/external hemorrhage (non-traumatic), tachypnea and poor oral fluid intake. Patients may present with cold/clammy skin, increased shallow breathing, elevated heart rate, altered mental status, pale/cyanotic/dry mucous membranes.
- Blood pressure is a "late sign" of dehydration. Patient can be normotensive or even hypertensive (relatively) and be dehydrated, requiring fluid resuscitation.
- For DM Type 1 pediatric patients, fluid resuscitation is 10 cc/kg where evidence of dehydration exists.

DIABETIC

Patient who may or may not exhibit altered mental status and/or an unresponsive state in the presence of a low or elevated capillary blood glucose level.

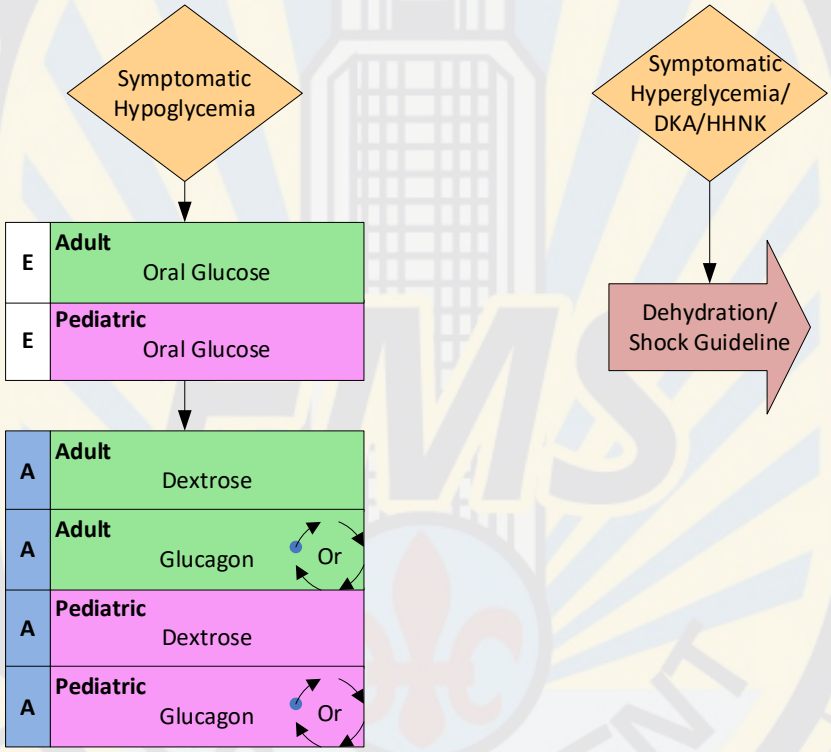
GOALS

- Reverse hypoglycemia
- Manage dehydration associated with hyperglycemia
- Maintain/establish adequate ventilation

DKA/HHNK

Patient Presentation:

- Abdominal pain/cramping
- Altered LOC
- Polydipsia
- Kussmaul respirations
- N/V
- Hypocapnia
- Polyuria
- Dyspnea
- Lethargy
- H/A and/or diplopia



Pearls:

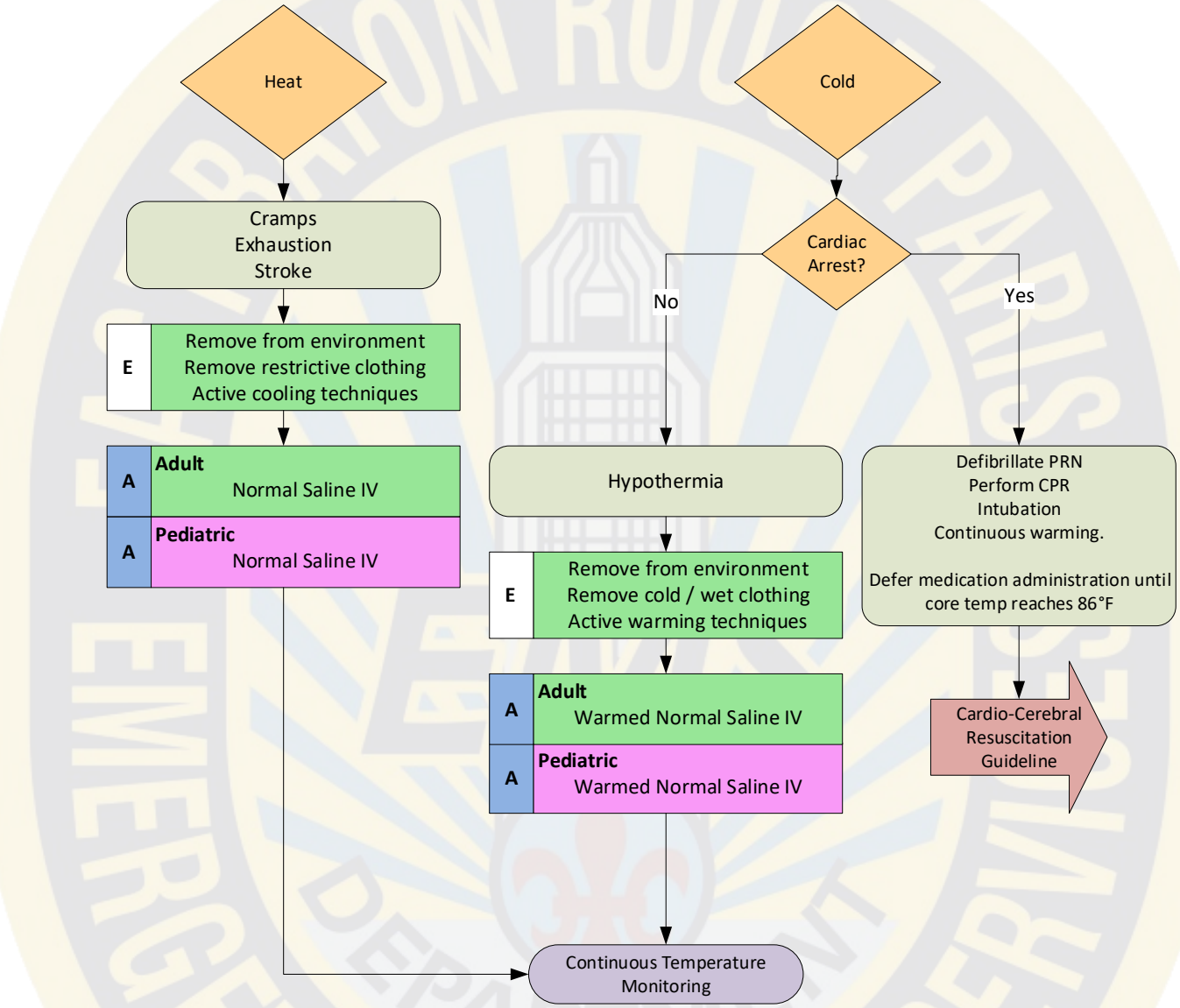
- CBG is RELATIVE!
- HHNK is predominately found with Type II Diabetics & DKA is predominately found with Type I Diabetics. These patients will often present with severe dehydration.
- DKA produces ketones; HHNK does not produce ketones.
- Closely monitor DKA/HHNK patients via continuous 12-Lead; hyperkalemia.
- Insulin pumps should be suspended in the presence of hypoglycemia.

ENVIRONMENTAL EXPOSURE

Environmental exposure is defined by patients suffering from effects of extreme environmental temperatures.

GOALS

- Removal of patient from the environment
- Management/control of temperature



Pearls:

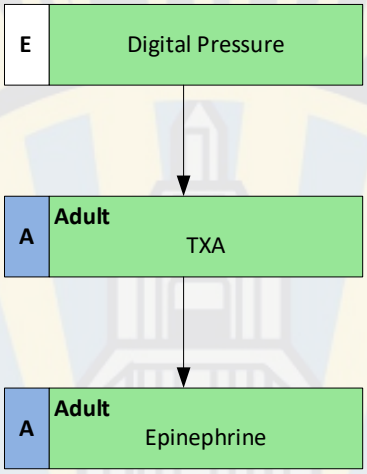
- Handle hypothermic patients carefully to reduce the risk of sudden V-Fib.
- Heat stroke presents with AMS and usually have high core temps above 104°F, sweating generally disappears. These patients must be aggressively and quickly cooled.
- Heat cramps may occur even with normal body temperature as a result of dehydration.
- Heat exhaustion may present with multiple signs & symptoms including: nausea/vomiting, weakness, dizziness, headache, tachycardia, hypotension and elevated temperature.
- Hyperthermia may be caused by illicit drug use or patients receiving general anesthesia for intubation

EPISTAXIS

Bleeding from the nasal cavity which can exit the nares or flow into the nasopharynx. Commonly referred to as a nosebleed.

GOALS

To manage bleeding originating from the nasopharynx and reduce the necessity of nasal packing



TXA Procedure:

Trial digital pressure for at least 10 minutes, if unsuccessful, continue
Have patient blow nose to evacuate the nasal cavity of blood clots
Administer TXA in one nare or both as needed
Have patient apply digital pressure and lean forward for a minimum of 10 minutes

Epinephrine Procedure:

Trial TXA for at least 10 minutes, if unsuccessful, continue
Have patient blow nose to evacuate the nasal cavity of blood clots
Administer epinephrine in one nare or both as needed
Have patient apply digital pressure and lean forward for a minimum of 10 minutes

Pearls:

- Posterior bleeding may be difficult to manage, evaluate by examining the pharynx
- Anticoagulants can contribute to bleeding, impair clotting and complicate management.

HEADACHE / VERTIGO

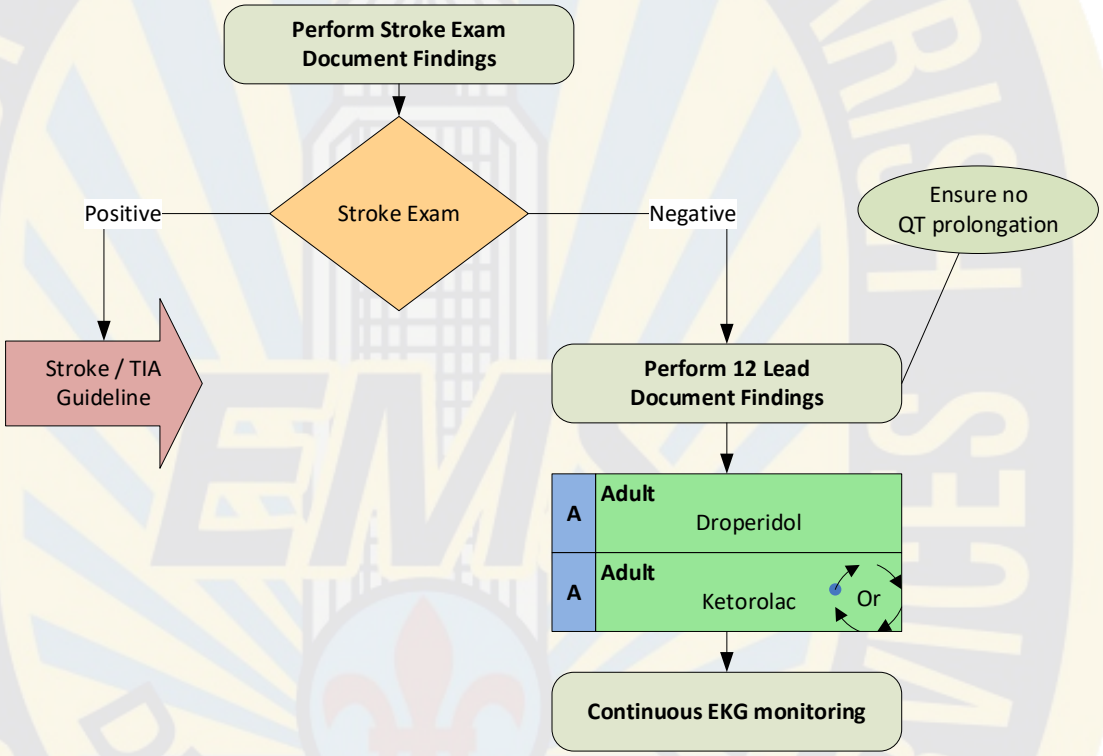
Migraines are characterized by recurrent, unilateral, throbbing headache associated with photophobia and nausea. Vertigo is a sensation of feeling off balance, dizziness and/or a spinning sensation or that the world is spinning around you.

GOALS

- Reduce headache pain experience to a "mild" status
- Reduce associated vertigo symptoms

Signs/Symptoms

- Dizziness and/or spinning sensation or sensation world is spinning around you
- Sensation of feeling off balanced
- Migraines are characterized by recurrent, unilateral, throbbing headache associated with photophobia and nausea.
- Migraines, which affect children and teenagers as well as adults, can progress through four stages: prodrome, aura, attack and post-drome. Not everyone who has migraines goes through all stages.



Pearls:

- 2.5 mg IM droperidol repeat only once after 15 minutes with 1.25mg (max 3.75 mg) has been shown to achieve a 'mild/ none' headache status in 88-100% of patients presenting with acute migraines (87% female study population).
- Droperidol has anti-emetic properties. The 2.5mg dose should address the headace pain as well as nausea symptoms
- Droperidol effects are very dose dependent. Assure proper dose for intended use prior to administration
- Use of opioids for migraine control has also been associated with higher recurrence rates, greater functional disability, and an increased likelihood of ED recidivism. Opioids should be avoided for migraine pain treatment
- Dehydration is a known trigger of migraine. Persistent nausea and vomiting further exacerbates the migraine. Although there is a relative paucity of strong evidence for the administration of IV fluids, adequate hydration might improve patient malaise and could prevent some of the adverse cardiovascular effects seen with many migraine therapies.

HYPERTENSIVE CRISIS

Systolic blood pressure >185 mmHg and/or diastolic blood pressure >110 mmHg and/or mean arterial pressure (MAP) >150 mmHg with a presence of symptoms suggesting organ dysfunction of the cardiac, renal, or central nervous systems.

GOALS

- Moderate reduction of MAP 10-20%
- Pain management
- Improve end organ dysfunction to the cardiac, renal, and/or central nervous systems

Signs and Symptoms:

- Systolic BP >185 mmHg
- Diastolic BP >110 mmHg

AND

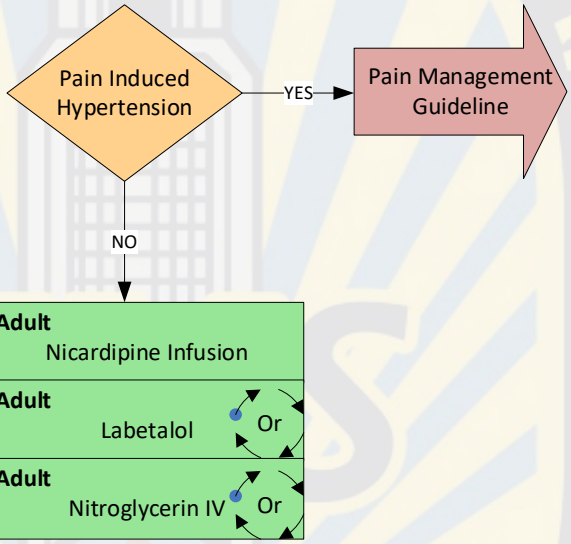
- dyspnea
- chest pain
- severe headache
- seizure
- A.M.S.

MAP Formula

$$\frac{(DBP \times 2) + SBP}{3}$$

OR

1/3 of (SBP-DBP) + DBP



Pearls:

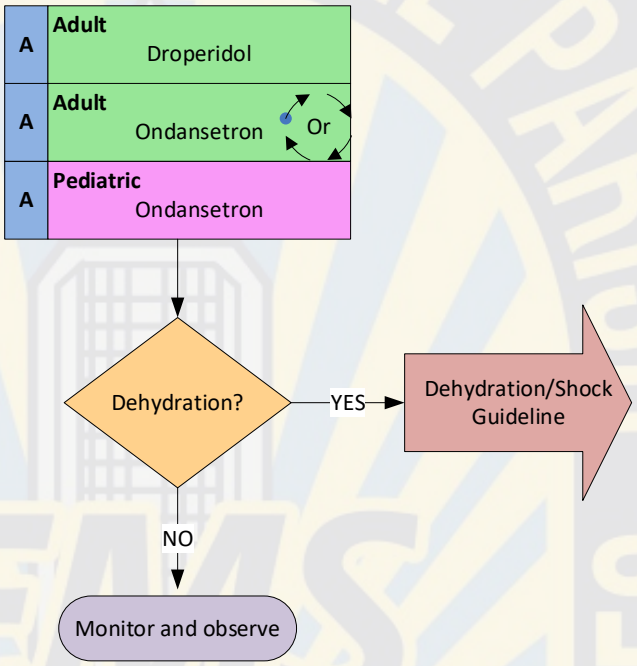
- Patients should be transported with their head elevated to 30 degrees.
- Ensure blood pressure cuff is sized appropriately.
- Utilize automated blood pressure trending.
- Use caution with Labetalol if cocaine use is suspected (runaway alpha response).
- Blood pressure determination based upon “trending” not initial/single BP reading.
- Hypertension is not uncommon in an emergency setting. HTN is usually transient and in response to stress and/or pain.
- When the patient is presenting with hypertension in the presence of severe pain, the patient’s pain should be addressed with analgesics before attempting to lower blood pressure with an anti-hypertensive medication.

NAUSEA/VOMITING

Nausea is a non-specific symptom of an involuntary urge to vomit. Nausea may precede vomiting or present with out vomiting at all. Many possible causes of nausea/vomiting exist.

GOALS

- Prevention or reduction of the symptom(s)
- Reduction of fluid loss from severe vomiting
- Rehydration of patients



Pearls:

- Ondansetron may be given as a "pre-medication" for other nausea/vomiting causing medications/procedures.
- There are no studies to ascertain the safety in administration of ondansetron in the OB patient.
- Prolonged vomiting can result in hypocalcemia and other electrolyte imbalances.
- It may be appropriate to withhold anti-emetics in patients who have ingested toxins where vomiting may be beneficial (alcohol).
- In cases where nausea and/or vomiting is associated with severe vertigo or migraine headache, administer Droperidol 2.5mg IM/IV repeat only once after 15 minutes 1.25mg (max 3.75mg)
- EKG and 12 Lead ECG should be considered prior to the administration of Ondansetron or Droperidol to assess for prolonged QT prolongation (i.e., QTc interval greater than 500 msec for males or 500 msec for females). Continuous EKG monitoring should continue post Ondansetron or Droperidol administration to monitor for QT prolongation.

NEUROGENIC SHOCK

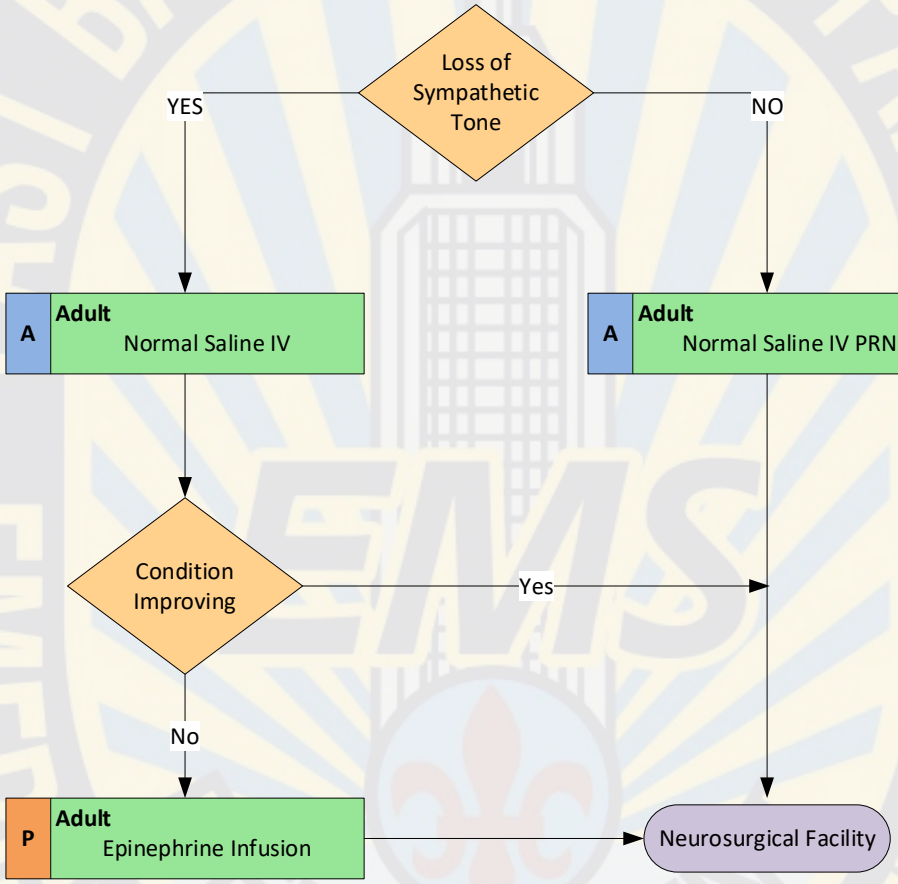
Classified as distributive shock whereas a disruption is occurring of the autonomic pathways within the central nervous system resulting in hypotension and occasional bradycardia.

GOALS

- Stabilize blood pressure, heart rate and body temperature
- Prevent tissue damage

Neurogenic Shock S/S:

- Vasodilation
- Hypotension
- Warm, flushed skin
- Priapism
- Not tachycardic; possibly bradycardic



Pearls:

- Neurogenic shock can result from a brain injury or a high spinal cord injury above the level of T-6
- Fluid resuscitation to achieve a MAP ≥70 mmHg
- Assess and treat for hypothermia

OVERDOSE/TOXICITY

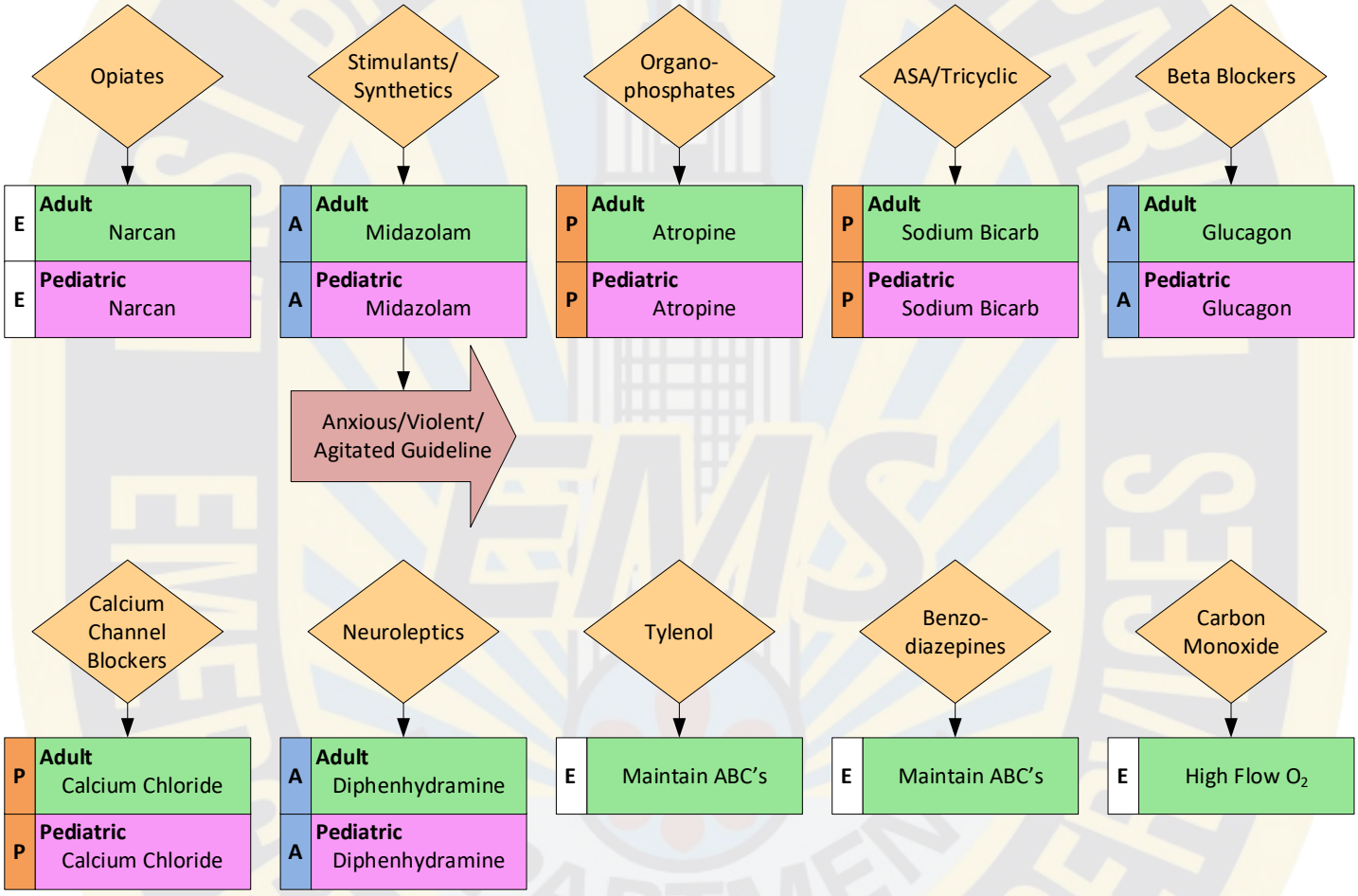
The exposure of a drug or other substance in quantities greater than recommended resulting in toxic or lethal states.

GOALS

- Airway/Ventiltion/Circulation management
- Antidote administration when applicable
- Poison Control Center Notification (800-222-1222)

SpCO% Interpretation (carboxyhemoglobin):

- **0-5%:** Normal in non-smokers
- **5-10%:** Normal in smokers. For non-smokers, assess for s/s, treat with high flow O_2
- **>10%:** Assess for s/s, treat with high flow O_2



Pearls:

S/S of an overdose/toxic exposure can range from compromises of airway, ventilation or circulation to violence and agitation

Opiates: heroin, fentanyl, morphine, hydrocodone, etc.
Stimulants/Synthetics: PCP, cocaine, amphetamines, MDMA, "mojo", "K-2", "spice"
Organophosphates: insecticides, herbicides and nerve agents
Tricyclics: elavil, amitriptyline
Calcium Channel Blockers: amlodipine, nifedipine, diltiazem, verapamil, benazepril
Neuroleptics: any "psychotropic" "behavior improving" medications like haldol, phenothiazines, phenergan
Benzodiazepines: midazolam/Versed, valium, alprazolam/Xanax, clonazepam/Klonopin, lorazepam/Ativan

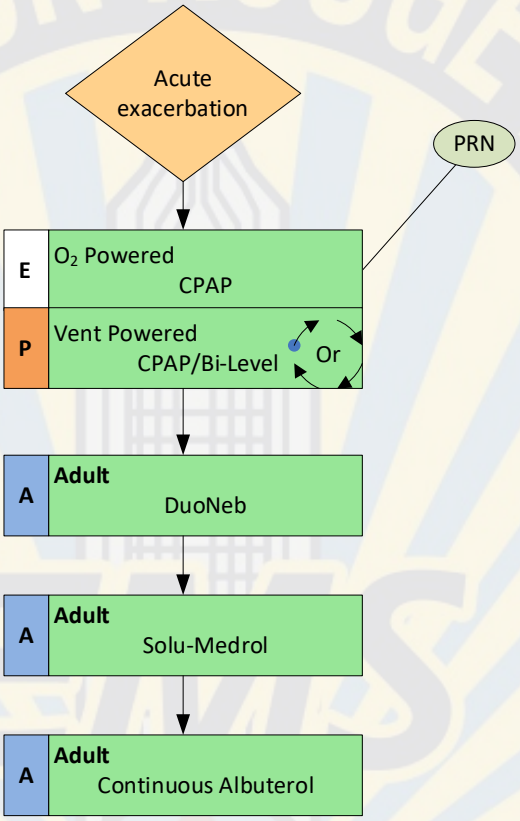
RESPIRATORY DISTRESS/COPD (ADULT)

Chronic Obstructive Pulmonary Disease is a type of obstructive lung disease with long term poor airflow.

- Treat acute exacerbations
- Bronchodilate airway
- Reduce mucous production

GOALS

- Reduce swelling
- Address hypoxia and hypercapnia



Pearls:

- PPV may be detrimental to continuity of care. **INTUBATION SHOULD BE A LAST RESORT.**
- Chronic findings (including wheezing, dyspnea upon exertion, "pink-puffer syndrome") are normal for these patients and should not be routinely treated in the emergency setting. Provider must exercise clinical judgment regarding the difference between a chronic finding and an exacerbation of symptoms complaint.
- These patients present with chronic hypercapnia.
- These patients respiratory drive is fueled by peripheral chemoreceptors not central chemoreceptors.
- Normal SpO2 values may range from 88-94%, depending on stage of disease.
- Chronic steroid use can lead to adrenal insufficiency
- CPAP/Bi-Level can be used to help splint airways open to allow for adequate exhalation
- $EtCO_2$ is a great tool for measuring patient response to treatment
- β-blocker medication should be withheld when β_2 agonist medication is being administered. Patients with significant hypertension may need to be treated with nitroglycerin.
- Wheezing can also be a sign of pulmonary edema in CHF. Wheezing does not always equate to obstructive airway disorders.

RESPIRATORY DISTRESS (PEDIATRIC)

Common upper and lower respiratory disorders affecting the pediatric patient's respiratory system. Pediatric respiratory distress may lead to respiratory failure where inadequate gas exchange causes hypoxia, hypercapnia or both. This is the leading cause of cardiac arrest in children.

GOALS

- Bronchodilation
- Reduction of airway swelling
- Reverse and prevent hypoxia
- Reduce hypercapnia and intrinsic peep
- Obtain and maintain patent airway

Respiratory Distress:

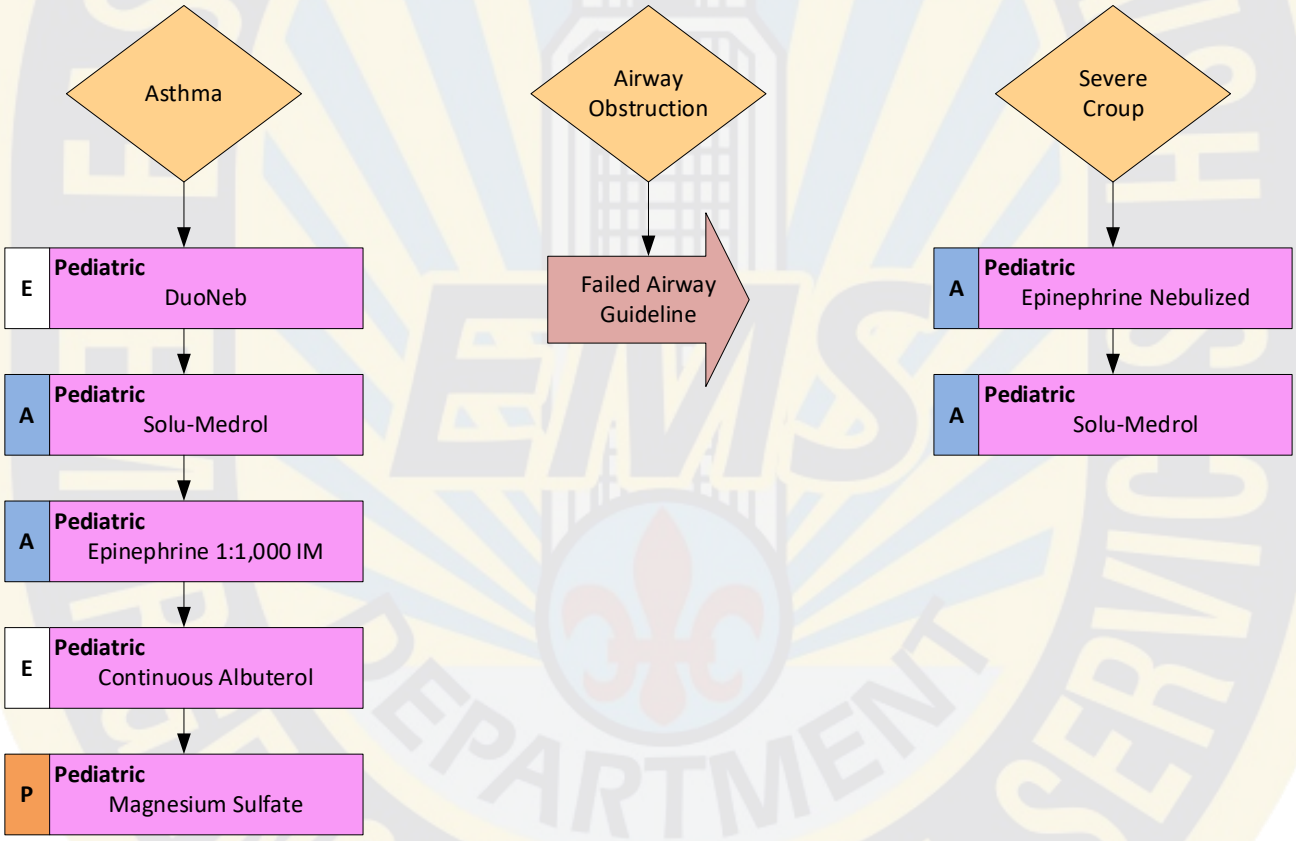
- Nasal Flaring
- Retractions
- Stridor
- Wheezing
- Tachypnea
- "Cling to parent"

Respiratory Failure:

- Gurgling
- Head bobbing
- Altered mental status
- Decreased muscle tone
- Decreased respiratory rate
- "Help from anyone"

Pre Arrest:

- Bradypnea
- Agonal
- Poor palor
- Diffuse cyanosis
- Non-responsive muscle tonne
- Unresponsive



Pearls:

- IV's should not routinely be attempted for young children who are stable.
- Supportive care only should be used for mild croup.
- Children with respiratory distress commonly sit up and lean forward to improve leverage for the accessory muscles and to allow for easy diaphragmatic movement.

SEPTIC SHOCK/INFECTION

Occurs when sepsis leads to dangerously low blood pressure and abnormalities in cellular metabolism. Classified as distributive shock. Septic shock is defined as hypotension following an infectious process that persists despite treatment with fluid administration. Bacterial infections are the most common culprit.

GOALS

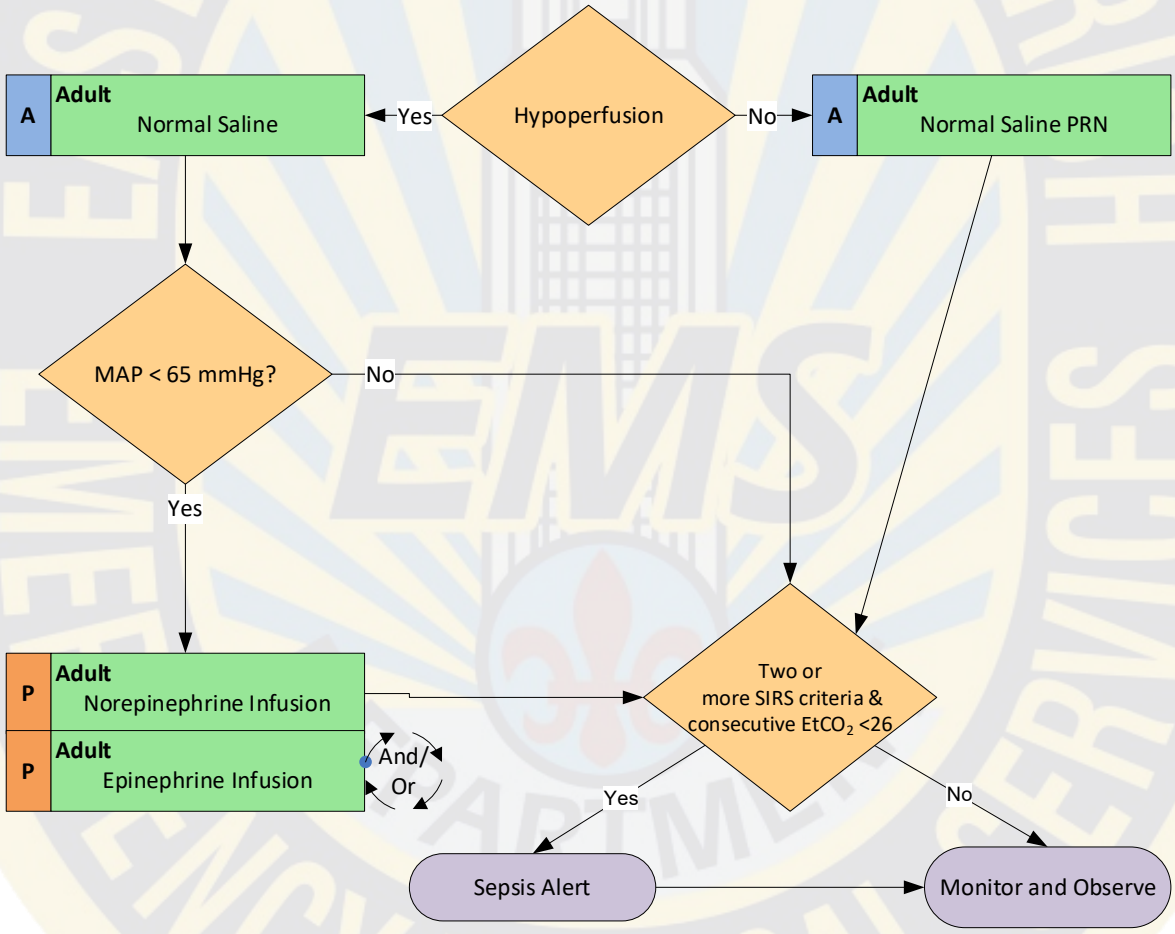
- Fluid resuscitation for vasodilation and third spacing—"Fill up the tank".
- Reduce "run away" vasodilation
- Early antibiotic administration (in-hospital)
- Temperature management
- MAP of >65 mmHg to regain end organ perfusion

Patient Presentation:

- AMS
- Chills
- Delayed Cap refill
- Myalgia
- ↑ CBG with no Hx of DM
- Hyper/Hypothermia
- ↓ urine output
- Unexplained rash/excessive bruising

SIRS Criteria:

- SBP <90 mmHg
- Heart Rate >90
- Respiratory Rate >20
- GCS <15
- Temp >100.4°F or <96.8°F



Pearls:

- $EtCO_2$ assessment should be used to aid in sepsis identification
- Early ED notification of "Sepsis Alert"
- These patients require high flow and high concentration of oxygen
- CPAP may be indicated for ARDS (5 cmH_2O max)
- Temperature management included fluid resuscitation and passive external cooling for *hyperthermia*
- Advanced stages of sepsis may present with *hypothermia*; management includes passive re-warming techniques

STROKE/TIA

A life threatening condition in patients with a thrombus or vessel rupture within the cranial space resulting in neurological compromise.

GOALS

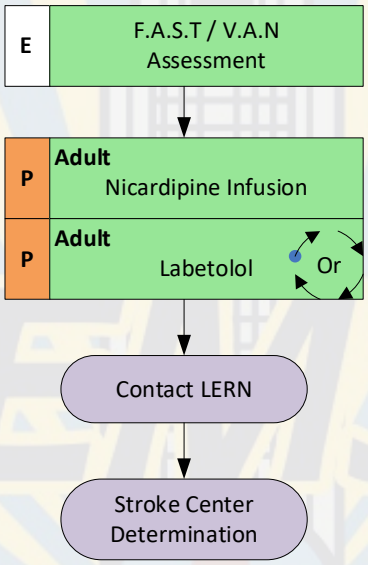
- Determine last seen normal time.
- Maximize cerebral perfusion and drainage.
- Target BP below 185/110 to reduce TPA time.
- Rapid determination and notification of appropriate stroke center.

Signs/Symptoms Documentation:
- facial droop/unilateral weakness
- unilateral arm weakness
- unilateral decreased grip strength
- speech difficulty/aphasia

History Documentation:
- time last known well
- seizure activity
- trauma before onset of symptoms
- recent illness, surgery, trauma
- current medication

STROKE ASSESSMENT TOOLS:

Facial drooping
Arm weakness
Speech difficulties
Time last seen normal
Vision
Aphasia
Neglect



Pearls:

- A CBG should be obtained to rule out a diabetic event
- A 12 lead ECG should be obtained on all suspected strokes
- Early LERN notification “Stroke Activation”
- Consider placing a 20g or larger IV at or above the antecubital fossa on VAN positive patients to expedite CTA acquisition
- Place patients supine for ischemic strokes
- Place patients 15-30 degrees for hemorrhagic strokes
- Ischemic vs hemorrhagic=7:1; when in doubt, transport supine unless airway compromise apparent
- Oxygen is not recommended for SPo2 ≥92% room air
- Limit scene time to 15 minutes
- Hypertension control only if systolic BP >185 mmHg or diastolic BP >110 mmHg and Last Seen Normal time to estimated arrival time at destination facility is ≤4 hours.
- “Wake up” stroke still requires rapid assessment, treatment and transport
- Have a family member/witness remain with patient or obtain phone number
- A VAN Assessment should be done on every stroke patient with arm weakness.
- VAN positive patients are eligible for endovascular thrombectomy up to 24 hours after time of onset.

THORACIC AORTIC CATASTROPHE

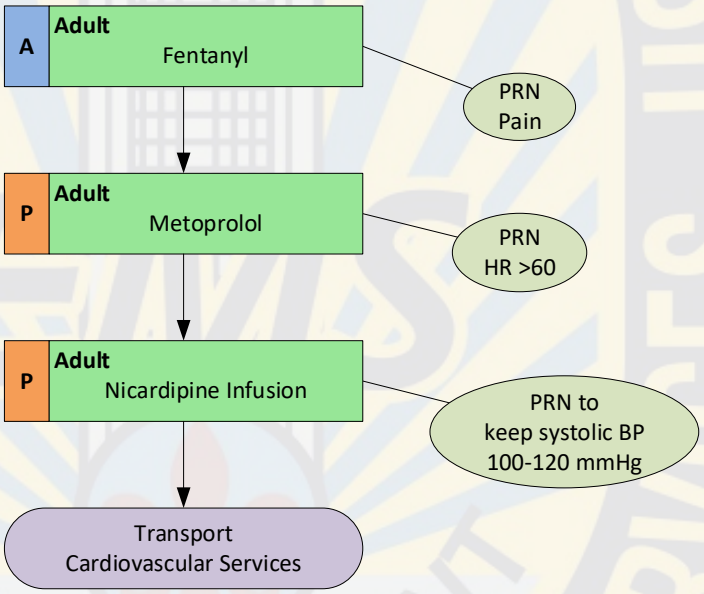
Aortic aneurysm: "ballooning of the vessel"
Dissecting aortic aneurysm: tearing of the tunica intima
Aortic rupture: Complete vessel transection, spilling blood into the thoracic and/or abdominal cavity causing exsanguination

GOALS

- Pain management
- Blood pressure and heart rate management: SBP between 100-120 and HR <60

Patient Presentation:

- Abrupt and severe pain described as sharp or tearing.
- Ascending aortic catastrophe may cause pain in the anterior and/or posterior chest
- Descending aortic catastrophe may cause pain in flank, back or abdomen.
- May show s/s of MI and/or stroke
- Disparity of blood pressure between upper extremities.
- Pericardial tamponade may be present, and is the most common cause of death.



Pearls:

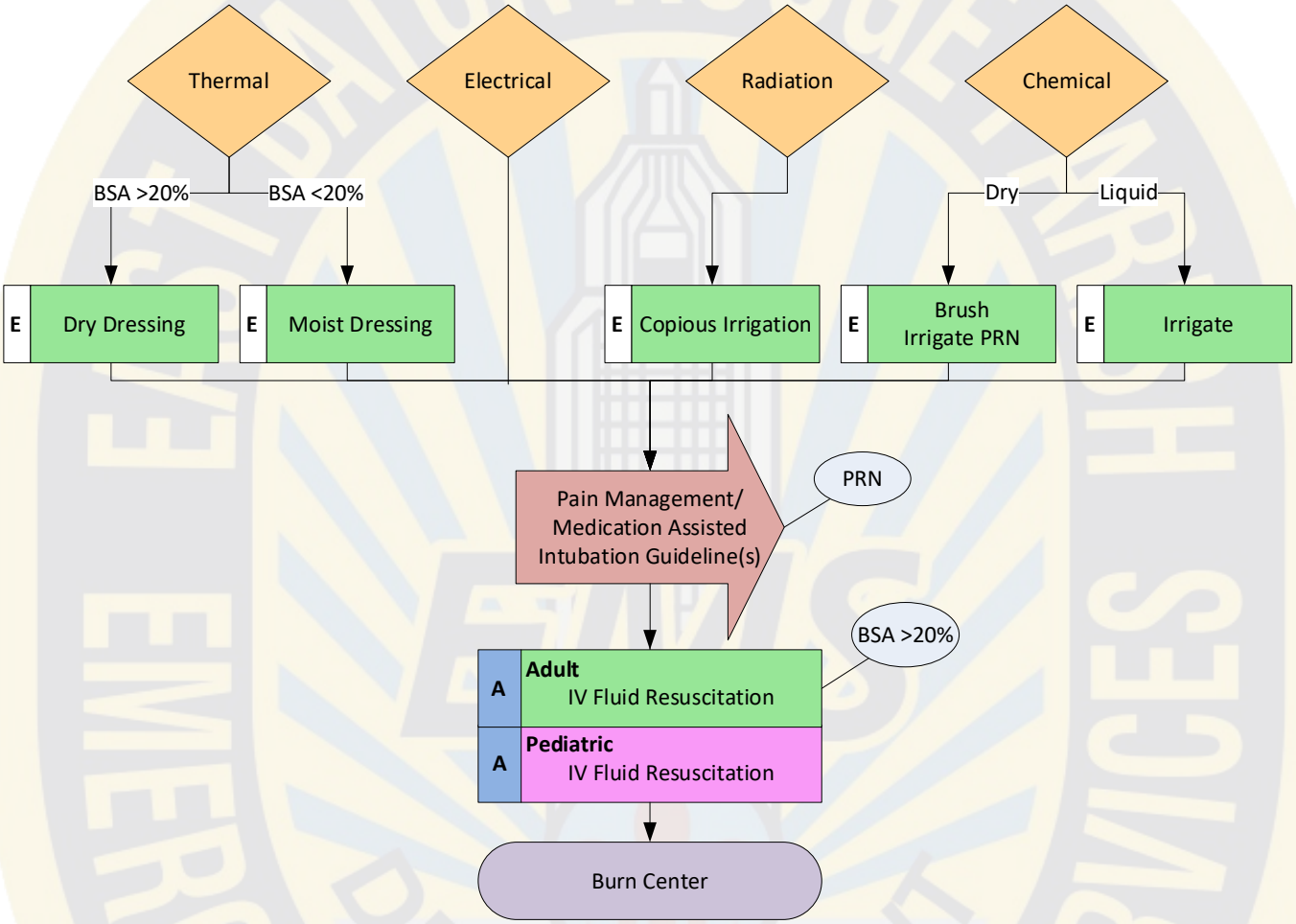
- Hypertension and tachycardia are extremely dangerous in these patients!
- Aggressive pain management will aid in managing BP and HR.
- Pain management and heart rate control is priority. Once the HR ≤60, then BP management can be initiated.
- Marfan syndrome and Ehlers-Danlos syndrome are contributing factors in patients primarily under the age of 40
- Risk factors include chronic HTN, atherosclerosis, previous cardiovascular surgery

BURNS

A type of injury to the skin caused by heat, cold, electricity, chemicals, friction or radiation

GOALS

- Consider inhalation injury and secure airway EARLY-as needed.
- Remove patient from source and stop burning process
- Remove restrictive garments, equipment and/or devices
- Prevent hypothermia



Pearls:

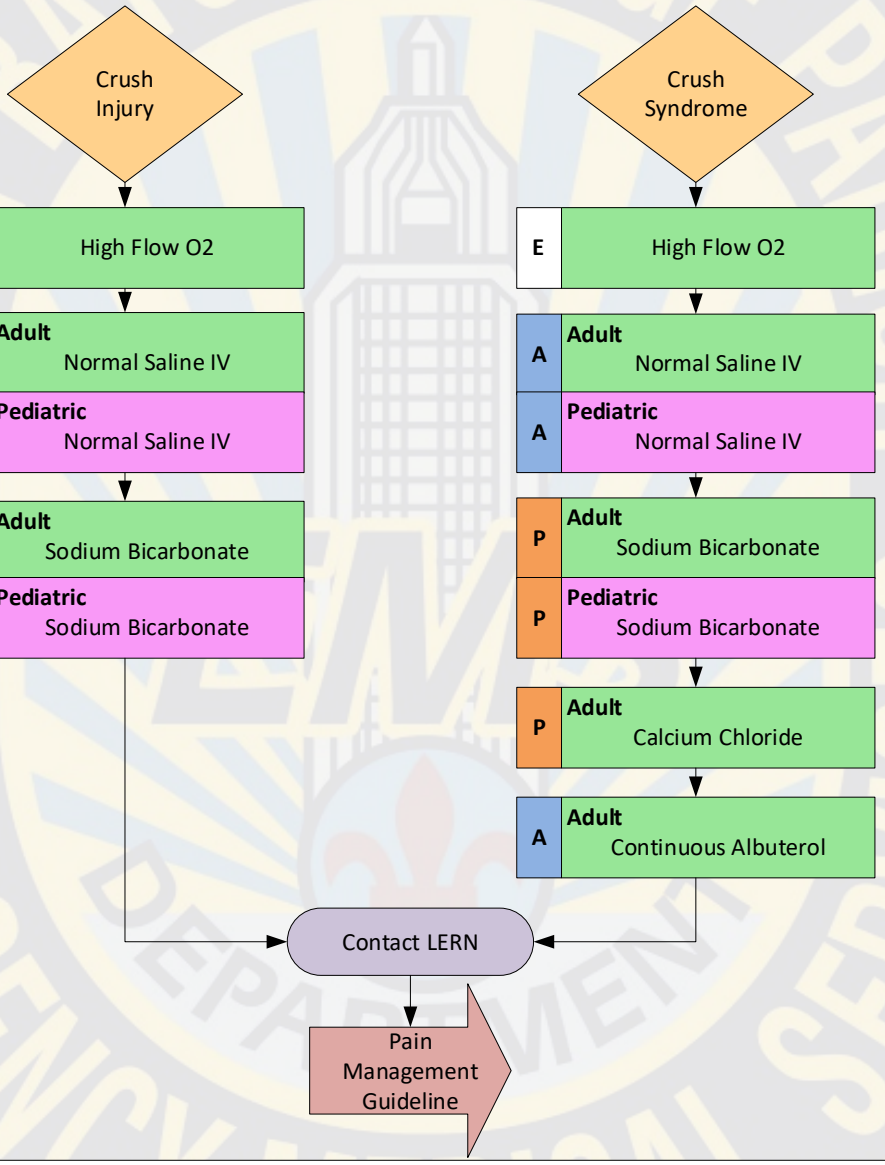
- **IV Fluid Resuscitation recommended volumes:**
  - 14 years or older 500cc/hr (83 gtts/min on 10 gtts)
  - 6 to 13 years 250cc/hr (42 gtts/min on 10 gtts set)
  - 5 years or younger 125cc/hr (21gtts/min on 10 gtts set)
- Critical burns include: full thickness burns, partial thickness >10% BSA; burns to face, eyes, hands, feet, genitalia and major joints; electrical burns to include lightning injury; chemical burns; inhalation burns; burns with extremes of age or chronic disease; burns associated with major traumatic injury. These patients should be transported to a burn center with the exception of critical trauma patients. Critical trauma patients with burns should be transported to a trauma center.
- Consult the Emergency Response Guidebook for guidelines on chemical decontamination and burn management
- Do not apply ointments, creams or lotions during the initial management of a burn
- Electrical burns: DO NOT touch the patient until you are certain that the electrical source is disconnected. Anticipate EKG disturbances.
- Consider carbon monoxide and/or cyanide poisoning when appropriate.

CRUSH INJURY/SYNDROME

Crush Injury is defined as compression of extremities or other major muscle groups causing muscle swelling and/or neurological impairment.
Crush Syndrome is defined as systemic manifestations of crush injury due to traumatic rhabdomyolysis and the release of potentially toxic cell components and electrolytes. This may lead to lethal dysrhythmias, hyperkalemia, hypocalcemia, renal failure, local tissue injury or death. May also lead to altered mental status and hypotension.

GOALS

- Rapid identification
- Minimalize/avoid renal failure or death
- Avoid hyperkalemia



Pearls:

- Be aware of air quality in confined spaces.
- It's a good principle to start this therapy during extrication
- Hyperkalemia: Peaked T waves, QRS >0.12 seconds, QT interval >0.46 seconds, loss of P wave, sine wave
- Early, aggressive pain management/control is strongly encouraged
- Patients may become hypothermic rapidly even in warm environments
- **ONE AMPULE OF SODIUM BICARBONATE IS 50 mEq**

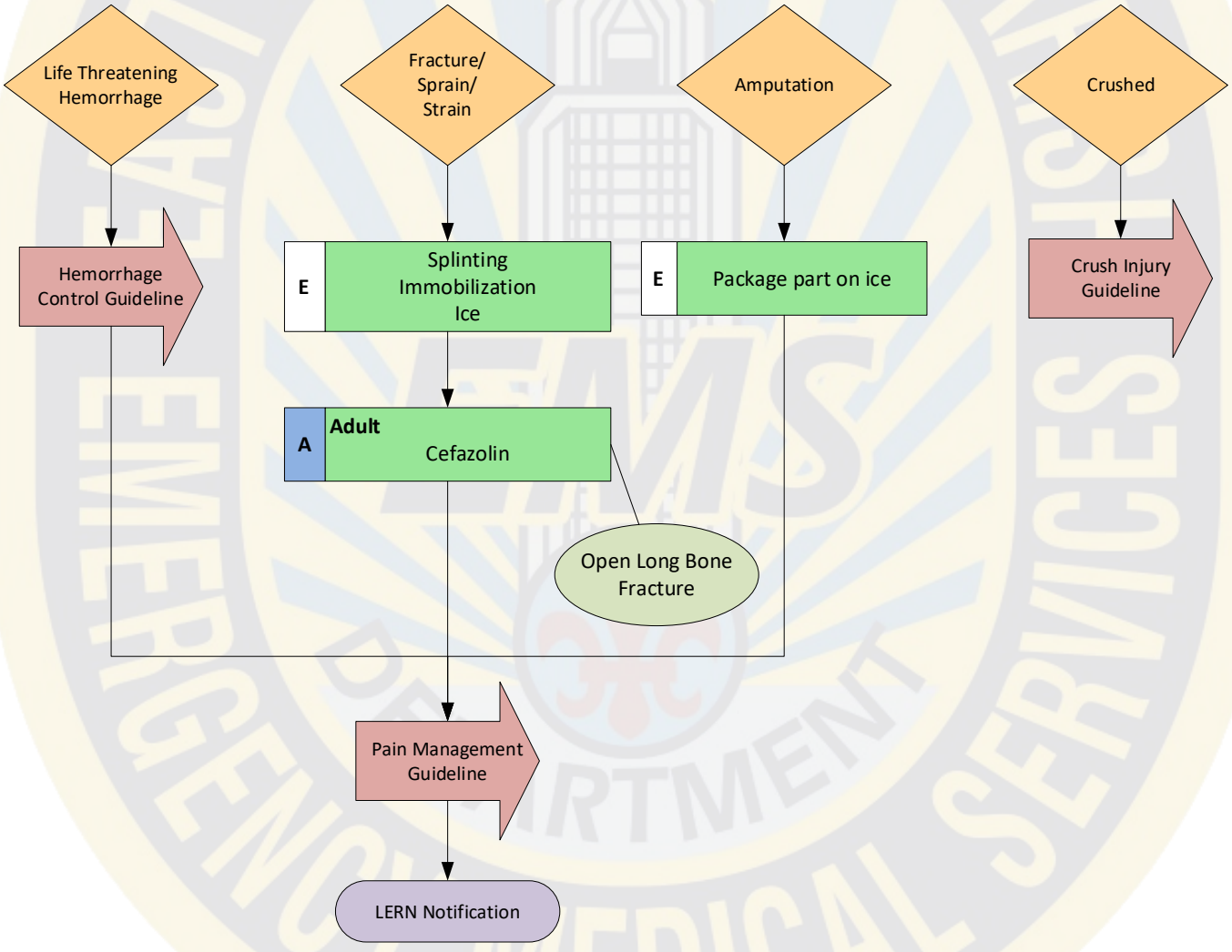
EXTREMITY INJURY

Any classification of a major injury to an extremity.

GOALS

- Preserve limb
- Prevent exsanguination
- Prevent further injury

Package amputated parts (as time and resources permit):
- Wrap part with clean, moist dressing
- Place in plastic bag
- Place in cold ice water



Pearls:
- There are many times that these extremity injuries may be associated with one another.
- Femur fractures are at HIGH risk for hemorrhagic shock secondary to internal bleeding.
- Open fractures are at HIGH risk for infection.
- Constant distal CMS assessment is critical, when applicable

HEAD TRAUMA

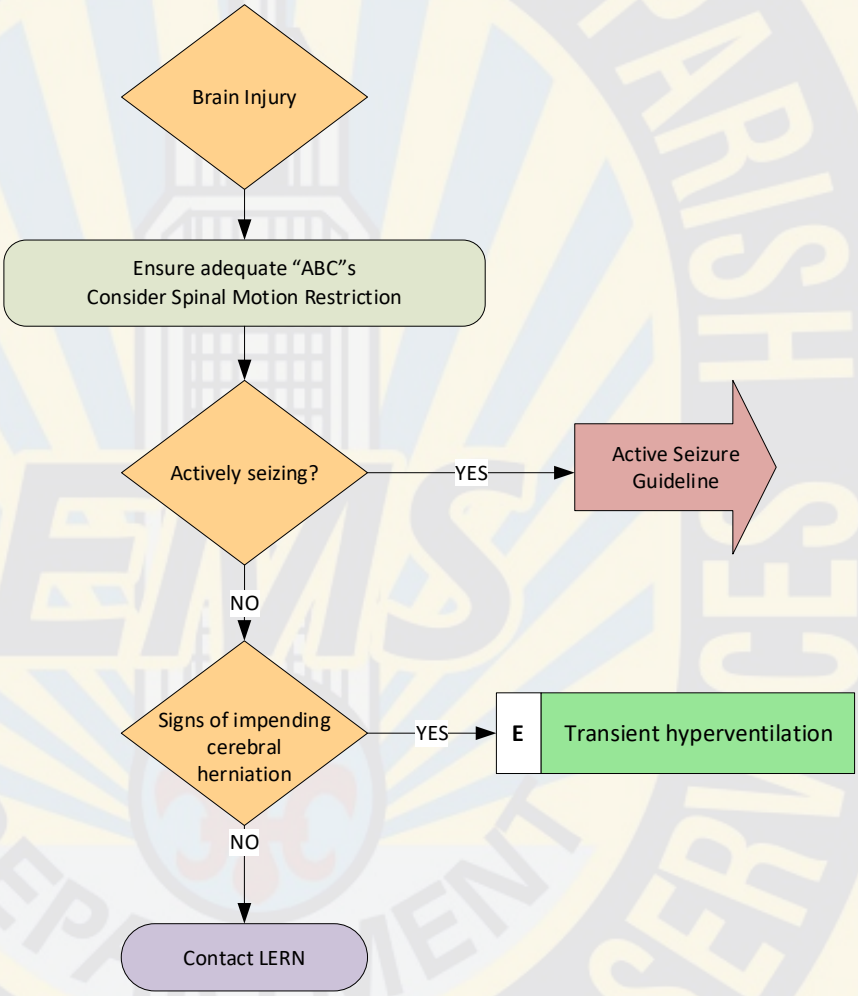
Blunt and/or penetrating trauma to the head

GOALS

- Prevent or manage secondary brain injury
- Ensure adequate oxygenation, ventilation and perfusion
- Prevent or correct hypoxia and hypotension

Brain Injury S/S:

- Altered mental status
- Unconscious or Loss of consciousness
- Confused or combative
- Seizures
- Posturing
- Trismus
- Headache
- Nausea/vomiting
- Loss of coordination



Pearls:

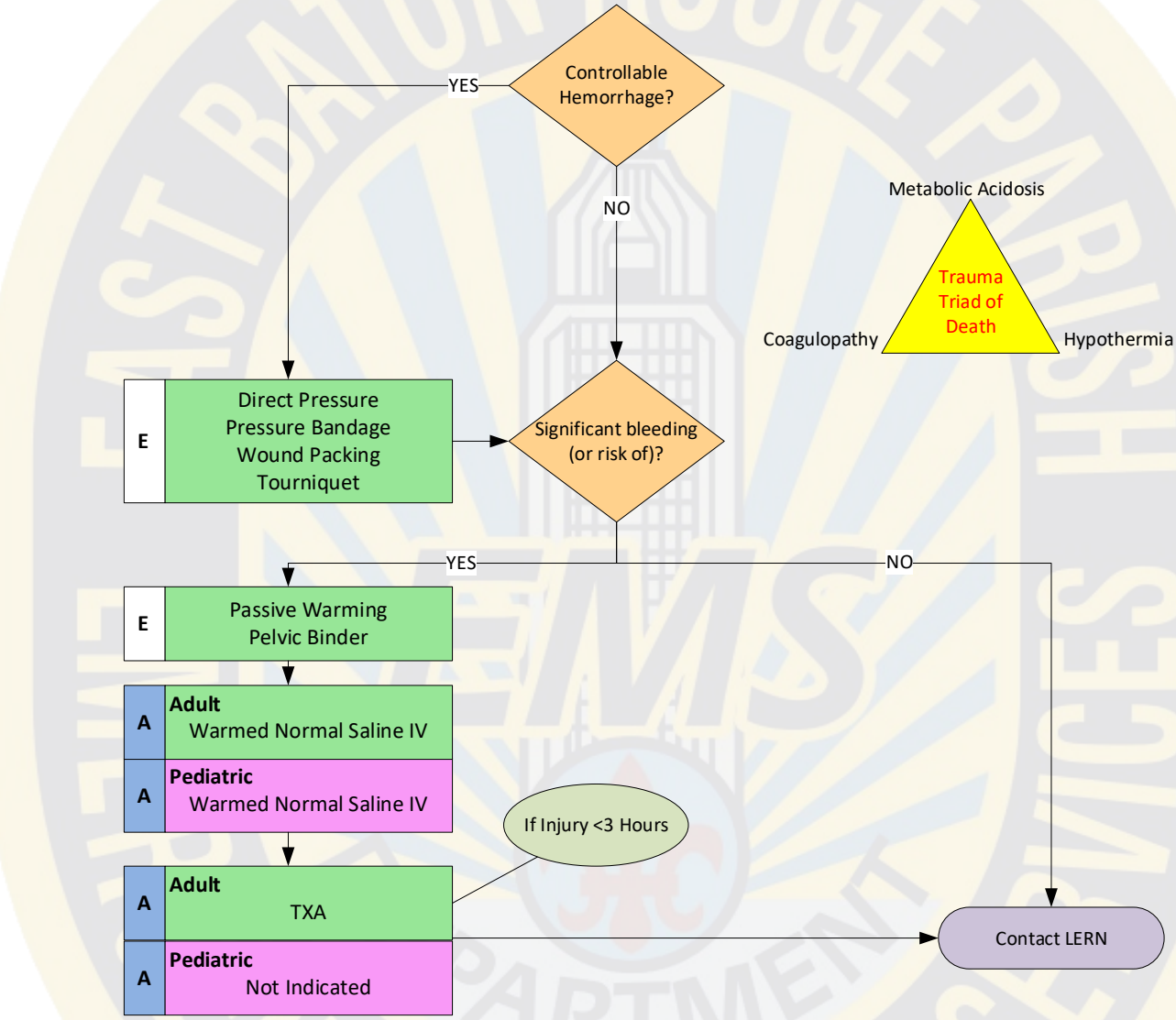
- **Maintain SpO2 ≥94%** and **$EtCO_2$ 35-45 mmHg**. Do not hypoventilate or hyperventilate. Transient hyperventilation is only indicated if signs of cerebral herniation are present.
- If **transient hyperventilation** is indicated, maintain $EtCO_2$ of **30-35 mmHg**.
- Consider elevating the head of the stretcher 30° if patient has a systolic blood pressure of≥90 mmHg to reduce ICP
- Maintain a systolic blood pressure of 90 mmHg if hypotension is present.
- If patient is hypoglycemic (CBG ≤ 60), contact medical control for treatment orders
- Signs of impending cerebral herniation may include: decreased mental status, posturing, unilateral/bilateral pupil dilation,hypertension, bradycardia and abnormal ventilatory patterns

HEMORRHAGE CONTROL

Patients that present with significant internal or external hemorrhage requiring manual, pharmaceutical and/or surgical intervention to control hemorrhage

GOALS

- **LIMIT SCENE TIME TO 5 MINUTES FOR UNCONTROLLABLE HEMORRHAGE**
- Interventions should not be completed on scene unless an immediate correctable life threat is identified.
- Rapid transport to closest trauma center
- Maintain patient condition until surgical intervention



Pearls:

- Damage Control Resuscitation, also known as "permissive hypotension" is defined by the management of patient clinical signs and symptoms with limited minimal pre-hospital intervention. The goal is to ensure vital organs are being perfused while avoiding massive crystalloid resuscitation. Key indications that would prompt intervention include: systolic BP <80 mmHg, change in mental status, or loss of radial pulses. The preferred intervention is administering a limited amount of warmed crystalloid solutionwhile enroute to the trauma center.
- The "Trauma Triad of Death" is a visual representation describing the combination of hypothermia, acidosis and coagulopathy. This combination is commonly seen in patients who have sustained severe traumatic injuries and results in a significant rise in the mortality rate.
- Pelvic Binders should be considered for patients who sustain significant blunt trauma and have signs of internal bleeding. Crepitus or pelvic instability is not required for the consideration of placement of a pelvic binder.

SPINAL MOTION RESTRICTION

Maintenance of the spine in anatomic alignment and minimizes gross movement and does not mandate the use of specific adjuncts.

GOALS

- Should not interfere with critical airway management, hemorrhage control or rapid transport.
- Backboards should not be used as a therapeutic intervention or as a precautionary measure.
- Should not be used for patients with penetrating trauma without evidence of spinal injury and when spinal motion restriction will delay care.
- Assess risk for spinal injury

Significant Mechanism of Injury:

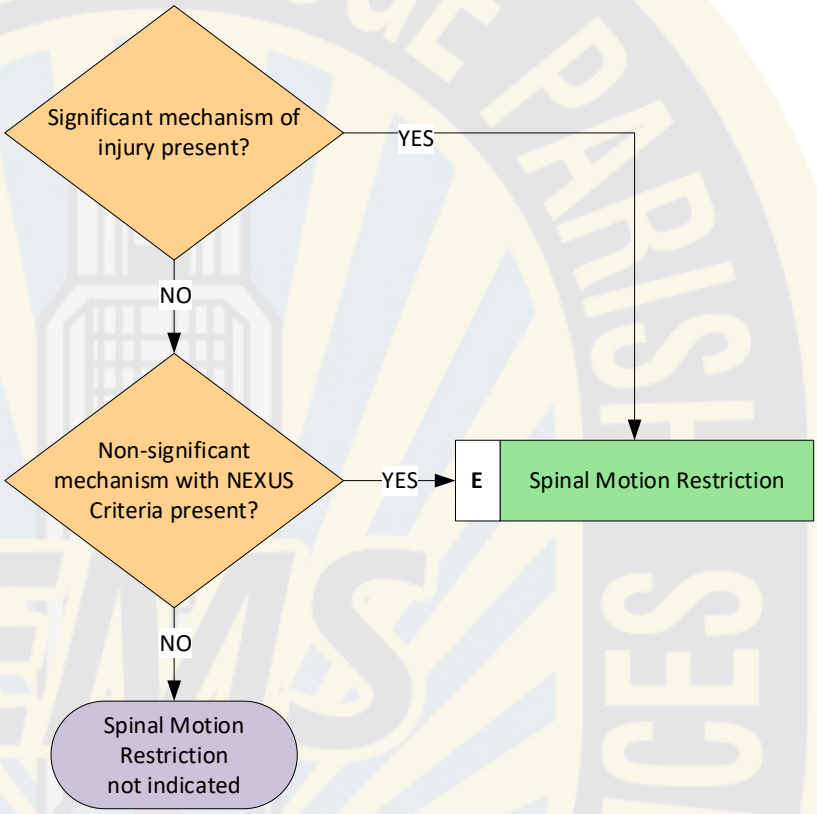
- MVC with any Ejection, death of occupant, rollover, 12 inch intrusion into passenger compartment.
- Pedestrian struck or run over >20 mph
- Motorcycle/bicycle/ATV >20 mph
- Blast injuries
- Major blunt trauma to torso
- Falls of patient or objects >20 feet

Non-Significant Mechanism of Injury:

- Falls <20 feet
- Pedestrian struck <20 mph
- Minor MVC's
- Mechanism of isolated injury should not be included in this guideline (GSW to leg, fracture to ankle, industrial hand injury, etc.)

NEXUS Criteria:

- Focal neurological deficit
- Midline spinal tenderness
- Altered level of consciousness
- Intoxication
- Distracting Injury



Pearls:

- Spinal Motion Restriction is best achieved by applying a cervical collar and lying the patient on the stretcher (preferably supine if tolerated by patient). The patient should be secured to the stretcher with all available straps to include the shoulder harness, or you have the option to achieve Spinal Motion Restriction by using alternate means of securing the patient supine to the bench seat (long spine board, scoop stretcher, folding stretcher, etc.).
- LSB's can be used as an extrication device
- It is recommended to remove motorcycle helmets
- Smaller children and others with cognitive impairment may not tolerate cervical collars therefore causing unwanted movement. It may be reasonable to withhold application of a cervical collar and leave small children in a car seat
- Patients 65 years or older have a higher risk of spinal injury that can be overlooked with NEXUS criteria. It is important to exercise sound clinical judgment when determining the need for spinal motion restriction in these patients. Insignificant mechanisms of injury can cause spinal fractures in the elderly population
- Patients with communication barriers (language, very old/young, or any other reason a patient cannot accurately report signs and symptoms) should be selected for spinal motion restriction
- Patients may be allowed to self-extricate to the stretcher when appropriate. Studies have shown that there is less manipulation to the spine when patients are allowed to move on their own versus being manually extricated or immobilized.

TORSO TRAUMA

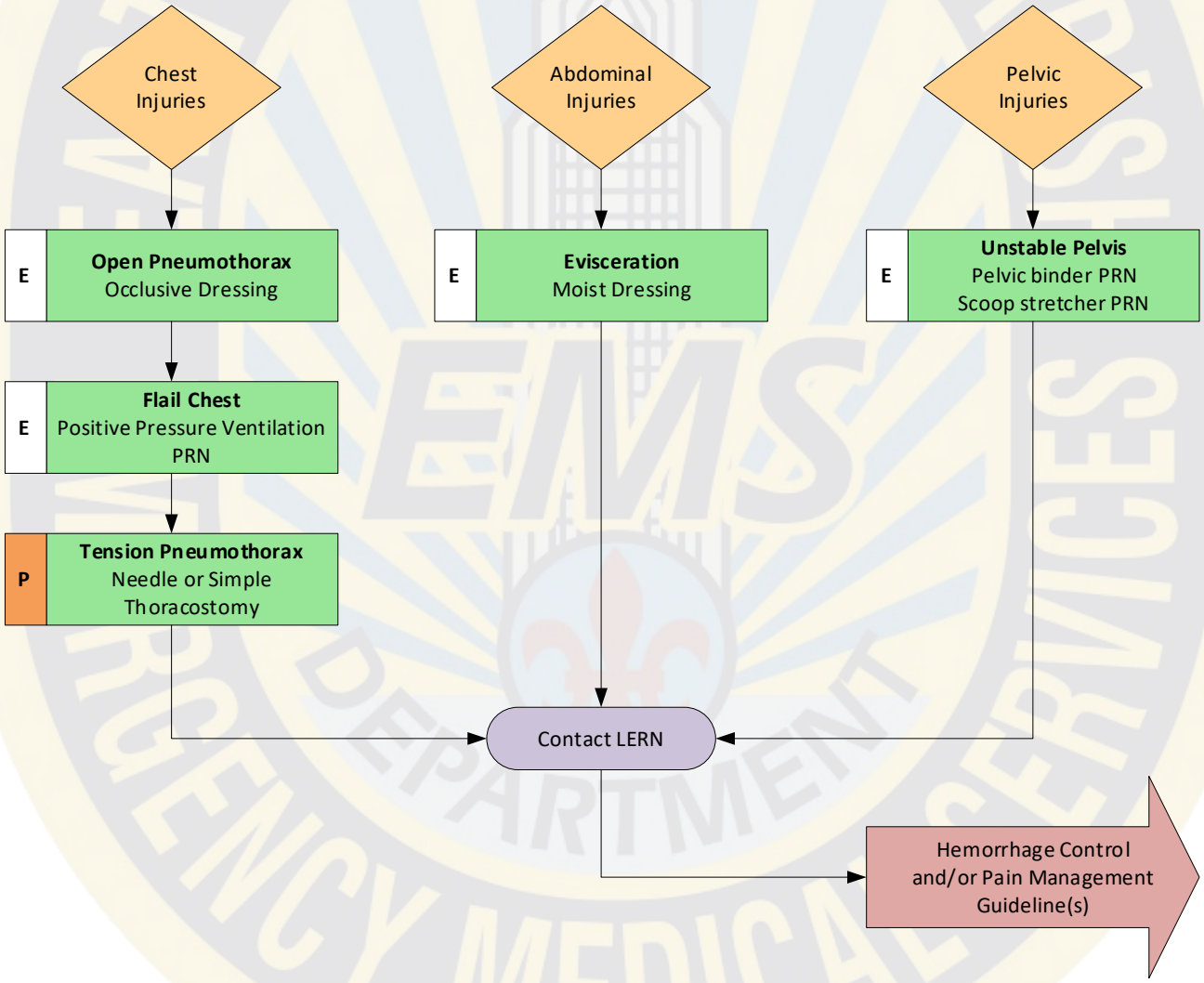
Blunt and/or penetrating trauma to the chest, abdomen or pelvic region.

GOALS

- Reduce hemorrhage
- Improve ventilation/oxygenation/perfusion
- Manage pain

Mechanism of injury suggestive of a pelvic fracture combined with one of the following indicates pelvic binder application:

- HR >100
- SBP <90
- GCS <14
- Distracting injury
- Pelvic pain on clinical assessment



Pearls:

- Springing the pelvis to evaluate for pelvic fractures is unreliable and dangerous
- Pelvic injuries should be suspected when s/s of shock are present with blunt trauma and obvious causes of blood loss can't be determined.
- Bulky dressings are no longer recommended to stabilize a flail chest injury.

TRAUMA ARREST

A pulseless patient caused by blunt and/or penetrating trauma. These patients may not be in cardiac arrest, rather just "pulseless".

GOALS

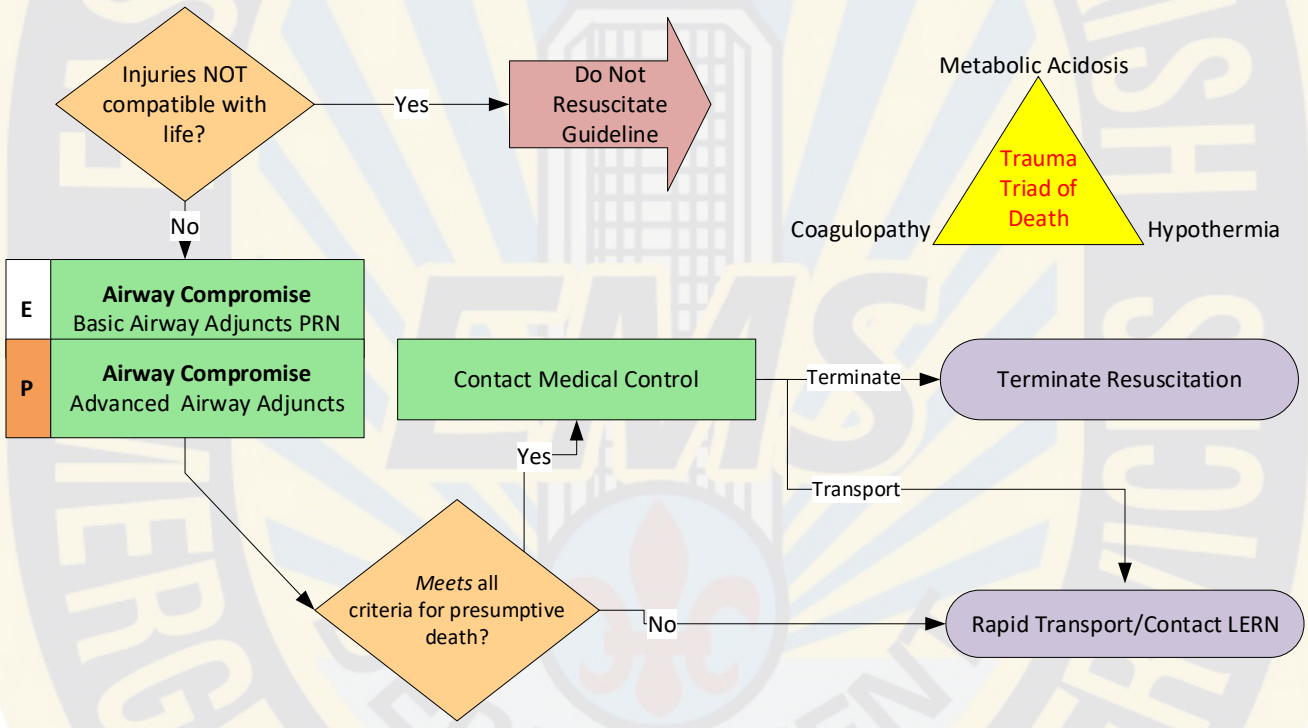
- Rapid identification of any correctable cause of the patient being pulseless, **OR**
- Identification of injuries non-compatible with life.
- Rapid transport to a trauma center when indicated.

Injuries not compatible with life:

Blunt or penetrating:
- Decapitation
- Catastrophic brain trauma
- Hemicorporectomy
- Incineration
- Grossly obvious mortal wound
- Injuries that do not permit effective administration of CPR
- Evidence of prolonged cardiac arrest, dependent lividity or rigor mortis

Presumptive Death: Blunt
- Asystole or PEA <40
- Apneic & Pulseless

Presumptive Death: Penetrating
- Asystole or PEA <40
- Apneic & Pulseless
- Without spontaneous movement
- Fixed, dilated pupils



Pearls:

- **Limit scene time to 10 minutes**
- Surgical intervention is definitive care. Do not waste time on scene establishing an advanced airway unless the compromised airway is suspected to be the cause or a contributing factor of the arrest and an advanced airway is required to address the compromise.
- When no correctable causes of trauma arrest exist, when there are no signs of presumptive death, and there are no injuries incompatible with life – **LOAD and GO**
- Contact LERN as time permits
- CPR is to be performed without emphasis on cardiac medication administration. Fluid resuscitation may be indicated and up to 2 liters of **warmed crystalloids** can be given under standing order if needed.
- Do not over ventilate
- Paramedics should use sound clinical judgment when determining "dead at scene"
- Trauma center arrival goal is 17 minutes OR LESS from arrest.

****This guideline does not supersede mass causality incident triage.****

PARAMEDIC INITIATED REFERRAL

This guideline is intended to help guide a paramedic's decision making with patient presenting with minor trauma or infestation, and where alternative treatment options exists.

GOALS

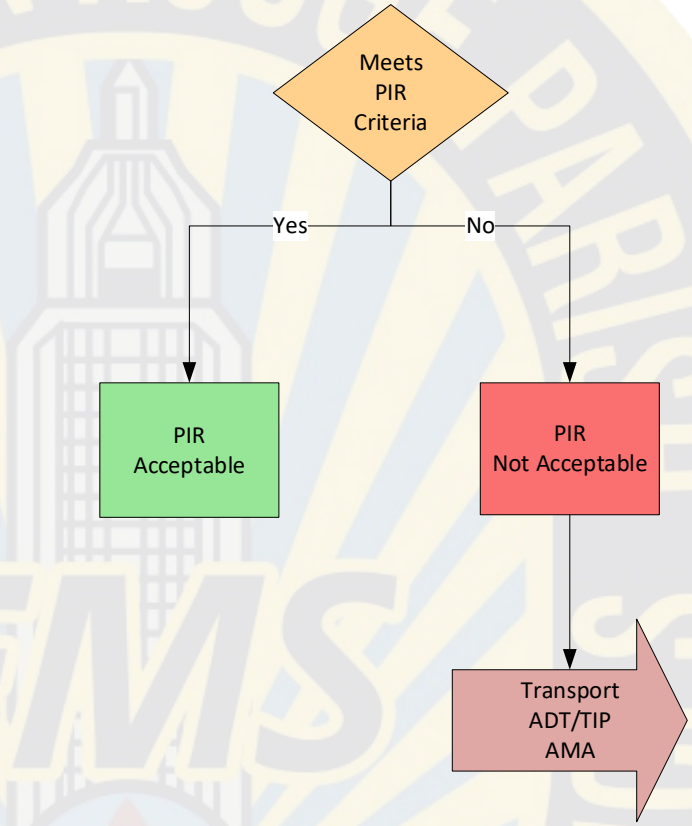
- To properly refer patients to medical care appropriate for low acuity presentations

Inclusion Criteria:

- Superficial extremity trauma
  OR
- Infestation (Bed bugs and lice)
  OR
- Requesting transport for ONLY:
  - COVID Testing
  - COVID Vaccines
  - COVID Infusions

Exclusion Criteria:

- Age: < 11 years of age
- Age: < 18 without guardian present
- BP: Systolic < 90 OR > 140 mmHg
- HR: < 60 OR >110 BPM
- GCS: < 15
- Any medical complaint
- Crush injuries
- Deep extremity trauma
- Head / Torso trauma
- LERN Activation Criteria
- Suspected Abuse / Neglect
- Language Barrier
- Elderly / Complex Medical History



Pearls:

- Comprehensive patient assessment with detailed and robust documentation are best practice
- Patient should be advised of all available resources and to recontact 911 should a change in their condition constitute an emergency
- Other methods of patient disposition are preferable

ALTERNATIVE DESTINATION TRANSPORTS-BEHAVIORAL

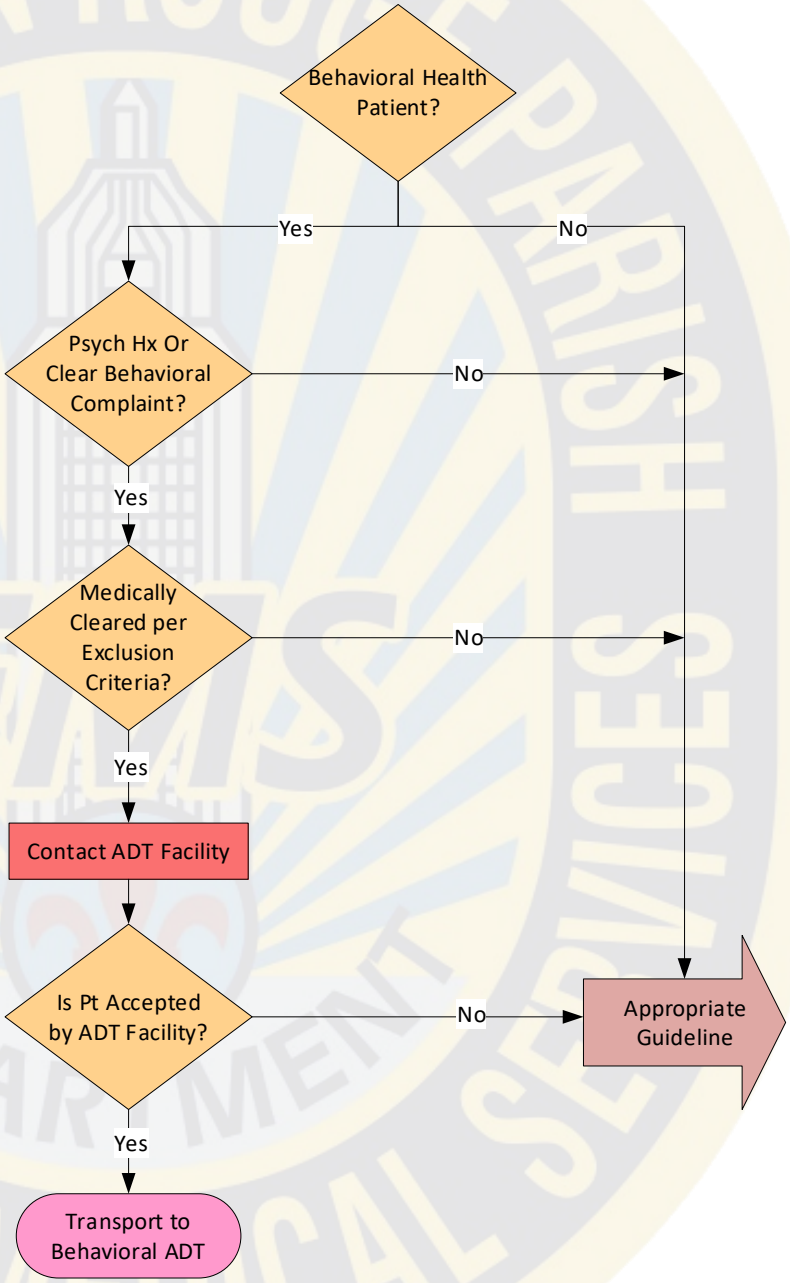
This Guideline is intended to help determine if a Behavioral Health patient is a candidate for transportation to a destination other than an Emergency Department

GOALS

-To improve the quality of care for the Behavioral Health patient who can be safely treated in a lower acuity setting. This allows EMS to encourage the most appropriate use of services while helping to avoid unnecessary ED visits.

A YES to any of the following questions excludes the patient's ability to be considered solely a behavioral health patient and transported to a Crisis Unit

- Age <18?
- Persistently Combative?
- Current Chest Pain?
- Disoriented to person/place/time?
- Signs of delirium/confusion?
- Does the pt have any other medical c/o or obvious acute medical necessity?
- Head trauma?
- Abnormal Pupil Size or Reaction?
- Blood Pressure SBP >160, DBP >120?
- Blood Pressure SBP <100?
- Pulse >120bpm or <50bpm?
- Respiratory rate >24bpm or <10bpm?
- SpO2 <94%?
- Blood Sugar >300 or <60?
- Temperature >100.0°F or <96.0°F?
- Abnormal Lung Sounds?
- Cardiac Rhythm Disturbances?



Pearls:

- If exclusionary criteria can promptly be fixed with on scene treatment, the patient may be an ADT candidate
- Consider patient history when utilizing exclusion criteria
- A patient with an OPC order only should be brought to an Emergency Department.
- If a PEC or CEC order is present, the original, signed form must be brought with the patient.

APPENDIX A – MEDICATIONS

Adenosine
Albuterol
Amiodarone
Aspirin
Atropine
Atrovent
Calcium Chloride
Cefazolin
Dextrose
Diltiazem
Diphenhydramine
Dobutamine
Droperidol
Epinephrine
Famotidine
Fentanyl Citrate
Furosemide
Glucagon
Insta-Glucose
Ketamine
Ketorolac
Labetalol
Lidocaine
Magnesium Sulfate
Metoprolol
Midazolam
Morphine
Naloxone
Nicardipine
Nitroglycerin
Norepinephrine
Ondansetron
Rocuronium
Sodium Bicarbonate
Solu-Medrol
Succinylcholine
Tranexamic Acid

MEDICATION MATRIX

East Baton Rouge Parish
Emergency Medical Services
Provider Medication Matrix

	EMT	AEMT	Paramedic	Notes
Adenosine			√	
Albuterol	√*	√	√	EMT - Asthma/COPD only
Amiodarone			√	
Aspirin	√*	√	√	EMT - ACS only
Atropine			√	
Atrovent	√*	√	√	EMT - Asthma/COPD only
Calcium Chloride			√	
Cefazolin		√	√	
"Danny's Dose"			√	
Dextrose IV		√	√	
Diltiazem			√	
Diphenhydramine		√	√	
Dobutamine			√	
Droperidol		√	√	
Epinephrine 1.0 mg/cc IM	√**	√	√	EMT - Anaphylaxis only
Epinephrine 1.0 mg/cc Neb	√**	√	√	EMT - Anaphylaxis only
Epinephrine 0.1 mg/cc IV		√	√	
Epinephrine 0.01 mg/cc IV			√	
Famotidine		√	√	
Fentanyl Citrate		√	√	
Furosemide			√	
Glucagon		√	√	
Immunizations	√	√	√	
Insta-Glucose	√	√	√	
Ketamine			√	
Ketorolac		√	√	
Labetalol			√	
Lidocaine		√	√	
Magnesium Sulfate			√	
Metoprolol			√	
Morphine Sulfate		√	√	
Midazolam		√	√	
Naloxone	√*	√	√	

* AEMT or Higher Assist only

MEDICATION MATRIX

East Baton Rouge Parish
Emergency Medical Services
Provider Medication Matrix

	EMT	AEMT	Paramedic	Notes
Nicardipine			√	
Nitroglycerin Sublingual		√	√	
Nitroglycerin IV			√	
Norepinephrine			√	
Ondansetron		√	√	
Rocuronium			√	
Sodium Bicarbonate			√	
Solu-Medrol		√	√	
Tranexamic Acid		√	√	

ADENOSINE

Additional Names:

Adenocard

Classification:

Endogenous nucleotide, atrial antiarrhythmic

Physiological Effects:

Adenosine is an endogenous nucleotide a derivative of Adenosine Triphosphate (ATP) which is 1 of 4 base pairs that makes up the structural unit of RNA and DNA. This means that adenosine is found in all cells of all living tissue. Adenosine slows conduction time through the AV-node and can interrupt re-entry pathways through the AV-node thus restoring sinus rhythms to patients experiencing SVT's.

Indications:

Stable narrow complex tachycardia (PSVT)
Consider for "unstable" narrow complex tachycardia while preparing for cardioversion
Consider a trial regimen for stable, regular wide-complex tachycardia with monomorphic QRS of undetermined etiology

Contraindications:

Known hypersensitivity
Bradycardias and AV blocks > than 1°
Sick-sinus syndrome
Poison induced tachycardias

Dosage:

Adult: Initial: 12 mg rapid IV/IO followed by 20 ml flush
2nd: 12 mg rapid IV/IO followed by 20 ml flush after 1 – 2 min

Pediatric: Initial: 0.1 mg/kg rapid IV/IO followed by 5 ml flush (max 6mg)
2nd: 0.2 mg/kg rapid IV/IO followed by 5 ml flush after 1 – 2 min (max 12 mg)

Side Effects:

Facial flushing, headache, sweating, chest pain, palpitations, hypotension, dyspnea, dizziness, tingling, burning, or heavy sensation in arms, apprehension

Additional Information:

Vagal maneuvers first when clinically appropriate
Half-life is less than 10 seconds
Administration in vein closest to cardiac circulation is preferred
Asystole and short lasting 1st, 2nd, or 3rd degree AV blocks possible
Does not convert atrial fibrillation, atrial flutter, or ventricular tachycardia
Larger doses may be required for patients taking Theophylline or Caffeine
Reduced doses may be required for patients taking dipyridamole (Persantine) or carbamazepine (Tegretol)

Clinical Guideline(s):

Tachycardia

ALBUTEROL

Additional Names:

Proventil, Ventolin, Salbutamol

Classification:

β_2 selective, sympathomimetic

Physiological Effects:

β_2 sympathomimetic that produces bronchodilation by causing smooth muscle relaxation of the smooth bronchial muscles through the stimulation of the β_2-adrenergic receptors in the lung tissue.

Indications:

Relief of bronchospasm
Asthma
COPD disease, chronic bronchitis, emphysema
Suspected Hyperkalemia

Contraindications:

Hypersensitivity
Symptomatic tachycardia

Dosage:

Adult: 2.5 mg/3 ml of NS added to nebulizer (oxygen flow rates of 6 – 8 lpm), may be repeated prn

Pediatric: 2.5 mg/3 ml of NS added to nebulizer (oxygen flow rates of 6 – 8 lpm), may be repeated prn

Side Effects:

Tachycardia, hypertension, angina, nervousness, tremors, headache, dizziness, insomnia, cough, dry mouth, exacerbation of symptoms, nausea, vomiting, GI distress

Additional Information:

Use cautiously in patients with CAD, hypertension, hyperthyroidism, and diabetes mellitus
Administer cautiously to patient on MAOI s or tricyclic anti-depressants
Albuterol and beta blockers are antagonistic (inhibit each other)
β_2 selectivity is not absolute and some β_1 effects (tachycardia or dysrhythmias) can occur in some patients

Clinical Guideline(s):

Asthma
Allergic Reaction / Anaphylactic Shock
Respiratory Distress / COPD
Respiratory Distress (Pediatric)
Crush Syndrome / Injury

AMIODARONE

Additional Names:

Cordarone

Classification:

Antiarrhythmic (class III)

Physiological Effects:

Amiodarone is a complex, multiple anti-arrhythmic agent. Amiodarone prolongs the action potential and refractory period of the myocardium, while slowing the sinus rate. Amiodarone increases PR and QT intervals and decreases peripheral vascular resistance.

Indications:

Ventricular Tachycardia and other wide-complex tachycardias
Ventricular Fibrillation
Stable, narrow-complex tachycardia — PSVT

Contraindications:

Hypersensitivity
Poison induced tachycardia
Bradycardias, 2° and 3° AV Blocks

Dosage:

Adult:

Cardiac Arrest
Initial: 300 mg IV/IO
2nd: 150 mg IV/IO 3 – 5 min after 1st dose

Non-Cardiac Arrest (perfusing tachyarrhythmias)
Initial: 150 mg IV/IO bolus infusion over 10 minutes
2nd: 150 mg IV/IO bolus infusion q 10 min, prn
Maintenance Infusion 1 mg/min, (mix 250 mg in 250 cc, run at 60 cc/hr)
Max 2.2 g / day

Amiodarone (Mix 250mg in 250cc) 1mg/cc

Dosage (mg/min)	cc/hr
1 mg/min	60

Pediatric:

Cardiac Arrest
Initial: 5 mg/kg IV/IO (Maximum single dose 300 mg)
2nd: 5 mg/kg IV/IO up to total dose 15 mg/kg or 2.2 g in 24 hours (Max single dose 150 mg)

Non-Cardiac Arrest (perfusing tachyarrhythmias)
Initial: 5 mg/kg IV/IO bolus infusion over 20 – 60 min (Max single dose 300 mg)
2nd: 5 mg/kg IV/IO bolus infusion over 20 – 60 min (Max total dose 15 mg/kg or 2.2 g / day)

AMIODARONE

Side Effects:

Significant hypotension with cumulative doses 2.2 g IV in 24 hours, flushing, chest pains, tightness in chest, brief periods of asystole, bradycardia, and ventricular Ectopy

Additional Information:

Do not administer with other medications that prolong QT intervals
Terminal elimination extremely long (1/2 life up to 40 days)
Potentiates bradycardia and hypotension with β-blocker and Ca++ channel blockers
Increases the risk of AV block and hypotension with Ca++ channel blockers
Increases anticoagulant effects of Warfarin
Decreases the metabolism of Phenytoin, Procainamide, Quinidine, and Theophylline, therefore increasing their serum levels

Clinical Guideline(s):

Cardiocerebral Resuscitation (Adult & Pediatric)
Post Resuscitation Care
Tachycardia

ASPIRIN

Additional Names:

Ecotrin, Ascriptin, Bufferin, Excedrin

Classification:

Analgesic, non-steroidal anti-inflammatory (NSAID), antipyretic, antiplatelet

Physiological Effects:

Aspirin seems to cause inhibition of synthesis and the release of prostaglandins. Aspirin blocks the formation of thromboxane A – 2 which causes platelets to aggregate and arteries to constrict.

Indications:

ACS
Mild to moderate pain
Fever

Contraindications:

Hypersensitivity (relative)
Asthma with hypersensitivity
Active GI ulcerations or bleeding
Hemophilia or other bleeding disorders
Pregnancy
Children less than 12 y/o
Hemorrhagic stroke

Dosage:

Adult: 325 mg PO, chew and swallow

Pediatric: Contact Medical Control

Side Effects:

Nausea, vomiting, heartburn, stomach pain, tinnitus

Additional Information:

Do not administer for ACS if less than 4 hours since last full dose
Reduces the mortality associated with myocardial infarction
Caution in patients taking blood thinning medications
Ecotrin brands are enterically coated and will not dissolve in the mouth without being chewed
Morphine may reduce aspirin's ability to block platelet aggregation which leads to higher mortality in AMI patients

Clinical Guideline(s):

ACS/STEMI/NSTEMI/Angina

ATROPINE

Additional Names:

Atropisol

Classification:

Parasympatholytic, Anti-cholinergic

Physiological Effects:

An alkaloid extract from the atropa belladonna plant that competitively antagonizes the effects of acetylcholine at the muscarinic receptors of the parasympathetic nervous system. Secretions are decreased at salivary and bronchial glands at low doses. At moderate doses atropine causes relaxation of the bronchial smooth muscles causing bronchodilation, increased heart rate through a blockade of the vagus nerve activity of the parasympathetic nervous system, and causes dilated pupils. Atropine decreases gastric motility and stomach acid secretions at high doses.

Indications:

Hypersalivation
Pre-medication for medication assisted intubation
Symptomatic bradycardia
Organophosphate and some "nerve" agent poisoning

Contraindications:

None in the emergency setting

Dosage:

Adult:

Bradycardia
0.5 – 1 mg IV/IO q 3 – 5 min, prn to maximum of 3 mg

Organophosphate Poisoning
2 – 4 mg IV/IO q 5 - 10 min prn, until SLUDGEM dissipates

Pediatric:

Bradycardia
Initial 0.02 mg/kg IV/IO- (pre-medication dose or Medication Assisted Intubation)
2nd: 0.04 mg/kg IV/IO
Minimum individual dose 0.1 mg
Maximum individual doses 0.5 mg (child), 1 mg (adolescent)
Maximum total dose 1 mg (child), 2 mg (adolescent)

Organophosphate Poisoning
0.05 mg/kg IV/IO q 3 – 5 min prn, until SLUDGEM dissipates

Side Effects:

Pupil dilation, blurred vision, headache, restlessness, confusion, tachycardia, angina, palpitations, hypertension, flushing of skin, drying of secretions, dry mouth, difficulty swallowing

Additional Information:

Use only when O2, ventilation, and epinephrine have failed for pediatric bradycardia
TCP is the primary treatment in AV blocks 2° or greater
SLUDGEM - salivations, lacrimation, urination, defecation, gastrointestinal pain, emesis, meiosis

ATROPINE

Clinical Guideline(s):

Medication Assisted Intubation
Bradycardia (Adult & Pediatric)
Overdose/Toxicity

ATROVENT

Additional Names:

Ipratropium bromide

Classification:

Inhaled anti-cholinergic, muscarinic antagonist

Physiological Effects:

A synthetic atropine derivative that antagonizes the effects of acetylcholine almost exclusively at the muscarinic receptors. Competitively binds to the muscarinic receptors without stimulating them. Decreases secretions at salivary and bronchial glands at low doses, while relaxing the bronchial smooth muscles causing bronchodilation, increased heart rate and causes dilated pupils at moderate doses. Atrovent decreases gastric motility and stomach acid secretions at high doses. Minimizes the side effects caused by organic belladonna.

Indications:

Relief of bronchospasms
Asthma
COPD disease chronic bronchitis, emphysema

Contraindications:

Hypersensitivity

Dosage:

Adult: 500 mcg nebulized (in addition to standard albuterol dose), (oxygen flow rates of 6 – 8 lpm)

Pediatric: 500 mcg nebulized (in addition to standard albuterol dose), (oxygen flow rates of 6 – 8 lpm)

Side Effects:

Tremor, dry mouth, blurred vision, photophobia, cough, exacerbation of symptoms, nervousness, dizziness, headache, palpitations, nausea, vomiting, GI Distress, anhidrosis

Additional Information:

Not indicated in the initial treatment of acute episodes of bronchospasms where rapid response is required
Acts along different pathway than β_2 agonist (albuterol). Concurrent administration has additive effects
Most common side effect is dry mouth from residual in oral pharynx during administration

Clinical Guideline(s):

Allergic Reaction / Anaphylactic Shock
Asthma
Respiratory Distress / COPD
Respiratory Distress (Pediatric)

CALCIUM CHLORIDE

Additional Names:

None listed

Classification:

Electrolyte

Physiological Effects:

Calcium chloride is essential for the physiological integrity of the nervous and muscular systems. It is necessary for normal cardiac function by increasing contractility, and operates the mechanism in the coagulation of blood.

Indications:

Suspected hypocalcemia
Hyper-magnesemia (magnesium sulfate overdose)
Suspected hyperkalemia
Calcium Channel blocker overdose

Contraindications:

Hypercalcemia
Digitalis toxicity
Cardiac arrest with ventricular fibrillation

Dosage:

Adult: 500 mg – 1 g IV/IO SIVP

Pediatric: 20 mg/kg IV/IO SIVP (Max 1 g)

Side Effects:

Sensation of "heat wave" or tingling, metal taste in mouth, local burning sensation

Additional Information:

Must be administered as a *slow* IV/IO push
Do not exceed 1 g/min for non-cardiac arrest situations
Rapid infusion may cause hypotension, bradycardia, or asystole
May antagonize effects of homebound calcium channel blockers
Do not administer simultaneously with Sodium Bicarbonate (flush with 5 – 10 cc of saline after administration to clear line)

Clinical Guideline(s):

Cardiocerebral Resuscitation (Adult & Pediatric)
Crush Injury / Syndrome
Overdose / Toxicity

CEFAZOLIN

Additional Names:

Ancef
Cefacidal
Cefazoline
Cephazolin

Classification:

Cephalosporin antibiotic (First Generation)

Physiological Effects:

Causes bacterial cell lysis by binding to penicillin-binding proteins, which inhibits peptidoglycan synthesis, hindering cell wall biosynthesis.

Indications:

Open long bone fractures
Penetrating trauma (GSW, Stabbing, etc.)

Contraindications:

Hypersensitivity
Penicillin Allergy
Cephalosporin Group Allergy

Dosage:

Adult: 1 g IV, dilute in 100cc of normal saline, slow bolus over 5 minutes (200gtts/min on 10gtts/set)
1 g IM, deep IM at vastus lateralis (recommended) or dorsogluteal site

Pediatric: Not Recommended

Side Effects:

Allergic Reactions, Diarrhea, Itching, Rash, Vomiting, Yeast Infections

Additional Information:

Medication must be reconstituted as directed by the medication label prior to administration.
(Apotex Corp Cefazolin 1 gram/vial: 2.5 ml sterile water, subject to change, verify with labeling)
The management goal of prophylactic Cefazolin administration in open fractures is to reduce in incident of deep infections.
Minimizing the time of administration from time of injury has been shown to decrease the occurrence of infection.

Clinical Guideline(s):

Extremity Injury

DEXTROSE

Additional Names:

D_5W, $D_{10}W$, $D_{25}W$, $D_{50}W$

Classification:

Carbohydrate, hyperglycemic

Physiological Effects:

Dextrose is a monosaccharide which provides calories for the metabolic needs of the cell as an aerobic metabolic substrate of ATP synthesis. Dextrose reverses the CNS effects of hypoglycemia by rapidly elevating serum blood glucose when given parenterally.

Indications:

Known hypoglycemia
AMS of unknown origin (if hypoglycemia suspected)
Chronic alcoholic rehabilitation (if malnutrition suspected)
Malnutrition

Contraindications:

None in the emergency setting

Dosage:

Adult: 8 years and above: 12.5 g – 25 g IV/IO as needed

Pediatric: Less than 8 years: Use $D_{10}W$
0.5 – 1 g/kg IV/IO (5 – 10 ml/kg $D_{10}W$) as needed

Side Effects:

Irritation, thrombosis, or necrosis can occur if dextrose is infiltrated into tissue

Additional Information:

Use largest possible IV site and verify patency before administering
Solutions containing dextrose should not be used for volume replacement in the presence of hypovolemia or shock
Use caution with administering dextrose to patients with known or suspected intracranial bleeding ($D_{10}W$ or Glucagon should be considered)
Dextrose solutions should not be diluted (For example, do not attempt to dilute $D_{50}W$ to make $D_{10}W$ or $D_{25}W$)

Clinical Guideline(s):

Cardiocerebral Resuscitation (Adult & Pediatric)
Adrenal Crisis
Diabetic

DILTIAZEM

Additional Names:

Cardizem, Tiazac, Tiamate, Adizem

Classification:

Slow calcium ion blocker

Physiological Effects:

Diltiazem is a calcium ion influx inhibitor. Diltiazem selectively inhibits the movement of calcium across the cell membrane of cardiac muscle, coronary and systemic arteries, and the cells of the intra-cardiac conduction system. Through the latter mechanism, Diltiazem suppresses activity of the SA and AV nodes and prolongs their refractory periods. Diltiazem is also a potent vasodilator.

Indications:

Atrial Fibrillation
Atrial Flutter
SVT

Contraindications:

Sick sinus syndrome
Wolff-Parkinson-White Syndrome
AV node conduction disturbances (Blocks)
Bradycardia
Impaired left ventricular function (CHF)

Dosage:

Adult: Initial: 20 mg IV/IO, over 2 min
2nd: 20 mg IV/IO, over 2 min (15 minutes after first dose)

Pediatric: Not recommended

Side Effects:

Dizziness, light-headedness, headache, nausea, vomiting, flushing, warm-feeling, bradycardia

Additional Information:

Give over 3 minutes in older patients
May cause sudden and profound hypotension and bradycardia
Calcium chloride is administered as an antidote in the event of an overdose
Do not give concurrently with IV β-blockers
Increase blood levels of digoxin and carbamazepine (Tegretol) can occur when given with these medications
Cimetidine (Tagamet) interferes with the hepatic breakdown of Diltiazem

Clinical Guideline(s):

Tachycardia

DIPHENHYDRAMINE

Additional Names:

Benadryl

Classification:

Antihistamine

Physiological Effects:

Antihistamines competitively bind the H_1 (located in the smooth muscle, vascular endothelium, the heart, and in the CNS) and H_2 (same as H_1 and gastric parietal cells) receptor sites on effector cells thus blocking the receptors stimulation by histamines during an immune system response to an antigen. Diphenhydramine prevents but does not reverse histamine responses. Antihistamines are also quite specific for reversal of the extrapyramidal (dystonic) reaction.

Indications:

Allergy symptoms (rhinitis, urticaria, itching)
Anaphylaxis
Dystonic reactions common with neuroleptics
Sedation
Motion sickness
Antiemetic

Contraindications:

Hypersensitivity
Patients taking MAOI's
Nursing Mothers
Patient with lower respiratory symptoms (asthma)

Dosage:

Adult: 25 – 50 mg deep IM/IV/IO (max 400 mg/day)

Pediatric: 1 mg/kg deep IM/IV/IO (max 50 mg/day)

Side Effects:

Drowsiness, confusion, sedation, disturbed coordination, palpitation, tachycardia, bradycardia, dry mouth and throat, thickening of bronchial secretions

Additional Information:

CNS depressants may enhance effects
Diphenhydramine toxicity can cause cardiac arrhythmias such as Torsades de Pointes

Clinical Guideline(s):

Allergic Reaction / Anaphylactic Shock
Chemical Sedation
Overdose / Toxicity

DOBUTAMINE

Additional Names:

Dobutrex

Classification:

Ionotropic Agent

Physiological Effects:

Dobutamine is a direct-acting inotropic agent whose primary activity results from stimulation of the β receptors of the heart while producing comparatively mild chronotropic, hypertensive, arrhythmogenic, and vasodilative effects. It does not cause the release of endogenous norepinephrine similar to dopamine.

Indications:

Ionotropic support for cardiac decompensation due to depressed contractility in heart failure and cardiogenic shock

Contraindications:

Hypersensitivity
Idiopathic hypertrophic subaortic stenosis

Dosage:

Adult: 5 – 20 mcg/kg/min IV/IO infusion

Dobutamine (Mix 250mg in 250cc) - 1000 mcg/cc

mcg/kg/min	40 kg	50 kg	60 kg	70 kg	80 kg	90 kg	100 kg
5 mcg	12	15	18	21	24	27	30
10 mcg	24	30	36	42	48	54	60
15 mcg	36	45	54	63	72	81	90
20 mcg	48	60	72	84	96	108	120
	Microdrips per minute or cc/hr						

Pediatric: Contact Medical Control

Dobutamine (Mix 250mg in 250cc) - 1000 mcg/cc

mcg/kg/min	5 kg	10 kg	15 kg	20 kg	25 kg	30 kg	35 kg
5 mcg	2	3	5	6	8	9	11
10 mcg	3	6	9	12	15	18	21
15 mcg	5	9	14	18	23	27	32
20 mcg	6	12	18	24	30	36	42
	Microdrips per minute or cc/hr						

DOBUTAMINE

Side Effects:

Increased heart rate and blood pressure, ventricular ectopy, hypotension caused by vasodilation, nausea/ vomiting, chest pain, shortness of breath

Additional Information:

Ensure patient is not fluid depleted before administering Dobutamine.

Clinical Guideline(s):

CHF/Cardiogenic Shock

DROPERIDOL

Additional Names:
Inapsine

Classification:

Anti-dopaminergic sedative, antiemetic

Physiological Effects:

Droperidol produces marked tranquilization and sedation. It has a faster onset time than Midazolam and requires less rescue doses. It allays apprehension and provides a state of mental detachment and indifference while maintaining a state of reflex alertness. Droperidol also produces an effective antiemetic effect.

Indications:

Nausea, vomiting, headache, vertigo, agitation, psychosis, excited delirium

Contraindications:

Known hypersensitivity

Pregnancy

Parkinson's (dopamine blockade)

Known or suspected QT prolongation (i.e., QTc interval greater than 500 msec for males or 500 msec for females). This would include patients with congenital long QT syndrome. A 12 Lead ECG should be considered prior to administration, when possible, as well as repeated after administration whenever possible.

Dosage:

Adult: **For Chemical Sedation**

RASS +2 (Agitated) 5mg IM/IV/IO may repeat once after 15 minutes
RASS +3 (Very Agitated) 5mg IM (mixed with Midazolam 5mg IM same syringe) may repeat Droperidol 5mg only once after 15 minutes
RASS +4 (Combative) 5mg IM (mixed with Diphenhydramine 50mg and Midazolam 2.5mg mixed in the same syringe)

For Headache/Vertigo/Nausea/Vomiting/Abdominal pain

2.5mg IM/IV/IO may give additional 1.25mg after 15 minutes (3.75 mg total dose max)

Pediatric: Droperidol is not recommended for use under 12 years of age

Side Effects:

Blurred vision, confusion, dizziness, orthostatic faintness, or lightheadedness, sweating, unusual tiredness, or weakness, akathisia, dystonia, sedation.

DROPERIDOL

Additional Information:

Droperidol potentiates other CNS depressants. It produces mild alpha-adrenergic blockade, peripheral vascular dilatation, and reduction of the pressor effect of epinephrine. It can produce hypotension and decreased peripheral vascular resistance and may decrease pulmonary arterial pressure (particularly if it is abnormally high). It may reduce the incidence of epinephrine-induced arrhythmias, but it does not prevent other cardiac arrhythmias. The onset of action of single intramuscular and intravenous doses is from three to ten minutes following administration, although the peak effect may not be apparent for up to thirty minutes. The duration of the tranquilizing and sedative effects generally is two to four hours, although alteration of alertness may persist for as long as twelve hours

Clinical Guideline(s):

Chemical Sedation
Headache/Vertigo
Nausea/Vomiting

EPINEPHRINE

Additional Names:

Adrenaline

Classification:

Sympathomimetic, catecholamine

Physiological Effects:

Epinephrine is an endogenous catecholamine that stimulates the α-adrenergic and β-adrenergic receptor sites in the sympathetic nervous system. In doing so, the general physiological expectation is smooth muscle relaxation of the bronchi, vasoconstriction in the arterioles of the skin and mucosa, and an increase in heart rate and blood pressure.

Indications:

Bronchoconstriction (bronchial asthma)
Croup/Stridor
Allergic reaction
Anaphylaxis
Pulseless arrest
Symptomatic bradycardia
Vasopressor in various shock states

Contraindications:

Hypersensitivity
Hemorrhagic Shock
Hypertension (relative)

Dosage:

Adult:

For Anaphylaxis (severe allergic reaction)
10 mcg of a 0.01 mg/ml concentration IV slow push contact medical control for subsequent dosages

For Bradycardia
10 mcg of a 0.01 mg/ml concentration IV slow push repeat as needed
2 – 10 mcg/min IV/IO infusion

For Bronchoconstriction (Asthma or Moderate Allergic Reaction)
0.3 – 0.5 mg of a 1.0 mg/ml concentration, or EpiPen, IM repeat as needed
3 mg of a 1.0 mg/ml concentration added to nebulize repeat as needed

For Cardiac Arrest
1 mg of a 0.1 mg/ml concentration IV/IO slow push repeat every 3 -5 min as needed

For Epistaxis
1 mg of 1.0 mg/ml concentration IN, divided between each nare

For Shock
10 mcg of a 0.01 mg/ml concentration IV/IO slow push repeat as needed
2 – 10 mcg/min IV/IO infusion

EPINEPHRINE

Epinephrine Infusion (Mix 1mg in 250cc) - 4 mcg/cc

Dosage	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min	6 mcg/min	7 mcg/min	8 mcg/min	9 mcg/min	10 mcg/min
	30	45	60	75	90	105	120	135	150
	Microdrips per minute or cc/hr								

Pediatric:

For Allergic Reaction (moderate allergic reaction)
0.01 mg/kg of a 1.0 mg/ml concentration IM repeat as needed (0.3 mg single dose max)

For Anaphylaxis (severe allergic reaction)
0.01 mg/kg of a 0.01 mg/ml concentration IV slow push contact medical control for subsequent dosages (0.1 mg total dose max)

For Bradycardia
0.01 mg/kg of a 0.1 mg/ml concentration IV/IO slow push repeat every 3 – 5 min as needed (1 mg single dose max)
Less than 20 kg use weight-based dose: 0.1 – 0.5 mcg/kg/min IV/IO infusion
Greater than or equal to 20 kg use adult dose: 2 – 10 mcg/min IV/IO infusion

For Bronchoconstriction (asthma)
3 mg of a 1.0 mg/ml concentration added to nebulizer repeat as needed
0.01 mg/kg of a 1.0 mg/ml concentration, IM, repeat as needed (0.3 mg single dose max)

For Cardiac Arrest
0.01 mg/kg of a 0.1 mg/ml concentration IV/IO repeat every 3 – 5 min as needed (1 mg single dose max)

For Croup/Stridor
3 mg of a 1.0 mg/ml concentration added to nebulizer repeat as needed

Epinephrine Infusion (Mix 1mg in 250cc) - 4 mcg/cc

Dosage	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min	6 mcg/min	7 mcg/min	8 mcg/min	9 mcg/min	10 mcg/min
	30	45	60	75	90	105	120	135	150
	Microdrips per minute or cc/hr								

Side Effects:

Sweating, dizziness, nervousness, weakness, pale skin, headache

Additional Information:

Contact medical control for allergic reactions and anaphylactic patients with a history of CAD
May be deactivated by alkaline solutions, do not administer simultaneously
Contact medical control for use during pregnancy (risk to fetus)

Clinical Guideline(s):

Cardiocerebral Resuscitation (Adult & Pediatric)
Neonatal Resuscitation
Post Resuscitation Care
Bradycardia (Adult & Pediatric)
Allergic Reaction / Anaphylactic Shock
Asthma
Neurogenic Shock

EPINEPHRINE

Respiratory Distress (Pediatric)
Septic Shock / Infection

FAMOTIDINE

Additional Names:

Pepcid

Classification:

Histamine H_2 – receptor antagonist

Physiological Effects:

Pepcid is a competitive inhibitor of histamine H_2 receptors. The primary clinically important pharmacologic activity of Pepcid is inhibition of gastric secretion.

Indications:

Given in combination with Histamine H_1 – receptor antagonist in allergic reactions
Heartburn
Acid indigestion
GERD

Contraindications:

Hypersensitivity to other H_2 – receptor antagonists

Dosage:

Adult: 20 mg IV/IO

Pediatric: Contact Medical Control

Side Effects:

Headache, dizziness, constipation, diarrhea, arrhythmia, AV Blocks, palpitations

Clinical Guideline(s):

Allergic Reaction / Anaphylactic Shock

FENTANYL CITRATE

Additional Names:

Sublimaze, Duragesic, Actiq

Classification:

Narcotic Analgesic

Physiological Effects:

Fentanyl is one of the most powerful opioid analgesics with a potency of approximately 81 times that of morphine. Fentanyl, a lipid soluble drug, is extensively used for anesthesia and analgesia. Fentanyl binds the opioid mu (μ) receptor. Like other opioids, Fentanyl acts directly on the CNS, through competitive binding to the receptor. Activation of these receptors is associated with euphoria, pain relief, dependence, and respiratory depression. Alterations in respiratory rate and alveolar ventilation may last longer than anesthesia. The onset of action is immediate upon IV injection, but the maximal analgesic and respiratory depressant effect may not be noted for several minutes.

Indications:

Pain management
Adjunct for anesthesia
Sedation

Contraindications:

Hypersensitivity

Dosage:

Adult: For Pain Control
Initial: 1 mcg/kg IV/IO/IM/IN (100mcg single dose max)
2nd: 0.5 mcg/kg IV/IO/IM/IN repeat as needed (50mcg single dose max)

For ACS
Initial: 0.25 mcg/kg IV/IO/IM/IN (25mcg single dose max)
2nd: 0.25 mcg/kg IV/IO/IM/IN (25mcg single dose max)

Pediatric: Initial: 1 mcg/kg IV/IO/IM/IN (60mcg single dose max)
2nd: 0.5 mcg/kg IV/IO/IM/IN repeat as needed (30mcg single dose max)

Side Effects:

Bradycardia, respiratory depression, apnea, muscle rigidity (particularly the muscles of respiration), diarrhea, nausea, constipation, dry mouth

Additional Information:

Effects are related to the dose and speed of administration. May cause sudden respiratory depression and respiratory arrest.
Usual effect last for 30 – 60 minutes, IM onset is 7 – 8 minutes with duration of 1 – 2 hours
Narcan must be available prior to administration
Use caution in the elderly or debilitated patients
Use with caution in patients taking other CNS depressant medications or consuming ETOH
Use with caution in patients with respiratory disease (i.e. COPD, asthma)

FENTANYL CITRATE

Clinical Guideline(s):

Pain Management
Medication Assisted Intubation
Post Advanced Airway Care
Cardiocerebral Resuscitation (Adult & Pediatric)
ACS/STEMI/NSTEMI/Angina
Thoracic Aortic Catastrophe

FUROSEMIDE

Additional Names:

Lasix

Classification:

Diuretic

Physiological Effects:

A sulfonamide derivative and potent diuretic which inhibits the reabsorption of sodium and chloride ions in the proximal and distal renal tubules as well as the Loop of Henle in the glomerulus. As the sodium is eliminated water follows depleting volume from the body as a result.

Indications:

Pulmonary edema
Congestive Heart Failure

Contraindications:

Anuria
Pregnancy
Dehydration

Dosage:

Adult: 0.5 – 1 mg/kg IV/IO over 1 – 2 min (max 100 mg)

Pediatric: Contact Medical Control

Side Effects:

Dizziness, tinnitus, hearing loss, headache, blurred vision, weakness, nausea, vomiting, water and electrolyte depletion

Additional Information:

Double the daily dose for patients taking furosemide
Should be protected from light
Do not administer to renal patients that do not urinate

Clinical Guideline(s):

GLUCAGON

Additional Names:

GlucaGen

Classification:

Endogenous hormone

Physiological Effects:

Glucagon is a hormone produced by the α-cells of the Islets of Langerhans in the pancreas. When released by the pancreas, it causes an increase in serum glucose concentrations by acting on liver glycogen stores. Glucagon converts glycogen to glucose through a processes called glycogenolysis and gluconeogenesis. Through a complicated chemical process, glucagon has an ability to bypass the β-adrenergic receptors in myocardial cells allowing the reversal of the effects from a β-blocker overdoses. In high doses Glucagon may also reverse the effects of calcium channel blockers.

Indications:

Hypoglycemia
β-blocker / Calcium Channel Blocker overdose resulting in symptomatic bradycardia
Steakhouse syndrome

Contraindications:

Hypersensitivity

Dosage:

Adult: 1 mg IM/IN/IV/IO, q 20 min prn

Pediatric: 0.03 – 0.1 mg/kg IM/IN/IV, q 20 min prn (max 1 mg)

Side Effects:

Dizziness, light-headedness, SOB, nausea, vomiting, irregular heart rhythm

Clinical Guideline(s):

Diabetic
Overdose / Toxicity

INSTA-GLUCOSE

Additional Names:

Glucola

Classification:

Carbohydrate, hyperglycemic

Physiological Effects:

Glucose provides calories for the metabolic needs of the cell as an aerobic substrate of ATP synthesis. Glucose reverses the CNS effects of hypoglycemia by rapidly elevating serum blood glucose when given orally.

Indications:

Known hypoglycemia (conscious patient with the ability to follow simple commands)

Contraindications:

Semi-conscious or unconscious patients (unable to manage airway or follow commands)

Dosage:

Adult: 15 G, 1 tube PO, in sips until CBG improves and patient feels better, repeat as needed

Pediatric: 15 G, 1 tube PO, in sips until CBG improves and patient feels better, repeat as needed

Side Effects:

Nausea/vomiting

Additional Information:

May cause Wernicke-Korsakoff syndrome in acute ETOH intoxication if given without thiamine supplement

Clinical Guideline(s):

Diabetic

KETAMINE

Additional Names:

Ketalar

Classification:

Dissociative anesthetic

Physiological Effects:

Ketamine acts primarily as an antagonist of the NMDA receptor which is mostly responsible for its anesthetic, hallucinogenic, and analgesic properties. In low doses Ketamine is a potent analgesic. In higher doses Ketamine will induce anesthesia and put the patient in a dissociative state. Unlike opiates, Ketamine does not suppress the central nervous system which makes it ideal for use when sedation or pain management is needed in the hemodynamically compromised patient. Ketamine is comparable to opioids but are less likely to decrease blood pressure or depress the respiratory system.

Indications:

Pain management
Delayed Sequence Intubation
Post Airway Care (Continuous Sedation)
Chemical Restraint (Agitation / Hyperactive Delirium Syndrome)

Contraindications:

Hypersensitivity
Patients less than three months of age (higher incident of airway complications and laryngospasm)

Dosage:

Adult:

For Pain Management
25 mg IV/IO slow push over 60 seconds, dilute to 10 cc total volume with saline
50 mg IM/IN

For Delayed Sequence Intubation
2 mg/kg IV/IO slow push over 60 seconds, dilute to 10 cc total volume with saline
(200 mg single dose max)

For Post Airway Care (Continuous Sedation)
1-2 mg/kg IV/IO slow push over 60 seconds, as needed 20 minutes after initial DSI dose, dilute to 10 cc total volume with saline (200 mg single dose max)
1-2 mg/kg/hr IV/IO infusion

For Chemical Restraint (Agitation / Hyperactive Delirium Syndrome)
RASS +4 (Combative) 3 mg/kg IM (300 mg single dose max)

KETAMINE

Pediatric: For Pain Management (6 years to 17 years of age)
0.25 mg/kg (maximum 25 mg) IV/IO slow push over 60 seconds, dilute to 10 cc total volume with saline
0.50 mg/kg (maximum 50 mg) IM/IN

For Delayed Sequence Intubation (3 months to 17 years of age)
1 mg/kg (maximum 100 mg) IV/IO slow push over 60 seconds, dilute to 10 cc total volume with saline

For Post Airway Care (Continuous Sedation)
1-2 mg/kg/hr IV/IO infusion

Ketamine for Continuous Sedation (Mix 250mg in 250cc) - 1 mg/cc

mg/kg/hr	40 kg	50 kg	60 kg	70 kg	80 kg	90 kg	100 kg
1	40	50	60	70	80	90	100
1.5	60	75	90	105	120	135	150
2	80	100	120	140	160	180	200
	Microdrips per minute or cc/hr						

Side Effects:

Emergence Phenomenon, hallucinations, respiratory depression when given rapidly, hypertension, elevated heart rate, bronchodilation, hypersalivation

Additional Information:

*** Assess GCS/mentation and perform a neurological assessment before and after ***
*** administration and document findings ***

Ketamine is an appropriate analgesic for:
- Trauma patients with moderate to severe pain
- Trauma patients at risk of developing hemorrhagic shock or respiratory distress
- Trauma patients for whom opioids or non-opioids are contraindicated
- Trauma patients who are still in pain after receiving opioids
- Trauma patients who are taking buprenorphine/naloxone (Suboxone) for opioid use disorder
- Trauma patients presenting with acute agitation when rapid control is necessary for safety

Not for use in ADT / TIP patients
Ketamine induced dissociative state complicates neurologic monitoring, be mindful
Administer slowly to avoid respiratory depression, support with ventilation if occurs
Potentiates the sedative effects of alcohol, be diligent and support respiratory decompensation
Potentiates the sedative effects of benzodiazepines, be diligent and support respiratory decompensation
Atropine can be utilized to mitigate hypersalivation
Benzodiazepines can be utilized to mitigate emergence phenomenon or hallucinatory effects
Avoided use if cocaine use is suspected as it may potentiate the cardiovascular toxicity of cocaine
Safety in pregnancy has not been established, use should be avoided

Clinical Guideline(s):

Anxious / Violent / Agitated
Delayed Sequence Intubation
Pain Management
Post Advanced Airway Care
Post Resuscitation Care

KETOROLAC

Additional Names:

Toradol

Classification:

Non-steroidal anti-inflammatory

Physiological Effects:

Ketorolac is a nonsteroidal anti-inflammatory drug (NSAID) that inhibits synthesis of prostaglandins and may be considered a peripherally acting analgesic. Ketorolac possesses no sedative or anxiolytic properties.

Indications:

Pain

Contraindications:

Hypersensitivity to NSAIDS
NSAID use within the last two weeks (Daily use or multiday, high dose patients are the intended populations)
Peptic Ulcer Disease or any form of GI Bleeding
At-risk for other types of internal bleeding
Pregnant or nursing mothers
Renal impairment (relative)
Asthma (Relative – Can cause bronchospasm)

Dosage:

Adult: 15 mg IM/IV/IO

Pediatric: Not recommended in patients < 16 years of age

Side Effects:

Renal failure, headache, indigestion, nausea, vomiting, diarrhea, abdominal pain, internal bleeding, bronchospasm

Additional Information:

For breakthrough pain, it is recommended to supplement the lower end of the Ketorolac dosage range with low doses of narcotics as needed.

Clinical Guideline(s):

Headache/Vertigo
Pain Management

LABETALOL

Additional Names:

Trandate, Normodyne

Classification:

Sympathetic blocker

Physiological Effects:

Labetalol combines both selective, competitive α_1-adrenergic blocking and non-selective, competitive β-adrenergic blocking activity in one substance. As a result, Labetalol decreases blood pressure without causing a reflex tachycardia.

Indications:

Hypertensive crisis

Contraindications:

Bronchial asthma
Decompensated CHF (BP < 100 mmHg)
2° and 3° AV block
Bradycardia
Cardiogenic shock

Dosage:

Adult: 20 mg IV/IO over 1 – 2 min. May repeat or double dose q 10 min (max 150 mg)

Pediatric: Not recommended

Side Effects:

Headache, dizziness, vertigo, fatigue, ventricular arrhythmias, SOB, hypotension

Additional Information:

Use caution with Labetalol if there is any reason to suspect cocaine use by the patient
EKG, blood pressure and pulse rate must be constantly monitored
Place patient supine to administer
May blunt effect of bronchodilators and other β-adrenergics
NTG may enhance hypotensive effects
Observe for signs of bradycardia, CHF, and bronchospasms
Use with caution in patients with pulmonary disease and CHF

Clinical Guideline(s):

Hypertensive Crisis
Stroke / TIA
Complications of Pregnancy

LIDOCAINE

Additional Names:

Xylocaine

Classification:

Antiarrhythmic, sodium channel blocker

Physiological Effects:

Lidocaine has both an anesthetic property and an antiarrhythmic property. The anesthetic properties are caused when depolarization of the neuron is altered by a blockade of the fast Na^+ channels on the cell membrane. As an anti-arrhythmic agent, the Na^+ channels of the myocardial action potential are blocked. This slows automaticity by increasing the time the ventricle is depolarized. The suppression of premature ventricular depolarizations results.

Indications:

Anesthetic during intraosseous placement
Pre-Medication used to blunt ICP during Medication Assisted Intubation
Ventricular Arrhythmias

Contraindications:

Hypersensitivity
Stokes-Adams syndrome
AV blocks > than 1°
Bradycardia
Wolff-Parkinson-White
In conjunction with Amiodarone

Dosage:

Adult:

EZ-IO
40 mg over 2 min— Dwell for 1 min — Rapid flush of saline — 20 mg over 1 min

Pre-medication to blunt ICP during MAI:
1.5 mg/kg IV/IO

Pediatric:

EZ-IO
0.5 mg/kg (max 40 mg) over 2 min— Dwell for 1 min — Rapid flush of saline — 0.25 mg/kg over 1 min (max 20 mg)

Pre-medication to blunt ICP during MAI:
1.5 mg/kg IV/IO

Side Effects:

Light-headedness, confusion, blurred vision, tinnitus, widening QRS, muscle twitching, seizure

LIDOCAINE

Additional Information:

Elimination time increased in patients with liver dysfunction or taking β-blockers
Increased plasma concentrations may cause myocardial and circulatory depression and seizures
Use extreme caution when administering Lidocaine to the following: hypotension not caused by arrhythmia, accelerated idioventricular rhythms, elderly patients, and patients with impaired liver function.
Anesthetic properties usually begin at the four-minute mark and last from 30 minutes to 3 hours.

Clinical Guideline(s):

Vascular Access
Medication Assisted Intubation

MAGNESIUM SULFATE

Additional Names:

Epsom salt, Phillip's Milk of Magnesia

Classification:

Anticonvulsant, Antiarrhythmic, Smooth muscle relaxant, Bronchodilator.

Physiological Effects:

Magnesium is the second most abundant ion in the intracellular fluid. It is essential for the activity of many enzyme systems and plays an important role in neuro-chemical transmission and muscular excitability. Magnesium sulfate reduces striated muscle contractions and blocks peripheral neuromuscular junction (synapses) by reducing acetylcholine release. Magnesium Sulfate effectively decreases the risk of preeclampsia progressing to eclampsia by preventing and treating seizures. Magnesium Sulfate reduces systolic blood pressure while having no effect on diastolic blood pressure, which aids in maintaining perfusion to the fetus when treating the OB patient.

Indications:

Torsades de Pointes
Suspected hypomagnesemia
Preeclampsia & Eclamptic seizure
Bronchospasms after β-agonists and anticholinergic agents

Contraindications:

Heart Blocks / Bradycardia
Myocardial damage
Renal Failure
Shock

Dosage:

Adult: <u>Torsades de Pointes / Bronchospasm / Pre eclampsia</u>
2 g IV/IO bolus infusion over 10 min

<u>Eclamptic Seizure</u>
4 g IV/IO bolus infusion over 10 minutes

Pediatric: <u>Torsades de Pointes / Bronchospasm</u>
50 mg/kg IV/IO over 20 minutes (max 2 g)

Side Effects:

Respiratory depression, drowsiness, flushing, depressed reflexes, reduced heart rate, circulatory collapse

Additional Information:

May enhance CNS depressants
Calcium gluconate and calcium chloride should be used as an antagonist to magnesium sulfate
Signs of magnesium sulfate intoxication include flushing, sweating, hypotension, depressed reflexes, flaccid paralysis, hypothermia, circulatory collapse, cardiac and CNS depression proceeding to respiratory paralysis.

MAGNESIUM SULFATE

Clinical Guideline(s):

Cardiocerebral Resuscitation
Tachycardia
Asthma
Complications of Pregnancy
Pediatric Respiratory Distress

METOPROLOL

Additional Names:

Lopressor, Toprol

Classification:

β-adrenergic blocker

Physiological Effects:

Metoprolol is a β-adrenergic receptor blocker, with preferential effect on β_1- adrenoceptors chiefly located in cardiac muscle. The preferential effect is not absolute and at high doses, β_2-adrenoreceptors chiefly located in the smooth bronchial muscles and vascular musculature can be affected. β-blocking activity in man is shown to reduce heart rate and cardiac output. Metoprolol has no intrinsic sympathomimetic activity.

Indications:

Acute Coronary Syndromes
Tachycardias
Electrical storm

Contraindications:

Bronchial asthma
Bradycardia
2° or 3° AV Blocks
Cardiogenic Shock

Dosage:

Adult: 5 mg IV/IO SIVP q 5 min (max 15 mg)

Pediatric: Safety has not been established

Side Effects:

Bradycardia, SOB, light-headedness, dizziness, weakness, nausea, vomiting, swelling ankles

Additional Information:

Use with caution in pulmonary disease and CHF

Clinical Guideline(s):

ACS/STEMI/NSTEMI/Angina
Tachycardia
Thoracic Aortic Catastrophe

MIDAZOLAM

Additional Names:

Versed, Hypnovel, Dormicum

Classification:

Benzodiazepine derivative, anxiolytic, anticonvulsant

Physiological Effects:

Induces effects by acting on parts of the gamma-amino butyric acid (GABA) and benzodiazepine receptors, the major inhibitory neurotransmitter in the CNS. Contains anxiolytic, anticonvulsant, sedative, muscle relaxant, and amnesic properties.

Indications:

Seizures
Sedation
Anxiety
Violent behavior
Adverse reaction to stimulants

Contraindications:

Hypersensitivity
Hypotension (except with ROSC)
Narrow angle glaucoma

Dosage:

Adult:

For Active Seizures/Overdose
2.5 – 5 mg IM/IN/IV/IO q 2 min, titrate to effect (max 20 mg)

For Chemical Sedation
RASS +1 (Anxiety) 1.25 mg IM/IN/IV/IO may repeat once after 15 minutes
RASS +2 (Agitated) 2.5 mg IM/IV/IO may repeat once after 15 minutes
RASS +3 (Very Agitated) 2.5 mg IM (mixed with Droperidol 5 mg same syringe)
RASS +4 (Combative) 2.5 mg IM (mixed with Diphenhydramine 50 mg and Droperidol 5 mg)

For Continued Sedation
2.5 – 5 mg IV/IO, titrate to effect (2.5 – 5 mg increments)

For Procedural Sedation
1.25 mg – 2.5 mg IM/IN/IV/IO q 2 min, titrate to effect (max 10 mg)

MIDAZOLAM

Pediatric: Seizures/Procedural sedation/Chemical sedation (RASS +2 - RASS +4)/Overdose
0.05 mg/kg IV/IO (max single dose 2.5 mg, max total dose 5 mg)
0.2 mg/kg IM (max single dose 2.5 mg, max total dose 5 mg)
0.2 mg/kg IN (max single dose 2.5 mg, max total dose 10 mg)
Administer initial dose and monitor for 5 minutes; subsequent doses may be repeated PRN up to max dose. If more than the max dose is needed, contact medical control.

Continued Sedation
0.1 mg/kg IV/IO, titrate to effect (0.1 mg/kg increments)

Side Effects:

Anterograde amnesia, apnea, respiratory arrest

Additional Information:

The IM and IN routes are not a preferred route for procedural sedation.
Dose increments may be shorter than 2 minutes for emergency procedures
May cause drowsiness, tiredness, or weakness for 1 – 2 days
Potentiates the effects of other CNS depressants
Rarely is > 5 mg required to reach desired effects
Considered to be 2x as potent as diazepam, milligram for milligram
May cause respiratory depression, be prepared to intubate

Clinical Guideline(s):

Procedural Sedation
Post Advanced Airway Care
Active Seizures
Chemical Sedation
Complications of Pregnancy
Overdose/Toxicity

MORPHINE SULFATE

Classification:

Opioid Agonists. Narcotic analgesic, which affects CNS and GI tract.

Physiological Effects:

Morphine increases the patient's tolerance for pain and decreases the perception of suffering. Morphine stimulates the parasympathetic nervous system, which results in decreased peripheral resistance, increased venous capacitance, venous pooling, and decreased venous return to the heart. Consider smaller doses for preload-dependent patients. Morphine depresses the respiratory, cough, and vasomotor centers in the medulla and can stimulate the vomiting center in the medulla.

Indications:

Relief of pain in adults and children when associated with:

- Burns
- Isolated musculoskeletal extremity injuries
- Renal Calculi (only if Ketorolac is contraindicated)
- Adult Chest pain/cardiac ischemia (this will be the most common use)

Contraindications:

- Known hypersensitivity
- Multi-systems trauma
- Hypotension
- Pain from a known bowel obstruction and constipation
- Use with extreme caution in patients with pre-existing respiratory depression, acute hypoxia (asthmatic attack), or patients with COPD
- Use with caution and in reduced dosages in the presence of other CNS depressants, particularly ETOH
- Use with caution during pregnancy and consider a lower dose
- Use with caution with abdominal pain
- Use with caution for NSTEMI ACS situations

Dosage:

Adult:

ACS/STEMI/NSTEMI/Abdominal Pain

1-2mg IV/IO/IM can repeat in 10 minutes if needed. Max. Dose 4mg (consider the 1mg dose for elderly patients and patient weights < 50kg)

Musculoskeletal Extremity Trauma/Burn/Renal Calculi Pain

1-2mg IV/IO/IM every 5 minutes to max. 10mg (consider the 1mg dose for elderly patients and patient weights < 50kg)

Pediatric:

Musculoskeletal Extremity Trauma/Burns

0.1mg/kg IV/IO/IM (max. single dose 1mg) may repeat q 5 minutes prn (max. total dose 10mg)

Side Effects:

Sedation, Hypotension, Respiratory depression/apnea, Orthostatic hypotension, Depressed cough reflex, Dizziness, Constipation, Nausea, and vomiting

Additional Information:

Potentiates the effects of Droperidol. Consider Ondansetron to prevent nausea/vomiting. If Droperidol has already been administered, consider reducing the dosage by half.

NALOXONE

Additional Names:

Narcan

Classification:

Opioid antagonist (synthetic)

Physiological Effects:

Naloxone competitively binds to the β-endorphin receptors in the CNS thereby reversing the effects of opiates and their derivatives. Because naloxone has a higher affinity for the β-endorphin receptors, it completely reverses the effects of opiates and opioids and causes a sudden rapid onset of withdrawal symptoms.

Indications:

Opiate/Opioid Toxicity

Contraindications:

Hypersensitivity

Dosage:

Adult: 0.4 – 2 mg IM/IN/IV/IO q 2 min, titrate to adequate breathing (max 10 mg)

Pediatric: 0.1 mg/kg IM/IN/IV/IO q 2 min, titrate to adequate breathing (max 2 mg)

Side Effects:

Tachycardia, hypertension, dysrhythmias, nausea, vomiting

Additional Information:

May cause opiate withdrawal
Half-life is shorter than narcotic, may need to repeat doses. Continuously monitor respirations.
Narcan may be given as a bolus infusion to provide continuous titration as needed
IM injection produces a more long term effect than IV administration
In cardiac arrest situations where opiate/opioid toxicity is suspected focus should be placed on providing adequate oxygenation and ventilation. Narcan may then be considered as a treatment modality.

Clinical Guideline(s):

Cardiocerebral Resuscitation (Adult & Pediatric)
Overdose/Toxicity

NICARDIPINE

Additional Names:

Cardene

Classification:

Calcium Channel Blocker

Physiological Effects:

Nicardipine inhibits the transmembrane influx of calcium ions into cardiac muscle and smooth muscle without changing serum calcium concentrations. The contractile processes of cardiac muscle and vascular smooth muscle are dependent upon the movement of extracellular calcium ions into these cells through specific ion channels. The effects of nicardipine are more selective to vascular smooth muscle than cardiac muscle. In animal models, nicardipine produced relaxation of coronary vascular smooth muscle at drug levels which cause little or no negative inotropic effect.

Indications:

Short-term treatment of hypertension

Contraindications:

Hypersensitivity
Advanced aortic stenosis

Dosage:

Adult: Initiate infusion at 5mg/hr. If desired effect is not achieved increase dose by 2.5 mg/hr every 5 minutes until desired effect or a max of 15 mg/hr. Once the desired blood pressure is achieved the infusion should be set at 3 mg/hr.

Nicardipine (Mix 25mg in 250cc) - 100 mcg/cc

Dosage	3 mg/hr	5 mg/hr	7.5 mg/hr	10 mg/hr	12.5 mg/hr	15 mg/hr
	30	50	75	100	125	150
	Microdrips per minute or cc/hr					

Pediatric: Not recommended

Side Effects:

Hypotension, headache, tachycardia, nausea, vomiting, dizziness, sweating

Additional Information:

Use with caution in patients with impaired liver function
Should be infused through large peripheral veins to minimize the risk of venous irritation
If unacceptable hypotension or tachycardia occur the infusion should be discontinued

Clinical Guideline(s):

CHF / Cardiogenic Shock
Hypertensive Crisis
Stroke / TIA
Thoracic Aortic Catastrophe

NITROGLYCERIN

Additional Names:

Nitrostat, Transderm Nitro, Nitro-Dur, Nitrobid

Classification:

Vasodilator

Physiological Effects:

When nitroglycerin is administered, it is converted to nitric oxide by a chemical process that is not understood. Nitric oxide is a potent vasodilator in the body. Acting directly on the coronary arteries, this would enhance blood flow and subsequent oxygenation to the myocardium. NTG also has a dilatory effect on the peripheral vasculature thereby reducing both preload and afterload. This is beneficial in reducing the workload (myocardial oxygen demand) of the heart.

Indications:

Acute Coronary Syndromes
Congestive Heart Failure
Hypertension

Contraindications:

Hypersensitivity
If erectile dysfunction medications used in last 24 hours, (taldalafil 48 hours)
Heart rates < 50 bpm or > 100 bpm in ACS
Relative Hypotension
Right ventricular infarction

Dosage:

Adult:

Acute Coronary Syndromes
400 mcg (1 spray) SL q 3-5 min, to desired effect

Congestive Heart Failure
400 mcg (1 spray) SL q 3-5 min, to desired effect
200 – 400 mcg IV/IO every 3-5 minutes, to desired effect
5 – 400 mcg/min maintenance infusion

Hypertensive crisis
5 – 400 mcg/min infusion

NITROGLYCERIN

Adult (Continued):

Nitroglycerin (Mix 50mg in 250cc) 200mcg/cc

Dosage (mcg/min)	cc/hr	Dosage (mcg/min)	cc/hr
5	1.5	210	63
10	3	220	66
20	6	230	69
30	9	240	72
40	12	250	75
50	15	260	78
60	18	270	81
70	21	280	84
80	24	290	87
90	27	300	90
100	30	310	93
110	33	320	96
120	36	330	99
130	39	340	102
140	42	350	105
150	45	360	108
160	48	370	111
170	51	380	114
180	54	390	117
190	57	400	120
200	60		
Microdrips per minute or cc/hr			

Pediatric: Not recommended

Side Effects:

Headache, transient hypotension (postural syncope), reflex tachycardia, nausea, vomiting, abdominal cramps

Additional Information:

Do not shake aerosol spray because this affects the metered dose
Not recommended in pregnancy
Light sensitive, protect from direct sunlight
Wear gloves when handling and use caution so as not to inadvertently inhale the medication or get in eyes
While treating CHF, the IV/IO route is recommended to avoid interruptions in providing continuous positive airway pressure

Clinical Guideline(s):

ACS/STEMI/NSTEMI/Angina
CHF / Cardiogenic Shock
Hypertensive Crisis

NOREPIEPHRINE

Additional Names:

Levophed

Classification:

Vasopressor

Physiological Effects:

Norepinephrine acts primarily on α_1-adrenergic receptors and has some effect on β_1-adrenergic receptors resulting in potent vasoconstriction with a mild ionotropic response resulting in increased cardiac output.

Indications:

Distributive Shock
Cardiogenic Shock

Contraindications:

Hypovolemia

Dosage:

Adult: 2 – 10 mcg/min IV/IO infusion

Norepinephrine Infusion (Mix 1mg in 250cc) - 4 mcg/cc

Dosage	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min	6 mcg/min	7 mcg/min	8 mcg/min	9 mcg/min	10 mcg/min
	30	45	60	75	90	105	120	135	150
	Microdrips per minute or cc/hr								

Pediatric: Not recommended

Side Effects:

Severe hypertension, ischemic injury due to vasoconstriction, bradycardia, headache

Additional Information:

When possible, infusions of norepinephrine should be given into a large vein, particularly an antecubital vein
Avoid Hypertension. Close blood pressure monitoring is required.
Use with extreme caution in patients receiving monoamine oxidase inhibitors (MAOI) or antidepressants of the triptyline or imipramine types
Ensure the patient is not fluid depleted. Fluid resuscitation should be considered when appropriate.

Clinical Guideline(s):

Post Resuscitation Care
CHF / Cardiogenic Shock
Septic Shock / Infection

ODANSETRON

Additional Names:

Zofran

Classification:

Antiemetic

Physiological Effects:

Zofran is a serotonin 5-HT_3 receptor antagonist. Mechanism of action has not been fully characterized although it is not a dopamine-receptor antagonist. Serotonin 5-HT_3 receptors are present both peripherally on vagal nerve terminals and centrally in the chemoreceptor trigger zone of "the area postrema," the part of the medulla oblongata that controls vomiting.

Indications:

Nausea
Vomiting

Contraindications:

Hypersensitivity

Dosage:

Adult: 4 mg PO/IM/IV/IO SIVP (may be repeated once)

Pediatric: 0.1 mg/kg IM/IV/IO SIVP for patients weighing < 40 kg, use adult dosing for ≥ 40 kg (max 4 mg)

Side Effects:

Rare EKG changes including elongated Q-T intervals and angina
Diarrhea, headache, fever

Additional Information:

Multiday administration is shown to slow colonic transiting
Reduction in clearance and increase in elimination half-life seen in patients > 75 y/o

Clinical Guideline(s):

Nausea / Vomiting

ROCURONIUM

Additional Names:

Zemuron, Esmeron

Classification:

Skeletal muscle relaxant

Physiological Effects:

Rocuronium bromide is a non-depolarizing neuromuscular blocking agent with a rapid to intermediate onset depending on dose and intermediate duration. It acts by competing for cholinergic receptors at the motor end-plate. This action is antagonized by acetylcholinesterase inhibitors, such as neostigmine and edrophonium.

Indications:

Induce paralysis to facilitate endotracheal intubation

Contraindications:

Hypersensitivity

Dosage:

Adult: 0.5 – 1 mg/kg IV/IO

Pediatric: 0.5 – 1 mg/kg IV/IO

Side Effects:

Apnea, transient hypotension and hypertension

Additional Information:

Presents intubation conditions in patients with intubation initiated at 60 – 70 seconds
Should not be administered unless 2 or more clinicians skilled in endotracheal intubation are present
All airway equipment needed to facilitate intubation as well as all equipment needed to facilitate back-up and rescue airway placement (Supraglottic airways, surgical cric) should be readily available

Clinical Guideline(s):

Medication Assisted Intubation

SODIUM BICARBONATE

Additional Names:

None

Classification:

Buffer

Physiological Effects:

Bicarbonate is an anion (negative charge) that forms a salt (sodium bicarbonate) when it combines with its conjugate acid. Bicarbonate serves as the principal buffer for the body's acid/base buffer system, maintaining the CO_2 level

Indications:

Hyperkalemia
Known preexisting bicarbonate responsive acidosis (Diabetic ketoacidosis, Tricyclic or ASA overdose, cocaine overdose, or Diphenhydramine overdose)

Contraindications:

Excessive vomiting or continuous gastric suctioning (resulting in metabolic alkalosis)
Metabolic alkalosis
Hypocalcemia
Hypokalemia

Dosage:

Adult:

Acidosis/Overdose
Initial: 1 mEq/kg IV/IO
2nd: 0.5 mEq/kg IV/IO q 5 – 10 min

Crush Injury/Syndrome
Injury: 100 mEq added to 2 liters of NS (50 mEq per liter of saline)
Syndrome: 100 mEq bolus IV/IO

Pediatric:

Acidosis/Overdose
Initial: 1 mEq/kg IV/IO
2nd: 0.5 mEq/kg IV/IO q 5 – 10 min

Crush Injury/Syndrome
Injury: Add 50 mEq to 1 liter of NS and administer at 20 cc/kg
Syndrome: 1 mEq/kg bolus IV/IO

Side Effects:

Metabolic alkalosis, Rise in intracellular PCO_2, Seizures

Additional Information:

Do not mix with calcium chloride or other salts
Do not mix with epinephrine
Sloughing will occur if infiltrated out of vein into tissue

SODIUM BICARBONATE

Clinical Guideline(s):

Cardiocerebral Resuscitation (Adult & Pediatric)
Overdose/Toxicity
Crush Injury/Syndrome

SOLU-MEDROL

Additional Names:

Methylprednisolone, A-methaPred, DepoMedrol

Classification:

Adrenocortical steroid

Physiological Effects:

Solu-medrol is a synthetic corticosteroid. Corticosteroids are hormones produced by the adrenal glands adjacent to the kidney. Corticosteroids are involved in a number of physiological systems such as stress response, immune system response, and regulation of inflammation to name a few.

Indications:

Anaphylaxis
Asthma
COPD

Contraindications:

Hypersensitivity
Use with caution in patients with GI bleeding
Use with caution in diabetics

Dosage:

Adult: 125 mg deep IM/IV/IO

Pediatric: 0.5 – 2 mg/kg deep IM/IV/IO

Side Effects:

Dizziness, weakness, sleep disorders, weight gain, sodium and water retention, nausea, induced Cushing Syndrome, hypokalemia, hyperglycemia

Additional Information:

Caution in pregnancy, only if benefit outweighs the risk to fetus
Enhanced effect in patients with hypothyroidism and cirrhosis
Peak efficiency and onset times are not immediate

Clinical Guideline(s):

Adrenal Crisis
Allergic Reaction / Anaphylactic Shock
Asthma
Respiratory Distress / COPD
Pediatric Respiratory Distress

SUCCINYLCHOLINE

Additional Names:

Quelicin, Anectine

Classification:

Skeletal muscle relaxant

Physiological Effects:

Succinylcholine is a short acting depolarizing neuromuscular blocking agent used to induce paralysis to facilitate endotracheal intubation

Indications:

Induce paralysis to facilitate endotracheal intubation

Contraindications:

Hyperkalemia or the risk of hyperkalemia
Personal or family history of malignant hyperthermia
Narrow angle glaucoma or penetrating eye injury

Dosage:

Adult: 1 – 2 mg/kg IV/IO

Pediatric: 1 – 2 mg/kg IV/IO

Side Effects:

Hyperkalemia or the risk of hyperkalemia, fasciculations, bradycardia

Additional Information:

Onset of flaccid paralysis is rapid (less than one minute after intravenous administration), and with single administration lasts approximately 4 to 6 minutes
Should not be administered unless 2 or more clinicians skilled in endotracheal intubation are present
All airway equipment needed to facilitate intubation as well as all equipment needed to facilitate back-up and rescue airway placement (Supraglottic airways, surgical cric) should be readily available

Clinical Guideline(s):

Medication Assisted Intubation

TRANEXAMIC ACID

Additional Names:

Cyklokapron

Classification:

Antifibrinolytic Agent

Physiological Effects:

Tranexamic Acid (TXA) is a synthetic amino acid (lysine) that prevents plasminogen from being converted to plasmin. Plasmin is responsible for breaking down already-formed clots in the body in a process known as fibrinolysis. When TXA is administered, it will prevent the body from breaking down clots so that the natural clotting processes can work to control non-compressible hemorrhage.

Indications:

Epistaxis
Major Hemorrhage (trauma)

Contraindications:

> 3 hours from time of injury
Hypersensitivity
Subarachnoid hemorrhage
Active intravascular clotting

Dosage:

Adult:

For Epistaxis
100 mg IN, each nare

For Major Hemorrhage
2 g IV, dilute in 100cc of normal saline, bolus over 5 minutes (200 gtts/min on 10gtts/set)

Pediatric: Not recommended

Side Effects:

Hypotension if given rapidly, diarrhea, nausea, vomiting, and blurred vision.

Additional Information:

Administer TXA no later than 3 hours from time of injury
TXA administered within 1 hour of time of injury has shown to significantly reduce the risk of death due to bleeding
If hypotension occurs slow down infusion rate
TXA should be considered in any patient who has experienced significant blood loss (internal or external) and for patients who have suspected ongoing internal hemorrhage secondary to trauma

Clinical Guideline(s):

Complications of Pregnancy
Epistaxis
Hemorrhage Control

APPENDIX B - PROCEDURES

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APNEIC OXYGENATION

Apneic oxygenation is a technique used to supplement the pre-oxygenation phase of advanced airway management. Oxygen desaturation is one of the most frequent complications associated with emergent airway procedures. Current evidence supports the use of apneic oxygenation to reduce rates of desaturation and extend the safe apnea time.

Indications:

- Patients requiring oxygenation prior to and during endotracheal intubation

Procedure:

1. During pre-oxygenation phase apply nasal cannula with NRB mask, CPAP or BVM
2. Connect nasal cannula to secondary source of oxygen
3. Adjust flow rate to 15lpm or higher
4. Maintain flow rate and maximum spo2 until airway procedure is complete
5. Ventilate patient with positive pressure ventilation via advanced airway
6. Disconnect nasal cannula from oxygen source

Additional Information:

- Factors that decrease safe apnea include inadequate preoxygenation, increased oxygen consumption, critical illness, obesity, pregnancy, small children, airway occlusion, and pulmonary shunt.
- In critically ill patients, critical desaturation can occur almost immediately despite optimal attempts at preoxygenation
- Alveoli will continue to take up oxygen even without diaphragmatic movements or lung expansion assuming there is no airway obstruction.
- Apneic oxygenation is merely an adjunct, it is not a substitute for effective pre-oxygenation
- High flow rates of oxygen via nasal cannula provide very high levels of oxygen and a small amount of PEEP
- Delivering gas at high flow rates without heating and humidification causes nasal irritation, however most patients requiring intubation are extremely sick and are past the point of noticing this discomfort.

Bi-Level Positive Airway Pressure

Bi-Level Positive Airway Pressure is like CPAP in that it provides positive airway pressure to the patient. Bi-Level differs from CPAP in that it provides two different levels of pressure to support ventilatory effort. Bi-Level uses Inspiratory Positive Airway Pressure (IPAP) to support ventilatory effort during inspiration and Expiratory Positive Airway Pressure (EPAP) as the constant underlying pressure during expiration. Bi-Level can be used to help prevent respiratory fatigue in patients suffering from moderate and severe COPD or CHF.

Indications:

- Moderate to Severe COPD or CHF.

Contraindications:

- < 30 Kg
- Inability to protect airway or follow commands
- Respiratory Arrest/inadequate ventilatory effort
- Unstable Cardiorespiratory Status / Hypotension (shock)
- Uncooperative patients
- Trauma/Burns involving face
- Penetrating chest trauma
- Pneumothorax
- Active upper GI bleeding or history of recent gastric surgery

Procedure:

1. Attach the patient circuit
2. Attach the high-pressure oxygen supply
3. Power on the ventilator
4. Select the appropriate default setting (CPAP)
5. Select the correct operating mode (Bi-Level or "BL")
6. Adjust parameter values (IPAP, EPAP, FiO2)
    a. CHF
        i. IPAP: 10 cmH2O
            1. Titrated to a max of 18 cmH2O
        ii. EPAP: 5 cmH2O
            1. Titrate to a max of 13 cmH2O
        iii. FiO2: 21 – 100
            1. 100% FiO2 should be utilized until SpO2 can assessed
            2. Use lowest FiO2 percentage to maintain SPO2 of 94-99%
    b. COPD
        i. IPAP: 10 cmH2O
            1. Titrated to a max of 18 cmH2O
        ii. EPAP: 5 cmH2O
        iii. FiO2: 21 – 100
            1. 100% FiO2 should be utilized until SpO2 can assessed
            2. Use lowest FiO2 percentage to maintain SPO2 of 94-99%
7. Perform high pressure operational test (finger over end of patient circuit)
8. Attach CPAP/Bi-Level mask to patient circuit
9. Attach to patient
10. Ensure patient monitoring devices such as SPO2 and ETCO2 are attached and reading appropriately

Bi-Level Positive Airway Pressure

Additional Information:

- Bi-Level works in the setting of CHF by impacting the osmotic pressures that leads to pulmonary edema. Bi-Level reverses the pressure gradients causing intra-alveolar fluid to be reabsorbed into the intravascular space.
- Bi-Level works in the setting of COPD by splinting airways for gas exchange and medication delivery. Use of the end-tidal capnography may assist in determining which patients are suitable for Bi-Level versus intubation
- CHF patients typically benefit from higher Bi-Level pressures due to the higher pressure needed for oxygenation and reducing hydrostatic pressure in the lungs which is responsible for preventing pulmonary edema. COPD patients typically respond well to lower Bi-Level pressures when the goal is exclusively to splint the airways to allow for exhalation of trapped CO2 or for nebulized medication administration.
- Do not remove Bi-Level until hospital therapy is ready to be placed on the patient
- Monitor patient for gastric distension which may lead to vomiting
- IV Nitroglycerin is the preferred route of administration during Bi-Level use to prevent having to remove the mask and lowering airway pressures.

BRPD Blood Draw

Indications: When an individual is suspected by law enforcement of driving under the influence of intoxicants, that obligation to the patient remains the priority. Law enforcement officials, however, also have an important job that often involves seeking evidence of intoxication. Driving under the influence of intoxicants is a public safety issue in which both law enforcement and EBREMS have a vested interest. This procedure is established to give guidance on how to handle a request from Baton Rouge Police Department (BRPD) to draw blood on a suspected DWI/DUI offender.

1. EMS arrives on the scene and verifies one of the following:
    a) The individual consents to the blood draw or
    b) The officer has a search warrant signed by a judge or commissioner, or
    c) There is exigency with the blood draw preventing either of the first two instances (too much time has passed since the crash or incident, a judge has yet to respond, etc.)
2. EMS initiates a PCR in ESO using the "Non-Patient Incident (Not Otherwise Listed, Incident Support Services Provided (Including Standby)" Disposition.
3. One of the following forms must be completed in ESO prior to the blood draw:
    a) Patient Consent to Draw Legal Blood Alcohol form, or
    b) BRPD Legal Blood Alcohol Attestation form
4. EMS verifies that the DWI blood kit is sealed and not expired. EMS can instruct the officer to obtain a new kit if the kit is opened or expired.
5. EMS may only use the needle, Vacutainer tube, BZK (benzalkonium chloride) swabs and tourniquet from the DWI blood kit. Gloves, gauze, and bandages may be used from EMS stock.
6. Draw the individual's blood by:
    a) Opening the kit and gather the contents needed to draw the blood
    b) Apply the tourniquet to an arm to help locate the site of venipuncture
    c) Prepare the site for venipuncture with the BZK swabs. **It is imperative that alcohol swabs are not used.**
    d) Insert the needle and collect the blood in the tube(s) supplied in the kit.
    e) Remove the needle and bandage the site
7. Hand the blood tube(s) directly to the officer without any identifiers
8. Initial the tube seal
9. Sign the Blood Collector's Report and print the name on the outside of the box
10. Complete the ePCR. Document the DWI "kit number" and expiration.

CAPILLARY BLOOD GLUCOSE (CBG)

CBG evaluation is utilized to test the blood for the glucose levels. Glucose levels typically range between 60 mg/dL and 120 mg/dL. Some glucometers can display either "low" or "high". The Optium EX Blood Glucose Monitoring System that we currently use will show "LO" for blood glucose levels less than 20. It will show "HI" for blood glucose levels greater than 500. If using a different monitoring system, you should refer to the owner's manual to determine the measured levels HI and LO indicate for that device.

Indications:

- Any patient present with altered mental status
- Reported hypoglycemia
- Diabetic patients with vague medical complaints
- Strokes
- Seizures

Procedure:

1. Prepare and assemble necessary equipment
    a. Glucometer
    b. Test Strip
    c. Lancet
    d. Alcohol Swab
    e. 4X4 Dressing
    f. Band-Aid
2. Select sample site on patient's finger
3. Insert test strip into glucometer
4. Clean site with alcohol swab using aseptic techniques
5. Wipe site with sterile 4X4 dressing
6. Prick the finger at the site previously selected.
7. Maintain the extremity in a position lower than the patient's heart to facilitate blood return
8. Squeeze to accumulate blood droplet
9. Wipe away first droplet with 4X4 dressing (to avoid sample contamination with alcohol)
10. Squeeze again to accumulate blood droplet
11. Apply blood to test strip
12. Observe and document blood glucose level

Additional Information:

- Test strips have an expiration date (maintain current date)

CLINICAL GUIDELINE DEVIATION REPORT

CLINICAL GUIDELINE DEVIATION REPORT

The following report is to be completed in its entirety and routed to the Training Division no later than the end of the affected shift, for any and all instances in which a provider administers patient care not specifically delineated in the East Baton Rouge Parish, Department of EMS Patient Care Guidelines as a standard method or procedure, while representing the Department as a medical responder.

Date of Occurence:

EHR#:

Time of Occurence:

Lead Provider:

On Duty Shift:

Other Provider:

Receiving Hospital:

Physician Ordering:

EM-Unit #:

Description of Event:

**********Office Use Below**********

QA/QI Notes:

Training Notes:

Name, Employee Number

Name, Employee Number

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Continuous Positive Airway Pressure has been shown to rapidly improve vital signs, gas exchange, and work of breathing, decrease the sense of dyspnea, and decrease the need for endotracheal intubation in the patients who suffer from hypoxemia caused by congestive heart failure, asthma, and COPD. The improvement seen following CPAP administration occurs through a combination of 1) preventing alveolar collapse and facilitating oxygen delivery to pulmonary capillaries; 2) increasing the functional residual capacity and opening collapsed alveoli which enhances gas exchange and oxygenation; and 3) reducing transmural pressure resulting in increased cardiac output.

Indications:

- Patients who are in respiratory distress with signs and symptoms consistent with hypoxic hypoxia to include chronic obstructive pulmonary disease, asthma, pneumonia, congestive heart failure, neuromuscular disorders, acute lung injury, etc.

Contraindications:

- < 30 Kg
- Inability to protect airway or follow commands
- Respiratory Arrest/inadequate ventilatory effort
- Unstable Cardiorespiratory Status / Hypotension (shock)
- Uncooperative patients
- Trauma/Burns involving face
- Penetrating chest trauma
- Pneumothorax
- Active upper GI bleeding or history of recent gastric surgery

Procedure:

1. Attach the patient circuit
2. Attach the high-pressure oxygen supply
3. Power on the ventilator
4. Select appropriate default mode
5. Ensure operating mode is appropriate (CPAP)
6. Adjust parameter values (PEEP, FiO2)
    a. PEEP: 5
        i. Titrated to a max of 15 based on SpO2
    b. FiO2: 21 – 100
        i. 100% FiO2 should be utilized until SpO2 can assessed
        ii. Use lowest FiO2 percentage to maintain SPO2 of 94-99%
7. Perform high pressure operational test (finger over end of patient circuit)
8. Attach CPAP mask to patient circuit
9. Attach to patient
10. Ensure patient monitoring devices such as SPO2 and ETCO2 are attached and reading appropriately

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

Additional Information:

- CPAP works in the setting of CHF by impacting the osmotic pressures that leads to pulmonary edema. CPAP reverses the pressure gradients causing intra-alveolar fluid to be reabsorbed into the intravascular space.
- CPAP works in the setting of COPD and Asthma by splinting airways for gas exchange and medication delivery. Use of the end-tidal capnography may assist in determining which patients are suitable for CPAP versus intubation
- CHF patients typically benefit from higher CPAP pressures due to the higher pressure needed for oxygenation and reducing hydrostatic pressure in the lungs which is responsible for preventing pulmonary edema. COPD/Asthma patients typically respond well to lower CPAP pressures when the goal is exclusively to splint the airways to allow for exhalation of trapped CO2 or for nebulized medication administration.
- Do not remove CPAP until hospital therapy is ready to be placed on the patient
- Monitor patient for gastric distension which may lead to vomiting
- IV Nitroglycerin is the preferred route of administration during CPAP use to prevent having to remove the mask and lowering airway pressures.

CRICOTHYROIDOTOMY (ADULT)

Cricothyroidotomy is an emergency procedure involving surgical cutting of the cricothyroid membrane to access the trachea for ventilation in patients where all other airway maneuvers have been unsuccessful or not possible.

Indications:

- Inability to establish an airway and death is eminent due to a lack of an airway
- FBAO, when methods to relieve obstruction have failed
- Patients experiencing trismus (clinching) with airway compromise
- Severe Facial trauma with airway compromise and other airway measures have failed
- Laryngeal edema
- Failed airway when rescue airways and BVM ventilations are unsuccessful

Contraindications:

- Underlying anatomic abnormality (goiter or tumor)
- Tracheal transection

Procedure:

Scalpel-finger-bougie approach

Equipment: Scalpel blade (#10)
Bougie
Size 6.0mm ETT (or tracheostomy tube) / appropriately sized pediatric ETT w/ cuff

1. Once decision is made to proceed, extend neck in supine position to make anatomy more accessible by palpation (a.k.a. the 'laryngeal handshake'); note that airway has priority over suspected c-spine injury
2. Stabilize the thyroid cartilage with the non-dominant hand. Dominant hand holds scalpel and rests on the patient's sternum for stability and support
3. Make a 4 cm vertical incision through skin over cricothyroid membrane. If impalpable anatomy you may need to extend incision from mandible to sternum. If landmarks are easily identifiable, a horizontal incision can be made through skin and membrane during this step.
4. Once skin is incised, palpate cricothyroid membrane position and blunt dissect with fingers through subcutaneous tissue until the membrane is readily identifiable. Ignore bleeding until airway is secure (ETT placement usually has a tamponade effect)
5. Horizontal incision through membrane, drag scalpel blade from one side to the other then rotate 180 degrees and extend to the other side. The cricothyroid membrane is bound by a 'cartilaginous cage' so resistance will be felt at the margins of the membrane when the scalpel blade abuts cartilage.
6. Dilate with gloved little finger and palpate tracheal lumen, ideally identifying the cartilage of the posterior wall of the trachea/cricoid ring.
7. Pass bougie alongside little finger into trachea. Confirm bougie position with finger, ensuring it passes through membrane. Bougie usually holds up at carina <10cm from the skin (may feel tracheal rings as the bougie advances). Do not force if resistance is met as to not perforate the carina.
8. Pass ETT over bougie and intubate trachea. Ensure the ETT balloon is fully deflated and twist ETT as it passes the skin (hold up here is common). Only advance the ETT until the balloon is within the airway and no longer visible (endobronchial intubation is likely if advanced further).
9. Ensure ETT is held secure while bougie is removed and ETT is connected to BVM
10. Ensure proper ETT placement with physiological and mechanical methods of confirmation (EtCO2, breath sounds, equal chest rise, etc.)
11. Secure tube

Additional Information:

CRICOTHYROIDOTOMY (ADULT)

Additional Information:

Excessive bleeding can occur (control with direct pressure)

Assess for displacement or false passage by assessing for inability to ventilate, subcutaneous emphysema, or signs of pneumo-mediastinum

In the really young patient, the pediatric QuickTrach may be too large to place. In these cases, it may be appropriate to use a 14 gauge over-the-needle catheter.

CRICOTHYROIDOTOMY (PEDIATRIC)

A Percutaneous Cricothyroidotomy is used on our pediatric patients as an emergency procedure involving puncturing the cricothyroid membrane to access the trachea for ventilation in patients where all other airway maneuvers have been unsuccessful or not possible.

Indications:

- Inability to establish an airway and death is eminent due to a lack of an airway
- FBAO, when methods to relieve obstruction have failed
- Patients experiencing trismus (clinching) with airway compromise
- Severe Facial trauma with airway compromise and other airway measures have failed
- Laryngeal edema
- Failed airway when rescue airways and BVM ventilations are unsuccessful

Contraindications:

- Underlying anatomic abnormality (goiter or tumor)
- Tracheal transection

Procedure:

1. Provide all supplemental support and necessary stabilizers
2. Assemble and check all necessary equipment
3. Place the patient in the supine position and assure stable positioning of the neck
4. Hyper-extend the neck (contraindicated in c-spine trauma) to expose thyroid cartilage (larynx)
5. Identify and localize landmarks (thyroid cartilage, cricoid cartilage, cricothyroid membrane)
6. Secure the larynx laterally between the thumb and forefinger
7. Find the cricothyroid membrane, which is in the midline between the thyroid cartilage and the cricoid cartilage (puncture site)
8. Clean the puncture site with alcohol or betadine swab using aseptic techniques
9. Grasp the laryngeal structure and hold firmly
10. Firmly hold the QuickTrach and puncture the cricothyroid cartilage while holding the syringe at a 90-degree angle from the structure (needle should be angled slightly downward toward the feet to avoid the vocal cords and glottic structures)
11. Advance the QuickTrach enough for the distal tip to move into the trachea or the spacer at the bottom of the 15 mm adapter contacts the skin
12. Aspirate with the attached syringe to get air return (indicates you are in the trachea)
13. Holding the stylet firmly to avoid further advancement, remove the spacer and advance the tracheal tube off the stylet into the trachea (push in downward direction towards the feet)
14. Carefully remove the needle and syringe
15. Secure the cannula with the neck strap
16. Apply the corrugated extension tube to the 15mm adapter of the tracheal tube
17. Connect the BVM to the corrugated extension and ventilate the patient
18. Ensure proper placement with physiological and mechanical methods of confirmation ($EtCO_2$, breath sounds, equal chest rise, etc.)
19. Continue to provide high flow oxygen and ventilate using BVM

CRICOTHYROIDOTOMY (PEDIATRIC)

20. Continuously monitor the integrity of the patient's airway by utilizing the $EtCO_2$ and SpO_2 monitoring

Additional Information:

- Excessive bleeding can occur (control with direct pressure)
- Assess for displacement or false passage by assessing for inability to ventilate, subcutaneous emphysema, or signs of pneumomediastinum
- In the really young patient, the pediatric QuickTrach may be too large to place. In these cases, it may be appropriate to use a 14 gauge over-the-needle catheter.

DELAYED SEQUENCE INTUBATION

Delayed Sequence Intubation is the use of pharmacologic agents to facilitate endotracheal intubation in patients where intubation may be difficult or impossible. This includes patients that are combative, have intact airway reflexes or other unfavorable conditions.

Indications:

- Patients requiring advanced airway placement which fall into one of the below categories:
  - Conscious
  - Combative
  - Trismus
  - Intact Airway Reflexes
  - Other unfavorable conditions

Considerations:

- Not all patients that have indications for this procedure are necessarily candidates for Delayed Sequence Intubation. Examples include patients who may have contraindications to the medications used for this procedure. Or, patients who are expected to be a difficult intubation in situations where management with supraglottic devices or a cricothyroidotomy is contraindicated or expected to also be difficult or unsuccessful thus providing no secure back up plan.

Procedure:

1. Gather, assemble, and check all equipment for ETI
2. Gather all need backup airway equipment (King LTS-D, Cric)
3. Properly position your patient. Back up approximately 20° - 30° and head elevated in the sniffing position.
4. Consider administration of pre-medications (Lidocaine, Fentanyl, Atropine)
5. Pre-Oxygenate patient (100% O_2 with NRB or BVM, Apneic Oxygenation) for at least 5 minutes
6. If patient does not allow for pre-oxygenation or resuscitation administer Ketamine as part of a delayed sequence intubation. Oxygenate and resuscitate your patient. Once patient's SpO_2 improves to > 90%, continue preoxygenation for 3 minutes.
7. If patient is adequately pre-oxygenated and does not require resuscitation administer Ketamine as your induction agent.
8. Intubation can be performed without the use of a paralytic if able.
9. If not, administer Rocuronium
10. Attempt intubation with bougie while maintaining Apneic Oxygenation once paralysis is achieved.
11. If the patient's SpO_2 falls below 90% then the attempt should be abandoned. When this occurs or if the attempt is unsuccessful then the crew should proceed to the Failed Airway Guideline. The patient should be ventilated and oxygenated before subsequent intubation attempts.
12. If intubation is successful verify tube placement and depth (breath sounds, equal rise & fall, $EtCO_2$)
13. Secure tube with commercial tube restraint
14. Continue with ventilations at appropriate rate and volum

DELAYED SEQUENCE INTUBATION

15. Administer Fentanyl for analgesia
16. Administer Ketamine and/or Midazolam for continued sedation
17. Continuously monitor patient (especially after any patient movement)

Additional Information:

- Etomidate is not the best induction agent to use in patients who are hemodynamically unstable. Ketamine is a safer option.
- Patients must be adequately oxygenated and resuscitated before a paralytic can be administered. Administering a paralytic to a hypoxic patient can cause rapid deterioration into cardiac arrest. Resuscitate and oxygenate your patients first before attempting DSI. If the patient's presentation does not allow for adequate oxygenation/ventilation (uncooperative or combative due to hypoxia or other cause), perform DSI where Ketamine is used to sedate the patient to allow for oxygenation and stabilization.
- All patients who are administered a paralytic should receive an induction agent first to ensure patients are sedated before paralyzed.
- Continued sedation must be administered in patients to prevent them from waking up while remaining paralyzed.
- Pain management must be administered to manage the body's physiological response to pain caused by this procedure.

ELECTRICAL THERAPY

Defibrillation

Energy Levels:

Biphasic

Adult:	Initial:	120 J → 150 J → 200 J
	All subsequent:	200 J
Peds:	Initial:	2 J/kg
	All subsequent:	4 J/kg

Cardioversion

Energy Levels:

Biphasic

Adult:	SVT / A-Flutter:	85** J → 120 J → 150 J → 200 J
	A-Fib:	120 J → 150 J → 200 J
	V-Tach with pulse:	
	— Monomorphic:	85** J → 120 J → 150 J → 200 J
	— Polymorphic:	120 J → 150 J → 200 J "**unsynchronous**"
Peds:	All rhythms:	0.5 J/kg → 2 J/kg → 2 J/kg all subsequent shocks

(if 2nd shock is unsuccessful, give anti-arrhythmic trial before third shock)

Indications:

- Cardiac arrythmias with hemodynamic compromise or refractory to pharmacological intervention

Procedure:

1. Ensure quality CPR is not compromised.
2. Prepare and attach defibrillation pads (anterior/posterior).
3. Ensure proper joules setting is selected, change using the Energy Select button if another setting is indicated
4. Adjust the Sync setting to enable/disable cardioversion as indicated
5. Press the Charge button to charge the monitor
6. When the monitor indicates full charge, indicate for all persons to stand clear and visually confirm
7. Deliver the electrical energy by pressing the Shock button

Additional Information:

- ** Zoll recommends starting at 75 J, but the Zoll X-Series Advance does not offer that option. The next best appropriate option is 85 J.
- Zoll OneStep™ Pediatric CPR electrode pads are indicated for patients 0-8 years of age and less than 55lbs/25kg, or as indicated on the product packaging.

EMERGENCY CHILDBIRTH

Emergency childbirth is the birth of an infant in places or situations other than what was planned. Emergency measures for delivery are indicated when childbirth is imminent

Indications:

Imminent childbirth

Procedure:

Gather, assemble, and check all supplies and equipment
Place clean pad under the patient
During contractions, urge the patient to push
Deliver and support the emerging fetal head
Check for nuchal cord and manage appropriately if present
Assess for the presence of meconium and consider suctioning if delivery is delayed
Deliver the shoulders and the remainder of the body
Place the newborn on mother's abdomen or at the level of the mother's uterus
Suction airway if needed. Routine suctioning is not recommended unless the newborn has visible meconium in the airway.
Dry, warm, and stimulate newborn.
After 1 minute (or sooner if the umbilical cord stops pulsating), clamp and cut the umbilical cord approximately 6 – 8 inches from the abdomen
Acquire 1-minute APGAR score
Resuscitate newborn according to Neonatal Resuscitation Pyramid if necessary
Place newborn on mother (skin to skin)
Acquire 5-minute APGAR sore
Acquire CBG from newborn if indicated
Monitor mother and newborn
Upon delivery of the placenta, place in provided bag and give to hospital staff

Additional Information:

Crowning, bulging of the perineum, and the urge to push are all signs of imminent delivery. Preparation for delivery should be completed immediately. If in the ambulance, the crew should pull over, if safely able to do so, to prepare for delivery.
Neonatal resuscitation is indicated for patients who are breathing inadequately or who have a sustained heart rate of less than 100. Proceed to the Neonatal Resuscitation Guidelines as needed

EMERGENT INFECTIOUS DISEASE

This procedure is intended to address the transport and PPE requirements for a patient with a suspected emergent infectious disease. Responding crews will be notified of a suspected emergent infectious disease by medical communications using the statement, "Positive screening, additional PPE required."

PPE Requirements

At a minimum, the following PPE will be needed for each practitioner when treating and transporting a patient with an emergency infectious disease.

- Eye protection (goggles) and face shield
- N95 Respirator
- Exam gloves – three pair
- Tychem suit with hood
- Shoe covers
- Boot Covers

At a minimum, the following PPE will be needed for the donning/doffing partner to assist the practitioner when donning and doffing PPE.

- Eye protection (goggles)/face shield
- N95 Respirator
- Exam gloves three pain
- Shoe covers
- Boot Covers
- Disposable gown and/or Tyvek jumpsuit/coverall

Donning and Doffing of PPE

Donning and doffing procedures will be completed using a 'buddy system' to ensure the lowest possible risk of contamination. Do not attempt to don or doff PPE without a partner to monitor the situation.

Donning Procedure

When donning PPE, it is important to have an additional person not involved in patient care watch over and supervise the donning procedure to assure PPE is donned appropriately. All taping should be done with duct tape so that there is no tenting; and covering with a spacing of 50/50 on gloves/shoe covers and Tyvek/Tychem material.

The following steps should be taken to don the PPE:

1. Remove all jewelry, watches, and belt attachments.
2. Remove outer uniform shirt.
3. With donning partner, inspect the Tychem suit for defects.
4. Place shoe covers over work foot gear.
5. Cleanse hands with alcohol hand gel.
6. Place Tyvek sleeves on each forearm. *
7. Apply first layer of gloves.
8. Tape first layer of gloves to Tyvek sleeves. *
9. Carefully place Tychem suit over shoe covers and slide arms into sleeves.
10. Place second, longer pair of gloves over the sleeves of the Tychem suit.
11. Tape second pair of gloves to the sleeves of the Tychem suit.

12. Apply boot covers over feet. If boot covers do not have elastic to fit snugly against Tychem suit, tape boot covers to the suit.
13. Apply N95 mask, making sure of a good fit and skin coverage.
14. Apply safety glasses/goggles.
15. Place hood on head, making sure all hair is inside of the hood.
16. Zip the suit.
17. Remove paper from adhesive and press the flap in place for the entire length.
18. Apply face shield.
19. Apply 3rd pair of gloves. These gloves may be removed, put into a bio hazard bag, and then replaced as they become soiled.

* The Tyvek sleeves may be omitted if longer gloves are used.

Doffing Procedure

When doffing PPE, an additional person not involved in patient care shall watch over the doffing procedure to assure it is doffed appropriately minimizing the risk for contamination.

The order and procedure in which PPE should be doffed is as follows:

1. Lay disposable sheet on ground to stand on and designate “clean/dirty” area.
2. Have doffing partner don PPE, except for Tychem suit.
3. Have biohazard bag within arms’ reach.
4. Have doffing partner remove any gross contamination with MEDI-WIPE or similar product.
5. Have doffing partner mist Tychem suit, gloves and boot covers with disinfectant or 10% bleach solution and wait 10 minutes.
6. Remove boot covers and place in biohazard bag.
7. Remove outer (3rd) layer glove and place in biohazard bag.
8. Apply a clean pair of gloves.
9. Remove face shield and place in biohazard bag.
10. Remove hood and place in biohazard bag.
11. Unzip and remove Tychem suit by rolling it inside out with doffing partner assisting in the process – take care not to allow outside of suit to contact skin or clothing.
    a. When removing hands from sleeves, the outer layer and the taped layer of gloves should be carefully removed during this step.
12. Before proceeding in completely removing suit, apply a clean pair of gloves (there should two gloves on each hand).
13. Using the inside of the Tychem suit, roll it down to the ankles.
14. Remove feet from the suit, taking care to step only on the inside of the suit.
15. Remove inner boot covers and step into “clean” area after each removal.
16. Remove outer layer of gloves and place into “dirty” area.
17. Remove safety glasses/goggles and place into “dirty” area.
18. Remove N95 mask, taking care not to touch the face, and place into “dirty” area.
19. Remove last layer of gloves along with Tyvek sleeves (if applicable).
20. Using alcohol hand sanitizer, cleanse hands and/or wash hands as soon as possible.
21. Doffing partner will contain all removed items onto disposable sheet and place into doubled biohazard bags for proper disposal.

EMERGENT INFECTIOUS DISEASE

Ambulance Preparation

Ambulance preparation will be done with the purpose of segregating the cab from the patient compartment and covering the cabinets/shelves, ceiling, seating and floor with an impermeable barrier.

Supplies that will be needed include:

- Plastic sheeting (visqueen)
- Duct tape
- Scissors

All sheeting should overlap prior sheets of plastic by a minimum of 1 inch. All seams should be sealed completely by duct tape.

Procedure:

1. Remove all unnecessary medical equipment and place in the cab of the ambulance.
2. Cover the ceiling of the patient compartment with plastic sheeting and affix with duct tape.
3. Place sheeting on the floor of the patient compartment area and affix to the bench seat, jump seat, and walls to create a bowl effect in an effort to channel any body fluids toward the center of the floor causing fluids to collect in one area.
4. Place plastic sheeting over the walls (sides and bulkhead) by affixing it to the edges of the sheeting for the ceiling and floor with duct tape to enable any flow of fluid to be captured on the sheet on the floor.
5. Wall sheeting should overlap with the upper portion over the lower portion to prevent any body fluid from leaking between sheets by gravity.
6. The stretcher mounts will need to be accessible through the plastic sheeting for safe transport of the stretcher and the patient. Seal these openings generously with duct tape so that all fluids flow to the sheeting on the floor.
7. Leave openings around ventilation ports to allow proper airflow and exchange.
8. Continue to overlap sheeting down and over seating to the floor. Cover rear doors with plastic sheeting and duct tape.

Stretcher Preparation

Stretcher preparation will be done with the purpose of preventing contamination of areas that cannot be clean with disinfectant (i.e., mattress pad).

Supplies that will be needed:

- Impermeable Mattress Cover
- Disposable blanket
- Patient containment bag

Procedure:

1. Cover mattress pad with fitted impermeable mattress cover. Place disposable blanket on top of cover so that the patient can be wrapped with the blanket once on the stretcher.

EMERGENT INFECTIOUS DISEASE

Patient Care

If possible, prior to patient contact, each caregiver will don the PPE while the other crewmember assists by both checking for integrity issues or exposed body parts. Patient care should be limited to supportive care.

Ambulatory patient

- If the patient can walk to the ambulance, have them don the PPE that is required for EMS personnel and walk to the ambulance

Non-ambulatory patient

- If the patient is not ambulatory, place the patient in a patient containment bag and then put the patient on the protected stretcher.

Transport to the Hospital

1. Family or friends of the patient should not ride in the ambulance and should be instructed to stay home. Should there be an issue (i.e., minor child), consult with your supervisor and/or wait for a decision from the state authorities.
2. When calling the receiving facility, make them aware of the situation as soon as possible and ask for specific instructions as to where to unload the patient.
3. Preplan the unloading procedure with the receiving facility.
4. Upon arrival at the receiving facility, contact the hospital staff and do not unload the patient until they are ready to receive them.

End Tidal CO_2 Detection ($ETCO_2$)

EtCO2 is utilized to evaluate a patient's perfusion status, confirm proper advanced airway placement, and the ongoing monitoring of advanced airway placement by measuring the capnometry and capnography during exhalation. EtCO2 is the standard in monitoring the respiratory integrity of the patient and perfusion status. EtCO2 is also valuable in assessing the level of severity in and the therapeutic response of medications for patients experiencing bronchospasm and chronic obstructive lung diseases.

Indications:

- Non-intubated patients:
  - Patients presenting with or suspected of having any type of hypoxic or hypercapnic disease pathology (Any form of shock, CHF, Asthma, Pneumonia, DKA, etc.)
  - Patients requiring any type of sedation
  - Patients receiving pain management or any other medication that affects circulation and/or respiration
- Intubated patients:
  - After initial advanced airway placement of any type
  - Continuous monitoring of correct advanced airway placement and ventilation
  - Detection of loss of circulatory function
  - Verification of the effectiveness of CPR
  - Confirmation of return of spontaneous circulation

Procedure:

- Non-Intubated Patients
  - Determine mechanism of distress (i.e. asthma, emphysema, CHF, etc.)
  - Attach EtCO2 monitor utilizing nasal cannula
  - Verify proper waveform and quantitative measures
  - Utilize diagnostic information (waveform and quantitative value) to verify the patient's condition
  - Initiate appropriate Clinical Guideline for pharmacological care
- Intubated or Ventilated Patients (BVM, ETT, Surgical airway, or Supraglottic airways)
  - Intubate according to intubation procedure
  - Set up EtCO2 monitor
  - Attach EtCO2 monitor between advanced airway or mask and Bag valve
  - Verify proper waveform and quantitative measure to confirm tube placement and/or ventilation
  - Continuously monitor placement by assuring proper waveform and quantitative value

Additional Information:

- In intubated patients, EtCO2 does not replace clinical confirmation of placement (chest rise, tube moisture, bag compliance, (+) breath sounds, and (-) gastric sounds)
- Shark fin pattern is indicative of the severity and presence of bronchospasms
- EtCO2 will be placed on all intubated patients and the non-intubated ones listed in above
- Normal capnometry values are between 35-45mmhg. Values less than 35mmhg suggest decreased cellular metabolism (shock, poisoning, etc.) or hyperventilation. Values higher than 45 suggest hypoventilation or increased metabolic metabolism (hyperthermia, hyperthyroidism)

ENDOTRACHEAL INTUBATION

The endotracheal intubation, or placement of an endotracheal tube, into the trachea is the preferred method of airway management when definitive airway care is warranted. Patients unable to maintain an adequate airway from various etiologies are candidates.

Indications:

- Failure of ventilation/oxygenation or pending failure of ventilation/oxygenation
- Patients unable to maintain or protect their airway
- Patients with the potential of clinical deterioration
- Airway obstruction of any type (edema, foreign body, trauma)
- Crash airway scenarios

Procedure:

1. Assure a patent airway and hyperoxygenate with 100% O_2 prior to the procedure
2. Assemble and check all the necessary equipment. Utilize Delayed Sequence Intubation Guideline as needed
3. Select the appropriately sized ETT
4. Place the patient in the "sniffing" position with the head extended
5. Insert laryngoscope blade into the right side of the mouth while sweeping the tongue to the left
6. Visualize right tonsillar fossa, centralize blade to the uvula
7. Look for the epiglottis and utilize the tip of the blade appropriately
    a. Macintosh inserts into the vallecula while lifting mandible to expose glottis
    b. Miller goes under the epiglottis to manually lift it to expose glottis
8. Visualize the glottic opening (vocal cords)
9. Insert the Coude-tip Bougie into the trachea while feeling for tracheal rings and advance until hold up.
10. Insert the ETT over the Bougie using a counterclockwise motion and into the trachea until the desired depth is achieved
11. Withdraw the laryngoscope blade followed by the Bougie taking care as to not dislodge the ETT.
12. Inflate the distal cuff on the ETT with 10 ml of air or until you feel resistance on the syringe, whichever occurs first
13. Confirm bilateral breath sounds and absent epigastric sounds by auscultation
14. Confirm bilateral chest rise by visualization
15. Confirm placement with proper $EtCO_2$ waveform
16. Visualize moisture in the ETT
17. Verify adequate BVM compliance
18. Secure the ETT appropriately using a commercial device
19. Continue to provide oxygen as needed and ventilate using a bag valve device

Additional Information:

- To problem solve any difficulty with the intubated airway, remember the pneumonic:
    DOPE: D-dislodgement, O-obstruction, P-pneumothorax, E-equipment
- Suction should always be available while performing this procedure
- Supraglottic airway and/or equipment needed for surgical airway should be readily available in the event of unsuccessful endotracheal intubation. (Failed Airway Guideline)

ENDOTRACHEAL INTUBATION

- The EtCO2 and SpO2 must be applied to all intubated patients for continuous airway monitoring
- To protect the cervical spine in trauma, manual stabilization may be used when performing endotracheal intubation.
- The Miller blade is recommended for pediatric patients

EZ-IO® INSERTION

EZ-IO insertion is used when fluid resuscitation or medication therapy is necessary, and IV access is unobtainable or when a delay in gaining IV access would be detrimental to the patient's outcome.

Indications:

- The EZ-IO is recommended for use on adult and pediatric patients any time vascular access is difficult to obtain in emergent, urgent, or medically necessary situations for up to 24 hours. Only 3 insertion attempts, per patient, is permitted.

Contraindications:

- Fracture of the target bone
- Previous, significant orthopedic procedures at insertion site (e.g. prosthetic limb or joint)
- IO in the targeted bone within the past 48 hours including unsuccessful attempts
- Infection at area of insertion
- Excessive tissue or absence of adequate anatomical landmarks

Adult/Pediatric Sites Include:

- Proximal Humerus (preferred)
- Proximal Tibia
- Distal Tibia
- Distal Femur (Pediatrics only)

Select EZ-IO® Needle Set based on patient weight, anatomy, and clinical judgment. The EZ-IO® Catheter is marked with a black line 5 mm proximal to the hub. Prior to drilling, with the EZ-IO® Needle Set inserted through the soft tissue and the needle tip touching bone, adequate needle length is determined by the ability to see the 5 mm black line above the skin.

- EZ-IO® 45 mm Needle Set (yellow hub) should be considered for proximal humerus insertion in patients 40 kg and greater and patients with excessive tissue over any insertion site
- EZ-IO® 25 mm Needle Set (blue hub) should be considered for patients 3 kg and greater
- EZ-IO® 15 mm Needle Set (pink hub) should be considered for patients approximately 3-39 kg

Procedure:

Proximal Humerus

Site Identification

Proximal Humerus (**Adult**)

1. Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)
2. Place your palm on the patient's shoulder anteriorly; the "ball" under your palm is the general target area
3. You should be able to feel this ball, even on obese patients, by pushing deeply
4. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally
5. Place your thumbs together over the arm; this identifies the vertical line of insertion on the proximal humerus

EZ-IO® INSERTION

Proximal Humerus (**Pediatric**)

1. Place the patient's hand over the abdomen (elbow adducted and humerus internally rotated)
2. Place your palm on the patient's shoulder anteriorly; the "ball" under your palm is the general target area
3. You should be able to feel this ball, even on obese patients, by pushing deeply
4. Place the ulnar aspect of your hand vertically over the axilla and the ulnar aspect of your other hand along the midline of the upper arm laterally
5. Place your thumbs together over the arm
6. This identifies the vertical line of insertion on the proximal humerus
7. Palpate deeply up the humerus to the surgical neck
8. This may feel like a golf ball on a tee – the spot where the "ball" meets the "tee" is the surgical neck
9. The insertion site is 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle

Insertion Technique

Proximal Humerus (**Adult**)

1. Aim the needle set at a 45-degree angle to the anterior plane and posteromedial
2. Push the needle set tip through the skin until the tip rests against the bone
3. The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
4. Gently drill into the humerus approximately 2 cm or until the hub is close to the skin; the hub of the needle set should be perpendicular to the skin

Proximal Humerus (**Pediatric**)

1. Aim the needle set tip at a 45-degree angle to the anterior plane and posteromedial
2. Push the needle set tip through the skin until the tip rests against the bone
3. The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
4. Gently drill, immediately release the trigger when you feel the loss of resistance as the needle set enters the medullary space; avoid recoil – do NOT pull back on the driver when releasing the trigger
5.

Tibia

Site Identification

Proximal Tibia (**Adult)**

1. Extend the leg.
2. Insertion site is approximately 2 cm medial to the tibial tuberosity, or approximately 3 cm below the patella and approximately 2 cm medial, along the flat aspect of the tibia.

Distal Tibia (**Adult**)

1. Insertion site is located approximately 3 cm proximal to the most prominent aspect of the medial malleolus.
2. Palpate the anterior and posterior borders of the tibia to assure insertion site is on the flat center aspect of the bone.

EZ-IO® INSERTION

Proximal Tibia (**Pediatric)**

1. Extend the leg. Pinch the tibia between your fingers to identify the medial and lateral borders.
2. Insertion site is approximately 1 cm medial to the tibial tuberosity, or just below the patella (approximately 1 cm) and slightly medial (approximately 1 cm), along the flat aspect of the tibia.

Distal Tibia (**Pediatric**)

1. Insertion site is located approximately 1-2 cm proximal to the most prominent aspect of the medial malleolus.
2. Palpate the anterior and posterior borders of the tibia to assure insertion site is on the flat center aspect of the bone.

Insertion Technique

Tibia (**Adult**)

- Aim the needle set at a 90-degree angle to the bone
- Push the needle set tip through the skin until the tip rests against the bone
- The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
- Gently drill, advancing the needle set approximately 1-2 cm after entry into the medullary space or until the needle set hub is close to the skin

Tibia (**Pediatric**)

- Aim the needle set at a 90-degree angle to the bone
- Push the needle set tip through the skin until the tip rests against the bone
- The 5 mm mark must be visible above the skin for confirmation of adequate needle set length
- Gently drill, immediately release the trigger when you feel the loss of resistance as the needle set enters the medullary space; avoid recoil – do NOT pull back on the driver when releasing the trigger

Insertion Completion

1. Hold the hub in place and pull the driver straight off; continue to hold the hub while twisting the stylet off the hub with counterclockwise rotations; catheter should feel firmly seated in the bone (1st confirmation of placement);
2. Dispose of all sharps and biohazard materials using standard biohazard practices and disposal containers.
3. If using the NeedleVISE® 1 port sharps block, place on stable surface and use a one-handed technique.
4. Place the EZ-Stabilizer® Dressing over the hub
5. Attach a primed extension set to the catheter hub, firmly secure by twisting clockwise
6. Pull the tabs off the dressing to expose the adhesive, apply to the skin
7. Aspirate for blood/bone marrow (2nd confirmation of placement) *
8. *Inability to withdraw/aspirate blood from the catheter hub does not mean the insertion was unsuccessful.
9. Proceed with technique below, based on situation:
    a. **ADULT - RESPONSIVE TO PAIN – RECOMMENDED ANESTHETIC**

Observe recommended cautions/contraindications to using 2% preservative and epinephrine-free lidocaine (intravenous lidocaine) and confirm lidocaine

dose per institutional Clinical Guideline
ii. Prime extension set with lidocaine
iii. Note that the priming volume of the EZ-Connect® Extension Set is approximately 1.0 mL
iv. Slowly infuse lidocaine 40 mg IO over 120 seconds
v. Allow lidocaine to dwell in IO space 60 seconds
vi. Flush with 5 to 10 mL of normal saline
vii. Slowly administer an additional 20 mg of lidocaine IO over 60 seconds.
viii. Repeat PRN; consider systemic pain control for patients not responding to IO lidocaine

b. ADULT - UNRESPONSIVE TO PAIN
ii. Prime extension set with normal saline
iii. Flush the IO catheter with 5-10 mL of normal saline
iv. If patient develops signs indicating responsiveness to pain, refer to adult recommended anesthetic technique.

c. INFANT/CHILD - RESPONSIVE TO PAIN – RECOMMENDED ANESTHETIC
ii. Observe recommended cautions/contraindications to using 2% preservative and epinephrine-free lidocaine (intravenous lidocaine) and confirm lidocaine dose per institutional Clinical Guideline; usual initial dose is 0.5 mg/kg, not to exceed 40 mg
iii. Prime extension set with lidocaine; priming volume of the EZ-Connect® Extension Set is approximately 1.0 mL
iv. For small doses of lidocaine, consider administering by carefully attaching syringe directly to needle hub (prime extension set with normal saline)
v. Slowly infuse lidocaine over 120 seconds
vi. Allow lidocaine to dwell in IO space 60 seconds
vii. Flush with 2-5 mL of normal saline
viii. Slowly administer subsequent lidocaine (half the initial dose) IO over 60 seconds.
ix. Repeat PRN; consider systemic pain control for patients not responding to IO lidocaine

d. INFANT/CHILD - UNRESPONSIVE TO PAIN
ii. Prime extension set with normal saline
iii. Flush the IO catheter with 2-5 mL of normal saline
iv. If patient develops signs indicating responsiveness to pain, refer to infant/child recommended anesthetic technique.

e. Connect fluids if ordered and pressurize up to 300 mmHg for maximum flow
f. Verify placement/patency prior to all infusions.
g. Stabilize and monitor site and limb for extravasation or other complications
h. For proximal humerus insertions, ensure arm is secured to avoid movement
i. For distal femur insertions, maintain securement of the leg to ensure the knee does not bend
j. Document date and time on wristband and place on patient

GASTRIC TUBE INSERTION

Nasogastric tube intubation is indicated to relieve gastric distention

Indications:

- Decompression of the stomach to reduce potential for aspiration and difficulty with ventilation
- Decompression of the stomach to relieve pressure inside the thoracic cavity to improve preload

Contraindications:

- Nasal or facial trauma or Basilar skull fracture
- If resistance is met upon insertion into both nostrils
- Anatomical alterations from previous surgeries
- Suspected esophageal varices

Procedure:

1. Select the proper size tube according to the size of the patient
2. Measure the tube by placing the distal end over the stomach region and extend to behind the ear, and then to the corner of the mouth or nostril (Marking the desired depth)
3. Place the patient in an upright, seated position for procedure if possible. Supine for unresponsive patients is appropriate.
4. Lubricate the distal end of the tube and insert into the largest nostril or corner of mouth
5. Advance the tube while having the patient swallow continuously (if conscious), until the desired marked depth is at the nostril or corner of the mouth
6. Verify tube placement by auscultating over stomach while injecting 30 mL of air with a syringe
7. Tape the tube in place
8. Attach clear tube with adaptor to suction tubing (lowest suction setting needed to decompress stomach)
9. If suction is to be removed, then the blue tube should be capped on to the clear tube with adaptor

Additional Information:

- Withdraw the tube immediately if the patient's respiratory status deteriorates
- NG tubes should be placed in all intubated patients when gastric distention is suspected or present. Especially, when the patient was being ventilated without an advanced airway.
- The clear tube on the Salem Sump Tube is used for suction/decompression. The blue tube is a vent tube that can be used as an irrigation tube. Typically, in the pre-hospital setting, you will only want to consider irrigating the NG tube through the blue tube is if it becomes blocked from gastric contents. If irrigation is needed flush the blue tube with sterile water. You would then flush the line again with air to ensure it remains patent to be used as a vent when hooked to suction.

I-GEL®

The i-gel® is a second generation supraglottic airway that has been designed to create a non-inflating, anatomical seal of the pharyngeal, laryngeal and perilaryngeal structures while avoiding compression trauma.

Indications:

- Need for positive pressure ventilation (PPV)
- Rescue airway for securing and maintaining airway patency when endotracheal intubation cannot be achieved or is unwarranted.

Contraindications:

- Use on a conscious/semi-conscious patient
- Trismus or limited mouth opening
- Pharyngo-perilaryngeal abscess, trauma, or mass.

Procedure:

1. Remove from cradle and use a small bolus of water-based lubricant (KY Jelly or similar) to lubricate the back, sides, and front of the cuff with a thin layer of lubricant. Proper seal will not be achieved if lubricant is not correctly applied.
2. Grasp the i-gel® firmly along the integral bite block with the cuff facing the chin.
3. With the patient in a sniffing position with head extended and neck flexed, the chin should be gently pressed down to open the mouth. Introduce the leading soft tip into the mouth in a direction towards the soft palate.
4. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt. The horizontal line on the device should be at or near the level of the patient's teeth (horizontal line is only present on adult devices).
5. Secure the i-gel® with the included securing strap. If no strap is available, secure the i-gel® down from maxilla to maxilla with tape.

Additional Information:

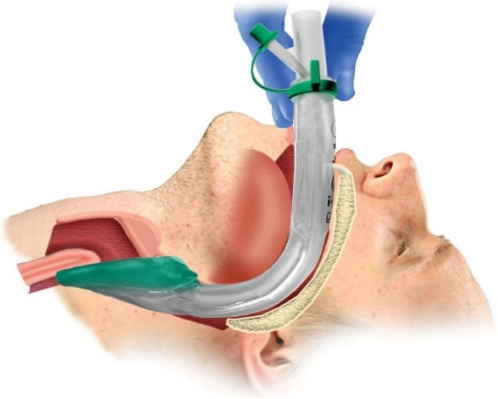
- Second generation devices achieve improved esophageal and pharyngeal seal (causes ↑ oropharyngeal leak pressure), incorporate a "drain tube" that allows access to the esophagus and stomach, and usually have an incorporated bite block
- Higher failure rate may occur with obese patients, inappropriate patient position (e.g. Trendelenburg), and placement by inexperienced provider
- This device may not protect the airway or allow for effective ventilation in the following situations:
    - Active Vomiting – aspiration is likely
    - Foreign Body Airway Obstruction (FBAO)
    - Trauma/bleeding in the airway
    - Edema to the airway – Burns, anaphylaxis, etc.
- ***For Paramedic Use Only*** - Gastric suctioning/decompression can be achieved through the gastric port of the i-gel®.
    - Size 1.0 i-gel® is the only size that does not include a gastric port.
    - Size 1.5 i-gel® use a 10 fr nasogastric tube
    - Size 2.0 i-gel® or greater use a 12 fr nasogastric tube
    - Size 5.0 i-gel® use a 14 fr nasogastric tube

I-GEL®

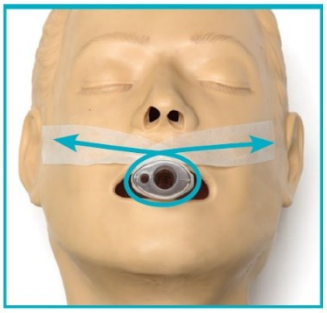
Sizing

i-gel size	Patient Size	Patient weight guidance (kg)
1	Neonate	2-5kg
1.5	Infant	5-12kg
2	Small paediatric	10-25kg
2.5	Large paediatric	25-35kg
3	Small adult	30-60kg
4	Medium adult	50-90kg
5	Large adult	90+kg

Inserting



Securing (with tape)



Securing (with strap)

INVASIVE VENTILATION

Invasive ventilation, by means of a mechanical device, provides a level of precision and repeatability that is not achievable by a person. Because a machine is precisely administering volumes, rates, and pressures automatically, the significant task of ventilation is removed from the provider, who is freed to engage in higher level tasks and critical thinking. This provides for a safer patient encounter is all regards.

Indications:

- Ventilation of patients with indwelling tracheal or supraglottic airway

Contraindications:

- Cardiac Arrest
- Patients under 5kg

Procedure:

1. Attach the patient circuit
2. Attach the high-pressure oxygen supply
3. Power on the ventilator
4. Select appropriate default mode
5. Ensure operating mode is appropriate (Assist Control - Volume)
6. Adjust parameter values (Vt, I:E, PEEP, FiO2)
    a. Vt: An initial of 5 ml/kg should be used
        i. Titrate to maintain an ETCO2 of 35-45 mmHg (Max Vt of 8 ml/kg)
    b. Rate: 10 BPM
        i. Titrated to maintain an ETCO2 of 35-45 mmHg
    c. I:E Ratio: 1:3
        i. Consider titration to a max of 1:5 for obstructive diseases (Asthma)
    d. PEEP: 5
        i. Titrated to a max of 10 based on SpO2
    e. FiO2: 21 – 100
        i. 100% FiO2 should be utilized until SpO2 can be assessed
        ii. Use lowest FiO2 percentage to maintain SPO2 of 94-99%
7. Perform patient disconnect operation test (open circuit)
8. Perform high pressure operational test (finger over end of patient circuit)
9. Attach to patient
10. Ensure patient monitoring devices such as SPO2 and ETCO2 are attached and reading appropriately

Additional Information:

- Continuation of Care: It is permissible to utilize a ventilator dependent patient's prescribed ventilator settings if the patient's ventilator cannot accompany the patient to the hospital
- Always have alternate means of ventilating patient available (BVM)
- DOPE (Displacement, Obstruction, Pneumothorax, Equipment Failure)
- I:E Ratio may need to be extended for COPD / Asthma
- PEEP indirectly effects cardiac output and can potentiate hypotension
- Keep in mind and assess for pneumothorax in trauma patients
- The adult circuits are intended for use when delivering tidal volume from 250ml or greater
- The infant circuits are intended for use when delivering tidal volume from 50ml to 249ml

INVASIVE VENTILATION

Ideal Body Weight (ARDSnet) / Tidal Volume Chart

Males

Height			IBW	4	5	6	7	8
feet	in	cm	kg	ml/kg	ml/kg	ml/kg	ml/kg	ml/kg
4' 6"	54	137	36	145	181	217	253	289
4' 7"	55	140	38	154	192	231	269	308
4' 8"	56	142	41	163	204	245	285	326
4' 9"	57	145	43	172	215	258	301	345
4' 10"	58	147	45	182	227	272	318	363
4' 11"	59	150	48	191	238	286	334	382
5' 0"	60	152	50	200	250	300	350	400
5' 1"	61	155	52	209	262	314	366	418
5' 2"	62	157	55	218	273	328	382	437
5' 3"	63	160	57	228	285	342	399	455
5' 4"	64	163	59	237	296	355	415	474
5' 5"	65	165	62	246	308	369	431	492
5' 6"	66	168	64	255	319	383	447	511
5' 7"	67	170	66	265	331	397	463	529
5' 8"	68	173	68	274	342	411	479	548
5' 9"	69	175	71	283	354	425	496	566
5' 10"	70	178	73	292	366	439	512	585
5' 11"	71	180	75	302	377	453	528	603
6' 0"	72	183	78	311	389	466	544	622
6' 1"	73	185	80	320	400	480	560	640
6' 2"	74	188	82	329	412	494	577	659
6' 3"	75	191	85	339	423	508	593	677
6' 4"	76	193	87	348	435	522	609	696
6' 5"	77	196	89	357	446	536	625	714
6' 6"	78	198	92	366	458	550	641	733

Females

Height			IBW	4	5	6	7	8
feet	in	cm	kg	ml/kg	ml/kg	ml/kg	ml/kg	ml/kg
4' 6"	54	137	32	127	158	190	221	253
4' 7"	55	140	34	136	170	204	238	272
4' 8"	56	142	36	145	181	218	254	290
4' 9"	57	145	39	154	193	231	270	309
4' 10"	58	147	41	164	204	245	286	327
4' 11"	59	150	43	173	216	259	302	346
5' 0"	60	152	46	182	228	273	319	364
5' 1"	61	155	48	191	239	287	335	382
5' 2"	62	157	50	200	251	301	351	401
5' 3"	63	160	52	210	262	315	367	419
5' 4"	64	163	55	219	274	328	383	438
5' 5"	65	165	57	228	285	342	399	456
5' 6"	66	168	59	237	297	356	416	475
5' 7"	67	170	62	247	308	370	432	493
5' 8"	68	173	64	256	320	384	448	512
5' 9"	69	175	66	265	332	398	464	530
5' 10"	70	178	69	274	343	412	480	549
5' 11"	71	180	71	284	355	426	496	567
6' 0"	72	183	73	293	366	439	513	586
6' 1"	73	185	76	302	378	453	529	604
6' 2"	74	188	78	311	389	467	545	623
6' 3"	75	191	80	321	401	481	561	641
6' 4"	76	193	82	330	412	495	577	660
6' 5"	77	196	85	339	424	509	594	678
6' 6"	78	198	87	348	436	523	610	697

KING LTS-D

The King LTS-D is a color coded supraglottic airway designed for positive pressure ventilation. The King LTS-D ranges in size (0 – 5) to accommodate pediatric patients less than 5 kg to adult patients greater than 6 ft. The anatomically shaped distal tip and cuff assist in the device's passage behind the larynx and into the normally collapsed esophagus providing ventilation into the trachea.

Indications:

- Need for positive pressure ventilation
- Rescue airway when endotracheal intubation cannot be achieved
- Securing and maintaining airway patency when endotracheal intubation is unwarranted

Contraindications:

- Intact airway reflexes
- Conscious/semi-conscious patients
- Ingestion of caustic substances
- Known esophageal disease

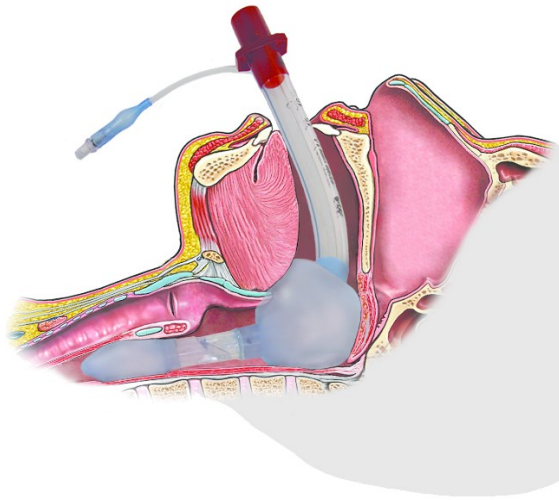
Procedure:

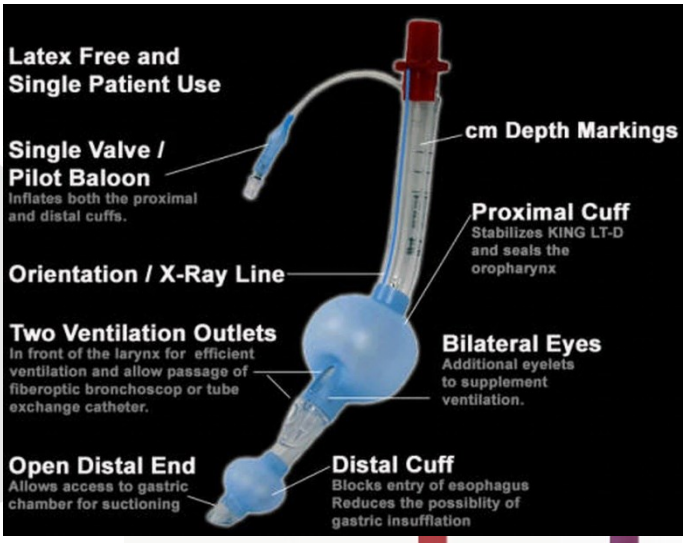
1. Lubricate distal tip while avoiding applying lubricant over ventilation or suction ports.
2. Place patient in sniffing position and perform tongue-jaw lift.
3. Introduce KING LTS-D into corner of mouth
4. Advance tip under base of tongue, while rotating tube back to midline
5. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums
6. Fully inflate cuffs using the maximum volume of air as listed on the airway device.
7. Attach resuscitation bag. While gently bagging, slowly withdraw tube until ventilation is easy and free flowing (large tidal volume with minimal airway pressure)
8. If necessary, adjust/add cuff inflation volume to maximize the seal of the airway
9. Confirm proper placement by auscultation and monitoring $EtCO_2$.
10. Secure the device using a commercial tube restraint or tape.
11. Note device depth
12. Measure and insert gastric tube through posterior port as needed
13. Lubricate gastric tube prior to inserting into the KING LTS-D's gastric access lumen

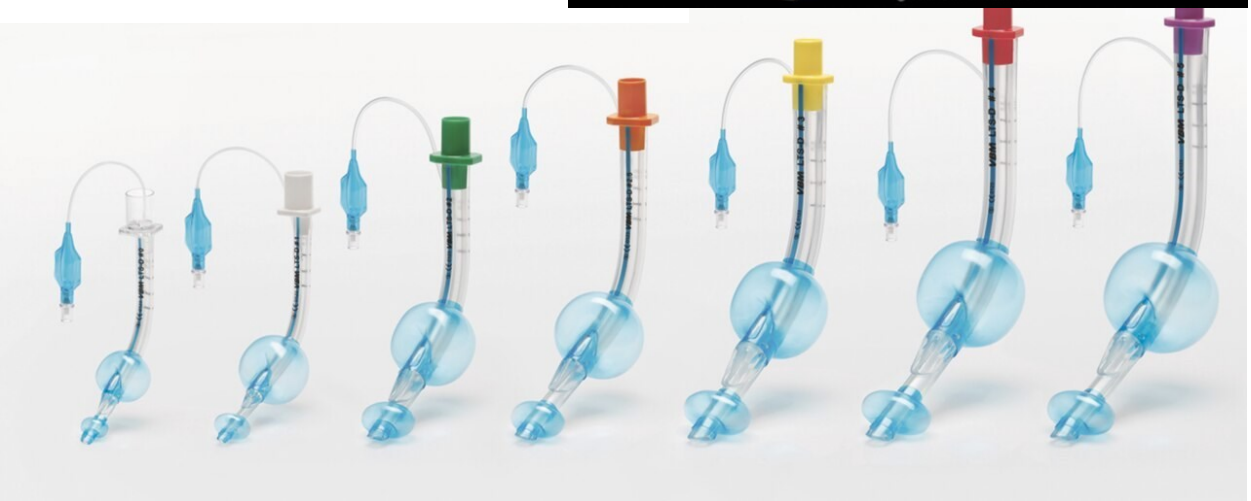
Additional Information:

- This device may not protect the airway or allow for effective ventilation in the following situations:
    - Active Vomiting – aspiration is likely
    - FBAO
    - Trauma/bleeding in the airway
    - Edema to the airway – Burns, anaphylaxis, etc.
- The second lumen of the KING LTS-D, which is open at the distal tip of the tube, provides three key additional benefits:
    - Passage of gastric tube up to 18 French
    - Channel for regurgitation, which significantly reduces potential for regurgitation to get past the cuff and therefore aids in reducing the chance for aspiration
- Provides "vent" for gastric pressure and stomach decompression

KING LTS-D







	Pediatric				Adult		
Tube Size	Size 0	Size 1	Size 2	Size 2.5	Size 3	Size 4	Size 5
Connector Color	Transparent	White	Green	Orange	Yellow	Red	Purple
Patient Criteria	<5 kg	5-12 kg	12-25 kg 90-115 cm	25-35 kg 105-130 cm	4-5 feet (122-155 cm)	5-6 feet (155-180 cm)	greater than 6 feet (>180 cm)
Recommended Cuff Volume	10 ml	20 ml	35 ml	40-45 ml	50-60 ml	70-80 ml	80-90 ml
Maximum Cuff Pressure	60 cm H_2O						
External Diameter of the Tube	9 mm	9 mm	14 mm	14 mm	17.6 mm	17.6 mm	17.6 mm
Bronchoscopy Via Ventilation Lumen	< 3.0 mm	< 3.0 mm	< 4.0 mm	< 4.0 mm	< 6.0 mm	< 6.0 mm	< 6.0 mm
Suction Catheter	10 Fr	10 Fr	16 Fr	16 Fr	18 Fr	18 Fr	18 Fr

McGRATH VIDEO LARYNGOSCOPY

The McGrath© MAC video laryngoscope is a combination direct and video laryngoscope device. The McGrath© MAC builds on the direct laryngoscope skills and competencies already possessed by advanced airway providers enhancing first-attempt success with the addition of the video laryngoscopy capabilities.

Indications:

- Patients requiring advanced airway placement

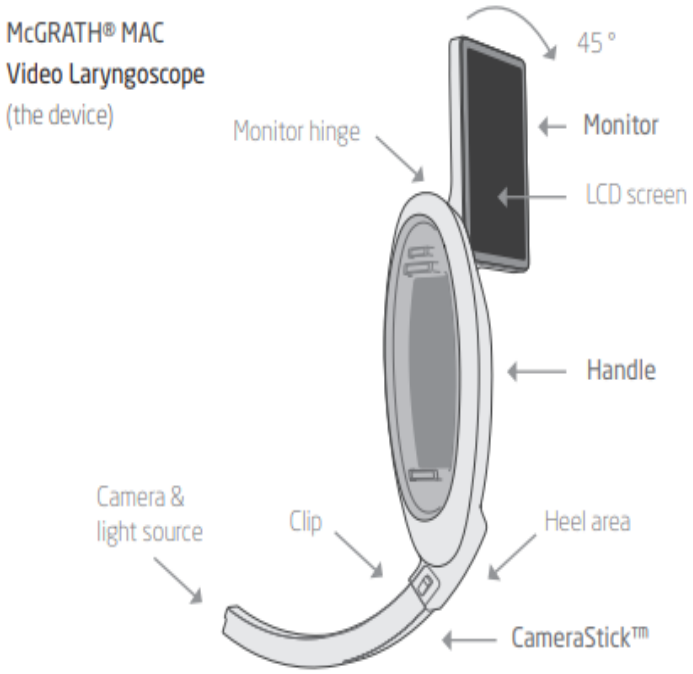
Procedure:

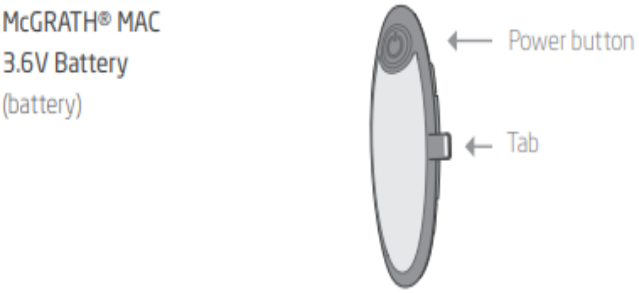
1. Gather all equipment needed to place an advanced airway
2. Have rescue devices available
3. Turn on the McGrath © by pressing the power button with a single push
4. If possible, position the patient in the optimal position for direct laryngoscopy
5. Look into the mouth; insert the blade into the right side of the mouth
6. Move the device to a central position while sweeping the tongue to the left
7. Advance the tip of the McGrath© MAC blade into the vallecula
8. Visualize the epiglottis on the screen. Lift the anatomy forward and upwards to expose a direct and indirect view of the glottis. When the device is in the optimal position the glottis should be viewed in the central upper section of the screen.
9. Advance the tube gently and atraumatically through the vocal cords. Tube placement can be performed either by looking directly in the mouth, indirectly on the screen or a combination of both.
10. Indirectly visualize the tube placement through the vocal cords. In optimal placement technique, the ET tube will enter from the right side of the display.
11. The screen view can be used to confirm the correct depth of the endotracheal tube.
12. Secure airway with tube restraint.
13. Ensure all monitoring equipment is placed on patient and reading appropriately. (SPO2, ETCO2)

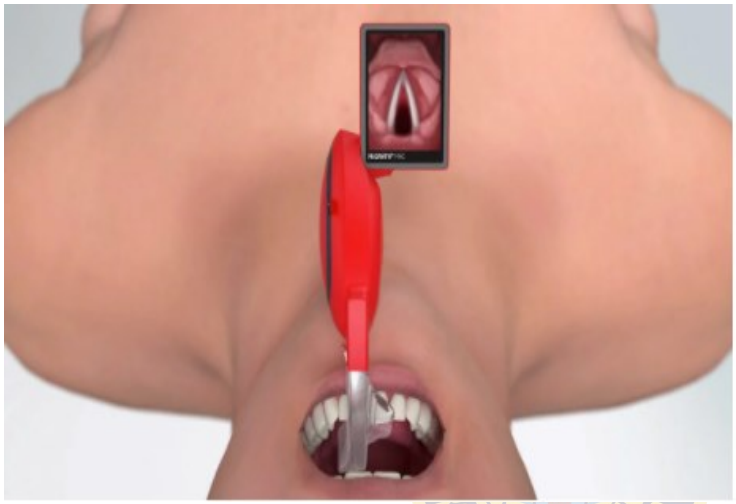
Additional Information:

- Utilize the “X Blade™” for patients with extreme anterior airways or where minimal manipulation is a requirement
- If utilizing a an “X Blade™” place a stylet into the ET tube and preform to the curvature of the “X Blade™”

McGRATH Video Laryngoscopy







MECHANICAL CPR

Mechanical CPR devices, like all automated devices, provide continuous, precise, perfectly repeatable results not achievable by a person. These automated devices free the provider from having to provide manual CPR or having to micromanage CPR to ensure high quality CPR is being provided. The provider is now free to engage in higher level tasks and critical thinking.

Indications:

- Any patient where manual CPR would be appropriate

Contraindications:

- Chest height < 6.7 inches or > 11.9 inches
- Chest Width > 17.7 inches

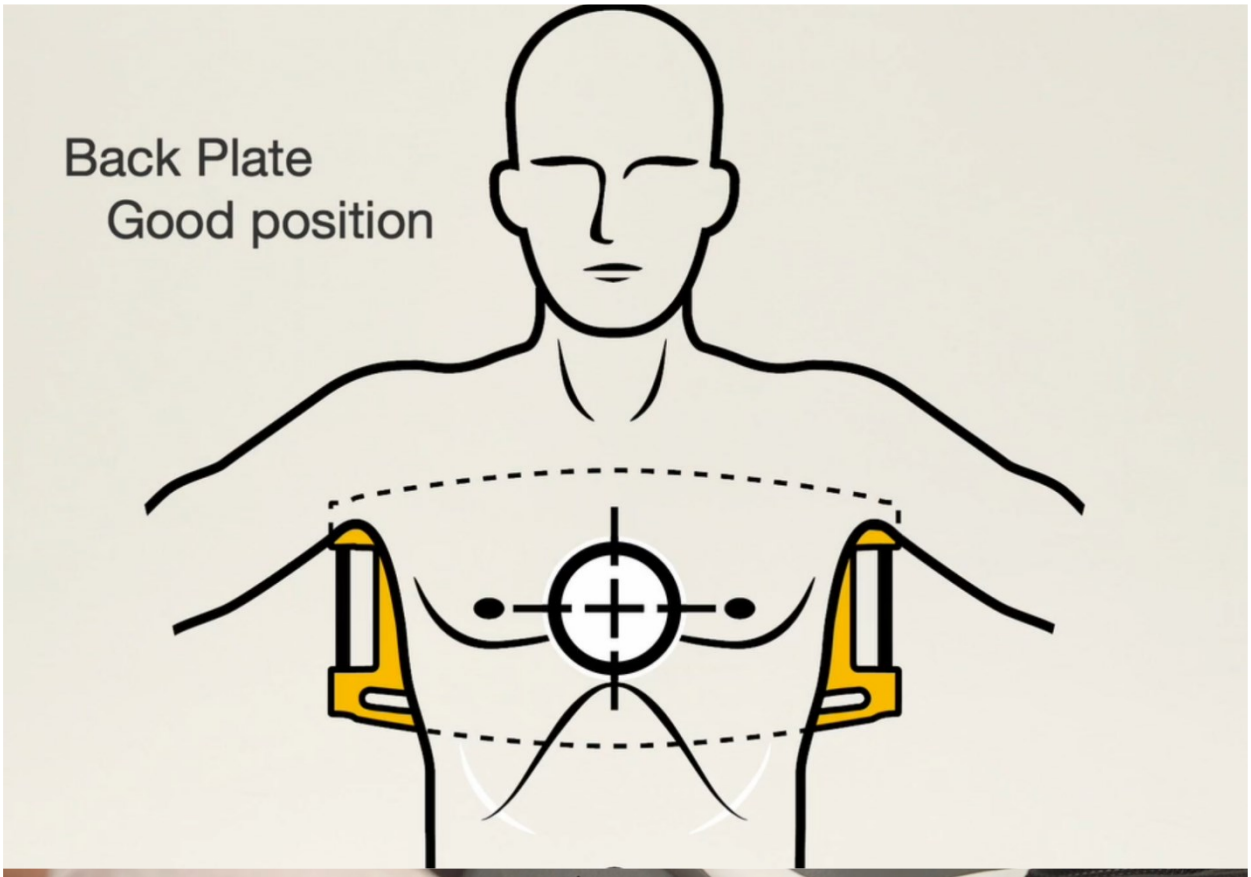
Procedure:

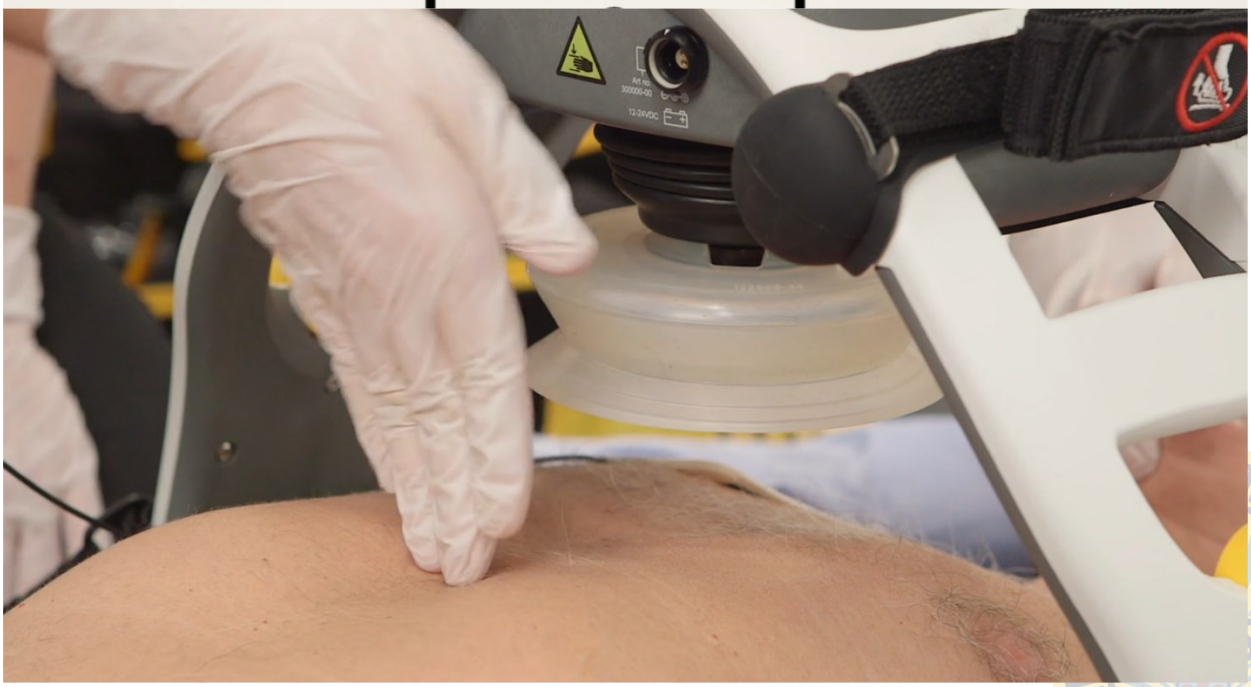
1. Push the On/Off button on the User Control Panel for 1 second to power up the LUCAS device and start the self-test
2. Place the Back Plate using the Rolling method or lifting method, ensuring the center point of the plate is approximately at the nipple line
3. Remove the LUCAS from the protective shell and pull the release rings once to make sure that the claw locks are open and then let go of the release rings
4. Ensure the lower edge of the Suction Cup is immediately above the lower boarder of the sternum
5. Press the number "1" button on the LUCAS and use two fingers to lower the Suction Cup and piston down to the chest well; if the piston cannot be locked in the down position without compressing the patient's chest or if the device gives a fast three chime alert, resume manual CPR
6. To lock the Suction Cup in the start position, press the number "2" button on the LUCAS
7. Start compressions by pressing the appropriate number "3" button, the button with only the ▶ symbol is for continuous compressions and the button with the ▶ symbol and "30:2: is for 30 compression to 2 ventilation CPR.
8. After starting the LUCAS successfully, secure the device to the patient starting with the neck strap and, if moving the patient, then the wrist straps

Additional Information:

- If the device shifts during use or movement, it may be necessary to pause the device (press "2"), unlock the Suction Cup (press "1"), shift the device to the appropriate position, and then follow the above procedure to lower the Suction Cup, relock the Cup, and restart the appropriate compression mode
- Defibrillation can be performed while the LUCAS device operates
- During 30:2 CPR, the device will give audible alerts to ventilate at the appropriate time
- Preference should be given to the Zoll X-series analysis mode vs the LUCAS 30:2 mode for time keeping
- The LUCAS has no weight-based restrictions

MECHANICAL CPR





MEDICATION INFUSIONS

Medication infusions are an advanced method of medication delivery. Medicated infusions require knowledge of when to administer an infusion, how to mix an infusion, how to correctly determine a proper infusion rate, how to set the infusion equipment to deliver the correct medication dosage, and how to document the medication infusion for continuity of care.

Indications:

- Anytime a continuous infusion of medication is necessary

Contraindications:

- None

Procedure:

1. Collect necessary equipment:
    a. Infusion fluid
    b. Medication to be infused
    c. Fluid drip set (Selec-3 set to 60gtts/cc or fixed 60gtts/cc)
    d. Dial-a-flow extension set
2. Withdraw the medication to be infused from it's supplied container
3. Inject the medication to be infused into the infusion fluid
4. Gently undulate the infusion fluid to mix thoroughly
5. Connect the dial-a-flow extension set to the distal end of the fluid drip set
6. Turn the dial-a-flow to the "Open" setting
7. Flush the fluid drip set and dial-a-flow extension with medicated infusion fluid
8. Stop the fluid flow with the clamp on the fluid drip set
9. Refer to the appropriate infusion rate chart in the medication formulary and find the appropriate dail-a-flow setting
10. Set the dail-a-flow to the setting obtained from the medication formulary
11. Start the fluid flow by unclamping the clamp on the fluid drip set
12. Monitor the patient and titrate the medication infusion as indicated and appropriate
13. Document the infusion in the patient's EHR

Additional Information:

- Note, the dial-a-flow setting (yellow area of the infusion charts) is not the dose being administered. The dose administered is in the purple area of the chart and has a "time" unit as part of the measure. Ex. mcg/min, mg/kg/hour
- Be mindful of the amount of volume to be added to the infusion fluid and if it substantially modifies the concentration. Withdraw infusion fluid from the bag if needed to maintain the correct concentration.

MEDICATION LABELING

Medication labeling is indicated any time a medication is removed from its supplied container and placed into another container that does not have the appropriate labeling to indicate what medication was placed into it.

ex.

Placing a 1mg vial of epinephrine into a 250 ml bag of normal saline
Placing 100mcg of fentanyl into a syringe of normal saline

Indications:

- The creation of a medication infusion

Contraindications:

- None

Procedure:

1. Obtain a medication label
2. Using a pen that is not likely to smear, neatly complete the following information:
    a. Name of medication placed into the infusion fluid
    b. The total amount of medication placed into the infusion fluid
    c. The rate of infusion in mass / time format (ex. mcg/min, mg/kg/hr)
    d. Time the infusion was started
3. Neatly place the completed label on the mixed infusion
4. Identify the label during patient turn over at the receiving facility

Additional Information:

- None

NEBULIZER

The nebulizer is a mechanical device utilized to administer medications via the tracheal-bronchial tree. Bronchodilators are the typical pharmacological agent administered via this route of administration. The nebulizer uses pressure from the oxygen flow delivered into a liquid medication of approximately 3 to 5ml to aerosolize the liquid allowing absorption via the respiratory tissues.

Indications:

- Bronchoconstriction
- In conditions when the delivery of aerosolized medications is useful, efficient, and indicated

Procedure:

1. Assemble the nebulizer unit and place the correct dosage of medication into the medication chamber
2. Connect the oxygen tubing to the bottom of the medication chamber and set the flow rate at between 6 – 8 liter per min to deliver the medication over a 10 to 20 minute time frame
3. **Utilizing mouthpiece**
    a. Have the patient form a seal around the piece with their lips
4. **Utilizing the mask**
    a. Form a proper mask seal by securing against the face with the cinch strap and pinching the nose piece to prevent aerosol escape at the eyes
5. Encourage the patient to take slow, deep breaths from the nebulizer to enhance deliver of the medication into the lower airways
6. It may be necessary to pluck or swirl the medication chamber ensure all the medication is delivered
7. **Utilizing the BVM**
    a. Assemble the mouthpiece style nebulizer with a valved, blue T-adaptor and remove the actual mouthpiece. This end will connect to the blue T adaptor and the Bag Valve. Place the elbow adaptor on the opposite end of the corrugate tubing. This will connect to the ETT and allow for tracheal suctioning.
8. Additional treatments may be given as indicated per Clinical Guideline

Additional Information:

- Place the patient in either Fowler's or Semi-Fowler's position to administer the nebulizer
- Note: the above flow range is based on necessary pressure to adequately deliver the mediations in aerosolized form. If nebulizer is placed on CPAP you may have to increase flow rate to allow for adequate aerosolization.

NEEDLE THORACOSTOMY

Needle Thoracostomy is an emergency procedure utilized to evacuate trapped air that can cause an increase in intrathoracic pressure resulting in a tension pneumothorax. Needle thoracostomy is accomplished by placing a 3.25-inch, 14 gauge, over-the-needle catheter into the pleural space.

Indications:

- Tension pneumothorax

Procedure:

1. This procedure is performed as a standing order
2. Confirm that a tension pneumothorax exists by assessing for s/s listed below
3. Administer high concentration oxygen and assist ventilations as needed
4. Identify landmark:
    a. 2nd or 3rd intercostal space, mid-clavicular (alternate site)
    b. 4th or 5th intercostal space, anterior-axillary (preferred site)
5. BSI
6. Prepare the site by cleansing with an alcohol swab
7. Insert the catheter while listening for air expulsion (feel for "pop" as you enter the pleural space)
8. When air escapes stop advancing the needle and push the remaining Teflon catheter into the cavity
9. Secure the catheter in place with tape
10. Assess for signs of successful decompression (improved mental status/perfusion, increased BP, decreased heart rate/respiratory rate). Equal chest rise / lung sounds may not be present if lung is compromised.
11. Monitor for signs of a reoccurring tension pneumothorax

Additional Information:

- Signs and symptoms of a tension pneumothorax:
    - Dyspnea or difficulty ventilating with BVM
    - Tachypnea
    - Unilateral decreased or absent lung sounds
    - Hypotension
    - Tachycardia
    - Narrowing pulse pressures
    - JVD
    - Tracheal deviation (late sign)
    - Mediastinal shift (late sign)
- A pneumothorax develops into a tension pneumothorax once pressure in the pleural space increases enough so that the heart and great vessels are compressed causing hemodynamic compromise.
- The needle should be inserted over the top of the chosen rib to avoid the nerves and vasculature on the underside of the rib.
- Continuously monitor the patient's respiratory status via pulse oximetry and EtCO2 monitoring
- Tracheal deviation is a late sign of a tension pneumothorax. The patient will typically be hemodynamically compromised well before tracheal deviation occurs. Chest decompression should not be delayed in the absence of tracheal deviation.
- If a suspected tension pneumothorax reoccurs and the catheter is no longer patent, then you must attempt decompression with a new 14g x 3.25" over-the-catheter needle lateral of the previous insertion site.

NEEDLE THORACOSTOMY

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PELVIC BINDER

A Pelvic Binder is a circumferential pelvic belt that is used to reduce and stabilize open-book pelvic ring fractures. Stabilizing these types of fractures can reduce morbidity and mortality and improve outcomes by reducing blood loss.

Indications:

- Pelvic instability, crepitus, or suspected pelvic fracture
- Significant blunt trauma with signs of internal bleeding (Major MVA, pedestrian struck, motorcycle MVA, etc.)

Contraindications:

- Impaled object to the pelvis
- Not to be used for isolated hip fractures

Procedure:

1. Remove objects from patient's pockets or pelvic area. Place SAM Pelvic Sling II black side up beneath patient at level of trochanters (hips not waist).
2. Place the black strap through buckle and pull completely through.
3. Hold orange strap and pull black strap in opposite direction until you hear and feel the buckle click.
4. Maintain tension and immediately press black strap onto Velcro surface to secure.
5. **Note: do not be concerned if you hear a second "click" after the device is secured**

Additional Information:

- Use caution when assessing for pelvic instability or crepitus. To assess the pelvis, apply gentle manual pressure anterior to posterior and from the sides.
- Pelvic fractures are a common result of high energy impacts such as significant falls, crushing injuries, motor vehicle collisions, or blast injuries.
- Pelvic binding has been shown to reduce mortality and morbidity and thereby improve outcomes in the prehospital and hospital settings by lessening internal bleeding, lowering the number of blood transfusions required, and decreasing the hospital length of stay.

PULSE OXIMETER

Pulse oximeters are utilized to detect saturation of the hemoglobin molecule in the blood. Ultimately it is the oxygen saturation of hemoglobin that is the target. There are other gases and molecules that bind to the hemoglobin and those will render a saturation percentage as well. Pulse oximeters are also dependent on circulating volume to the periphery of the patient. Keeping those two limitations in mind, the pulse oximeter displays the quantified SpO2 measurement.

Indications:

- 1. Patients with a chief complaint of respiratory distress
- 2. All patients receiving oxygen administration
- 3. All patients with the potential to develop hypoxia
- 4. All intubated patients and those being monitored with an $EtCO_2$
- 5. Patients receiving procedural sedation

Procedure:

1. Provide all supplemental support and necessary stabilizers
2. Attach appropriate size sensor to appropriate patient region
3. Obtain a measure prior to oxygen administration to determine a baseline
4. Verify reading is valid and consistent with patient's condition
5. Administer oxygen via the appropriate adjunct prn
6. Manage patient's airway accordingly

Additional Information:

There are certain issues that may represent an inaccurate reading:

- Remove nail polish or artificial nails as necessary to obtain accurate reading
- Obscure the sensor from bright light
- The waveform should correlate with the radial pulse and/or the EKG waveform
- CO gas has a higher affinity for hemoglobin and can measure 100% saturation
- Other limiting factors
    - Cardiac arrest
    - Local circulation dynamics
    - Temperature of the extremity
- Measures of hypoxia:
    - 95% - 99% normal
    - 91% - 94% mild hypoxia
    - 86% - 90% moderate hypoxia
    - < 85% severe hypoxia

RESQPOD®

The ResQPOD® is an impedance threshold device (ITD) that selectively prevents unnecessary air from entering the chest during the chest wall recoil phase of CPR. This leads to greater vacuum (negative pressure) in the chest during the chest wall recoil phase, doubling blood flow during CPR. Studies have shown that this mechanism increases cardiac output, blood pressure and survival rates. The ResQPOD® does not restrict patient ventilation and exhalation in any way when used during the management of patients in cardiac arrest. The device is not intended for use in patients with a pulse present.

Indications:

- Non-traumatic cardiopulmonary arrest for all patients 12 years of age and older.

Contraindications:

- Patients under 12 years of age
- Cardiopulmonary arrest related to trauma

Procedure:

1. Confirm absence of pulse and begin CPR immediately
2. Assure that the chest wall recoils complete after each compression
3. Using the ResQPOD® on a facemask:
    a. Connect ResQPOD® to the facemask
    b. Connect ventilation source (BVM) to top of ResQPOD®
    c. Place EtCO2 detector between the ResQPOD® and the BVM
    d. Establish and maintain a tight face seal with mask throughout chest compressions (Use a two-handed technique when possible)
    e. Perform CPR at the recommended compression-to-ventilation ratio (30:2), compress the chest at a rate of 100/min.
    f. Perform ACLS interventions and pulse checks as appropriate
4. Using the ResQPOD® on an endotracheal tube or King tube
    a. Endotracheal intubation is the preferred method of managing the airway when using the ResQPOD®
    b. Place endotracheal tube or King tube and confirm placement
    c. Secure the tube with an appropriate securing device
    d. Attach the ResQPOD® to the advanced airway
    e. Place the EtCO2 detector between the ResQPOD® and BVM
    f. Remove the protective tab from the timing assist light switch, slide switch to “on”
    g. Continue CPR with minimal interruptions while providing continuous chest compressions as a rate of 100/minute and ventilate asynchronously over 1 second when the timing assist light flashes at a rate of 10 breaths per minute
    h. Perform ACLS interventions and pulse checks as appropriate
    i. If a pulse is obtained, remove the ResQPOD® and assist ventilation as needed

RESQPOD®

Additional Information:

- Do not use the ResQPOD®'s timing lights during CPR when using a facemask for ventilation
- Always place EtCO2 detector between the ResQPOD® and ventilation source
- Administer endotracheal medication directly into endotracheal tub (not through the ResQPOD®)
- Do not interrupt CPR unless necessary
- Do not delay compressions if the ResQPOD® is not readily available
- Allow full recoil of the chest during compression and avoid hyperventilation
- If a pulse returns, discontinue CPR and remove the ResQPOD®
- If the patient should re-arrest, resume CPR and re-attach the ResQPOD® to the airway device
- The ResQPOD® is to remain with the patient who has ROSC and reused if the patient should re-arrest
- If the ResQPOD® fills with fluid, disconnect it form the airway and clear it by blowing air through it with
- the BVM and re-attach to the airway device once cleared

SEDATION

The following procedure is recommended for the patient requiring sedation for the purpose of performing a medical procedure necessary to treat the patient or in situations where a patient's behavior is physically dangerous to self or others. Appropriate emergency equipment for maintaining the patient's airway, ventilatory status and cardiac status must be readily available when sedation/analgesia medications are given to the patient.

Indications:

- Patients requiring endotracheal intubation for ventilatory assistance, not able to tolerate laryngoscopy
- Combative behavior that compromises patient care or patient/provider safety
- Patients who experience CPR induced consciousness
- Sedative medication prior to electrical cardioversion
- Patients experiencing discomfort during transcutaneous pacing
- Patients with ROSC who require sedation

Procedure:

1. IV access, airway equipment, and cardiac monitor should be available
2. Administer agent according to Clinical Guideline directive via appropriate route
3. Observe for signs of sedation
4. Monitor the patient's respirations, heart rate, and blood pressure closely
5. Apply pulse oximeter, $EtCO_2$, and cardiac monitor

Additional Information:

- Midazolam will typically be utilized for sedating patients who require procedural sedation, or for continued sedation during post airway management.
- Ketamine is utilized for the sedation of patients who needs intubation but cannot tolerate laryngoscopy. Once laryngoscopy is achieved, administer Midazolam and/or Ketamine to maintain sedation of the patient.
- Fentanyl and/or Ketamine can be used for the sedation of patients who experience CPR induced consciousness.
- Ketamine should be utilized when patients have a compromised circulatory system or poor perfusion status
- Midazolam and/or Ketamine can be used for the sedation of patients experiencing excited delirium or other behavioral emergencies.

SIMPLE THORACOSTOMY

Emergency chest decompression is a lifesaving procedure in the setting of a tension pneumothorax. Chest decompression can be achieved by needle or simple thoracostomy. Unlike needle thoracostomy, simple thoracostomy allows maximum release of air/liquid from the pleural cavity and full lung re-expansion, making it the only effective option in some patients.

Indications:

- Tension pneumothorax **with hemodynamic instability** unrelieved with needle thoracostomy
- Actual or near traumatic cardiac arrest

Procedure:

1. Place the patient supine with the arm on the affected side abducted and externally rotated with palm of the hand behind the patient's head if possible.
2. Site should be cleansed using chlorhexidine
3. Using a #10 scalpel, a 1–2-inch incision is made between the fourth and fifth intercostal space at the anterior to mid-axillary line over the rib through skin and subcutaneous tissue only.
4. Blunt dissection using large, curved Rochester Pean forceps, in a controlled fashion, is used to pass through the intercostal muscles over the top of the rib and penetrate the pleural space
5. With the curved tips remaining just inside the pleural space, the clamp is opened widely to allow the expulsion of air and blood and subsequently pulled out. The ostomy through the intercostal muscles should allow free insertion of a finger without pushing and should be large enough to prevent re-tension from occurring.
6. A finger is inserted through the ostomy site and into the pleural space. Once in the pleural space, palpation of the parietal pleura and lung with the finger is necessary to ensure you have entered the thoracic cavity and that the possible tension pneumothorax has been managed.
7. A "HyFin® vent chest seal" with one-way valve is used to seal the opening.

Additional Information:

- Frequently check for redevelopment of tension pneumothorax and re-sweep the thoracostomy as needed

TARGETED TEMPERATURE MANAGEMENT

Targeted Temperature Management (TTM), commonly referred to as Therapeutic Hypothermia, is a treatment used to improve health outcomes of patients who were resuscitated from cardiac arrest. AHA recommends that all comatose adult patients with ROSC after any form of cardiac arrest should have TTM. However, they do not recommend the use of chilled intravenous fluids to accomplish TTM. Part of how TTM works is by slowing metabolism and decreasing a cell's permeability. This prevents the cascade of reactions caused by an ischemic event which can cause irreparable and fatal damage. Another part to TTM is that it protects the body from the potential of reperfusion injury. During reperfusion, various inflammatory responses occur which can lead to cellular death. By preventing the body from becoming hyperthermic and slightly reducing body temperatures, TTM will lessen these inflammatory responses which in turn should improve clinical outcomes.

Indications:

- ROSC after cardiac arrest

Contraindications:

- GCS > 3
- Traumatic cardiac arrest
- < 16 years old
- Initial temperature < 93°
- Sepsis
- Active bleeding (internal or external)
- Recent major surgery
- DNR
- Pregnancy

Procedure:

1. Assess patient for exclusion criteria.
2. Obtain and monitor core temperature using esophageal probe
3. Apply non-invasive cooling measures (ice packs, Cryothermic Systems)
4. Monitor temperature, EKG, and vital signs
5. Assess for adverse reactions. If at any time the patient rearrests, discontinue TTM.

Additional Information:

- Targeted temperature management should be started as soon as possible with a target temperature of 89.6°F - 95.2°F
- Shivering is common once TTM is implemented and temperature reaches at or below 95.2°F. You can help prevent shivering by administering Fentanyl. If Fentanyl is unsuccessful it may be appropriate to administer a paralytic.
- AHA does not recommend the use of chilled IV fluids to accomplish TTM in the prehospital setting.

TOURNIQUET

Tourniquets have often been described as the technique of "last resort." Military experience in Afghanistan and Iraq plus the routine and safe use of tourniquets by surgeons, has led to reconsideration of this approach. The use of "elevation" and pressure on "pressure points" is no longer recommended because of insufficient data supporting their effectiveness. Tourniquets are very effective in controlling severe hemorrhage and should be used if direct pressure or a pressure dressing fails to control hemorrhage from an extremity.

Indications:

- Any external hemorrhage of an extremity that cannot be controlled by direct pressure and pressure dressing.

Procedure:

1. Apply the tourniquet proximal to the wound, directly on the skin, and not over a joint or fracture (if able).
2. Insert the free end of the tourniquet through the loop and ensure the band is pulled tight as to not allow the tips of three fingers to be placed between the tourniquet and the skin.
3. Turn the windlass until the bleeding has stopped **AND** the distal pulse is eliminated.
4. Secure the windlass and any excess band with the small Velcro strap
5. Note and document the application time on the tourniquet.

Additional Information:

- If one tourniquet does not completely stop the hemorrhage, then another one should be applied just proximal to the first.
- Once applied, the tourniquet site should not be covered so that it can be easily seen and monitored for recurrent hemorrhage.
- A device that only occludes venous outflow from a limb will increase hemorrhage from a wound.
- A direct relationship exists between the amount of pressure required to control hemorrhage and the size of the limb. Thus, on average, a tourniquet will need to be placed more tightly on a leg to achieve hemorrhage control than on an arm.
- If application of a tourniquet is required, the patient will most likely need emergency surgery to control hemorrhage. Thus, the ideal receiving facility for such a patient is one with surgical capabilities
- A tourniquet can be painful for a conscious patient to tolerate, and pain management should be considered.
- A tourniquet should not be periodically loosened to allow for perfusion.
- Tourniquets should not be placed over fractures.

TRACTION SPLINT

A Traction Splint is used to apply mechanical traction to one or both lower limbs attempting to realign the limb(s) to reduce pain and minimize vascular and neurological complications.

Indications:

- Proximal third and mid-shaft femoral fractures

Contraindications:

- Pelvic fractures
- Distal Femur Fracture
- Knee, Ankle, Tib/Fib, & Foot Fractures

Procedure:

1. Gather, assemble, and check all equipment
2. Expose the injured leg(s) and assess PMS
3. Remove all extremity and toe jewelry from injured extremities
4. Position the splint firmly between the patient's leg, resting the ischial perineal cushion against the ischial tuberosity
5. Attach the thigh strap around the upper thigh of the fracture extremity.
6. Push down on the ischial perineal cushion while pulling the thigh strap laterally under the patient's thigh to seat the end of the cushion comfortably against the ischial tuberosity.
7. Tighten and secure the thigh strap
8. Lift the spring clip and extend the inner shaft of the splint until the crossbar rests adjacent to the patient's heal
9. Apply the ankle hitches to both ankles and secure only the fractured leg(s) to the device.
10. Ensure each ankle hitch is on the appropriate side and ensure that the hitch is on the posterior aspect of the foot
11. Apply traction until the desired amount of traction is achieved (Not to exceed 10% (max 15 pounds) of the patient's body weight for unilateral femur fracture or 20% (max 30 pounds) for bilateral femur fractures).
12. Apply elastic straps by placing each strap below the knee and gently sliding into position
13. Secure all straps around both legs and splint
14. Secure the feet to prevent outward rotation by placing the provided strap in a figure 8 pattern around both ankles and feet
15. Assess PMS

Additional Information:

- Compound fractures of the femur with bone fragments sticking through the skin may be a contraindication. Further harm could be done attempting to apply traction. Also, if a compound fracture is present, it is less likely that a traction splint will provide benefit to the patient.
- Both ankle hitches should be placed on every patient even if not pulling traction on both lower extremities. This is to ensure the device does not cause discomfort while rubbing on the inside of the ankles.

TRANS-CUTANEOUS PACING (TCP)

External pacing is an electrical stimulation of the cardiac muscle used when the rate is bradycardic (< 60 bpm) and causes hemodynamic compromise.

Indications:

- Bradycardia (hemodynamically unstable)

Procedure:

1. Assess the patient to determine need for pacemaker
2. Attach 3 – lead monitoring and electrodes
3. Attach pacing electrodes and cables anterior/posterior
4. Provide pain management/sedation prn.
5. Set pacemaker rate to 70 bpm
6. Click to turn pacer on
7. Default energy level begins at 30mA. Gradually increase by 10mA every 2 to 3 seconds until electrical capture is achieved on the oscilloscope
8. Assess carotid pulse to verify mechanical capture is achieved
9. Once mechanical capture is verified, increase 10 mA above threshold to ensure capture is maintained
10. If no mechanical capture is achieved, discontinue pacing
11. Contact medical control

Additional Information:

- Hemodynamic instability: hypotension, chest pains, SOB, pulmonary edema, or altered mental status (must have hypoperfusion)
- Pacer pads should be placed in the anterior/posterior position. Anterior/Posterior placement is clinically superior.
- Pacing is the primary treatment if bradycardia presents with 2° AV block or higher (atropine may be considered while or after applying the pacemaker)
- Utilize pediatric pads for patients < 15 kg
- Electrical capture occurs when the pacer spike combines with the patient's intrinsic beat and becomes wide and bizarre compared to the intrinsic beat
- Mechanical capture is when the carotid pulse equals the rate setting of the pacemaker and improvement in blood pressure, level of consciousness, skin color, and temperature occurs
- Muscle twitching or shoulder shrugging is common

VAGAL MANEUVERS

Modified Valsalva maneuvers are a manual stimulation of the parasympathetic nervous system via one of several cranial nerves. Slowing of the heart rate is the result. Valsalva maneuvers are the first line treatment in stable patients prior to medication administration or electrical therapy. Electrical therapy remains primary treatment in the unstable patient.

Indications:

- 1. PSVT specifically
- 2. Tachycardia's in general

Procedure:

1. Provide all supplemental support and necessary stabilizers
2. Place the patient on the cardiac monitor
3. Place the patient in a semi- recumbent position
4. Modified Valsalva Maneuver:
    a. Instruct the patient to take a deep breath and blow into a 10cc syringe for a 15 second strain.
    b. Immediately reposition patient to a supine position and raise legs 45 degrees for additional 15 seconds
    c. Monitor EKG for results
    d. This procedure may be repeated
5. Ice water immersion of the face
    a. Prepare two ice packs (actual ice in water)
    b. Place the ice packs on both sides of the face to cover nose and eyes
    c. Monitor EKG for results.
    d. This procedure may be repeated

Additional Information:

- Carotid sinus massage should not be attempted in the prehospital setting
- Ice water immersion is preferred treatment for pediatric patients
- Profound bradycardia or asystole may occur
- The patient must be connected to a cardiac monitor
- Postural modification to the standard Valsalva maneuver is highly effective, returning more than 40% of patients to sinus rhythm compared with 17% with a standard Valsalva

VASCULAR ACCESS

This procedure is utilized to establish a portal of entry into the patient's vascular space for the purposes of medication administration and volume replacement. The procedure may be initiated at the discretion of the paramedic and by standing order.

Indications:

- Patients that may need pre-hospital medication administration
- Patients requiring pre-hospital volume replacement
- Prophylactic access in anticipation of either of the above
- Patients requiring venous access for definitive care at the hospital

Procedure:

1. Assess the patient to establish the need for vascular access
2. Provide other stabilization in anticipation of the procedure
3. BSI
4. Assemble all the necessary equipment and inspect for expiration dates and defects
5. Select an access point suitable to the patient and appropriate for the condition of the patient
6. Tourniquet the arm, palpate and distend a suitable vein
7. Swab with 70% alcohol swab (observe aseptic technique)
8. Perform venipuncture while watching for blood return (flash), entering the vein far enough to guarantee the Teflon has entered the vein
9. Push the Teflon off the needle advancing only the catheter into the vein until the hub of the catheter touches the skin
10. Withdraw the catheter and place into sharps (never re-introduce the needle into the catheter to avoid shearing)
11. Attach either the IV tubing with assembled bag of fluid or primed saline lock connector set
12. Cover with Tegaderm™ or similar dressing to secure the catheter
13. Flush with 10 ml of saline to verify patency of line and that there is no extravasation or infiltration
14. Observe patient and monitor site

Additional Information:

- A saline lock may be utilized in all cases except volume replacement and cardiac arrest
- Greater than 3 repeated attempts without medical control is discouraged. Consider IO access if applicable.

APPENDIX C—REFERENCES

12 Lead Guidelines
APGAR
BLS Guidelines
Consult Guide (Online Medical Control)
Delayed Sequence Intubation Checklist
Drip Rates (Adult and Pediatric)
End-Tidal CO_2 Waveforms
Fluid Infusion Rates
GCS
Medical Abbreviations
Pain Scale
Rule of 9's
SALT Triage
Louisiana Bureau of Emergency Medical Services Scope of Practice
Toxidromes
Trauma Score
Vital Signs

12 Lead Guidelines

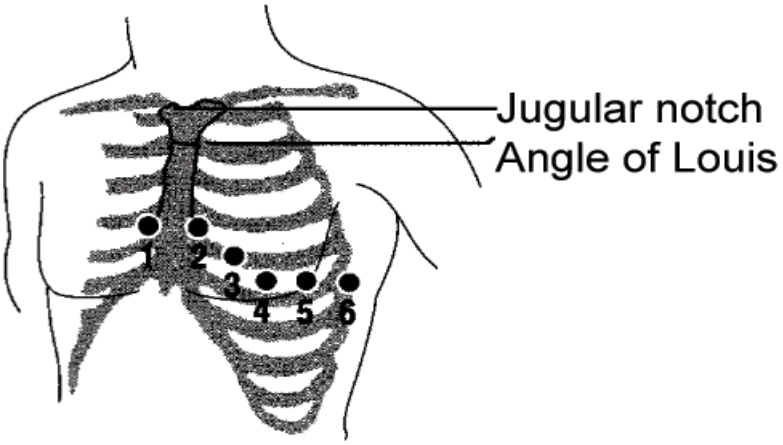
A 12-lead EKG must be transmitted to the receiving emergency department prior to transporting if possible in the following situations:

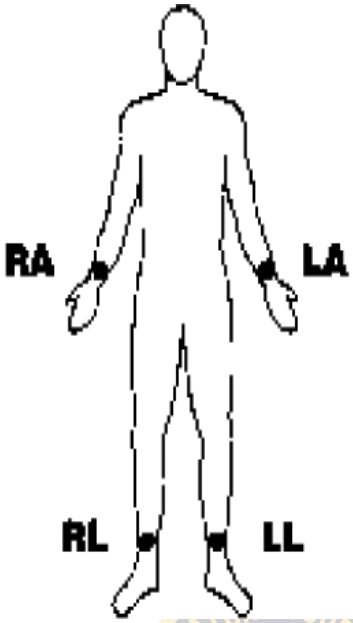
1. A STEMI is noted on the 12-lead EKG
2. A patient is being, or is going to be treated under a Cardiac Guideline (ACS, Bradycardia, or Tachycardia) or if the patient is being treated under the Post Resuscitation Care Guideline.
3. Any time the EMS practitioner feels that a 12-lead should be reviewed by a physician or is seeking advice or orders for a patient with a cardiopulmonary complaint.

When a STEMI is identified and after the EKG is transmitted, a radio report should be provided to the receiving emergency department as soon as possible to allow for ample time for mobilization of the heart team.

It is good clinical practice that patients being treated under the ACS Guideline or when the patient has a cardiopulmonary complaint, that the clinician utilize continuous 12-lead monitoring along with acquiring subsequent 12-lead EKGs to monitor EGK changes. Subsequent 12-lead EKGs which show significant changes should be transmitted to the receiving emergency department as soon as possible.

12 Lead EKG Placement





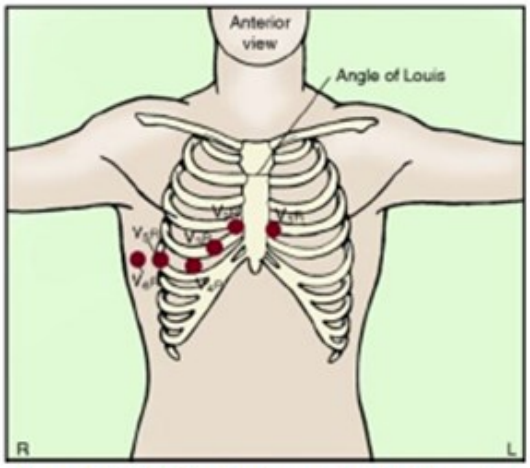
Place the precordial electrodes across the chest in the following locations:
V1 : Fourth intercostal space, at the right sternal margin.
V2 : Fourth intercostal space, at the left sternal margin.
V3 : Fifth rib, between leads V2 and V4.
V4 : Fifth intercostal space, on the left midclavicular line.
V5 : Left anterior axillary line, at the horizontal level of V4.
V6 : Left midaxillary line, at the same horizontal level as V4 and V5.

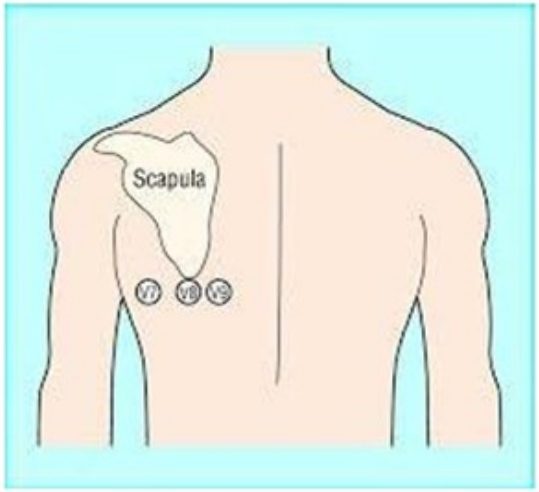
Note:

1 . When placing electrodes on female patients, always place leads V3 -V6 under the breast rather than on the breast.
2. Limb leads must be placed on limbs. The 12-lead analysis is based on the assumption that the leads are placed on the limbs.

12 Lead Guidelines

Right Side and Posterior Wall EKG Placement

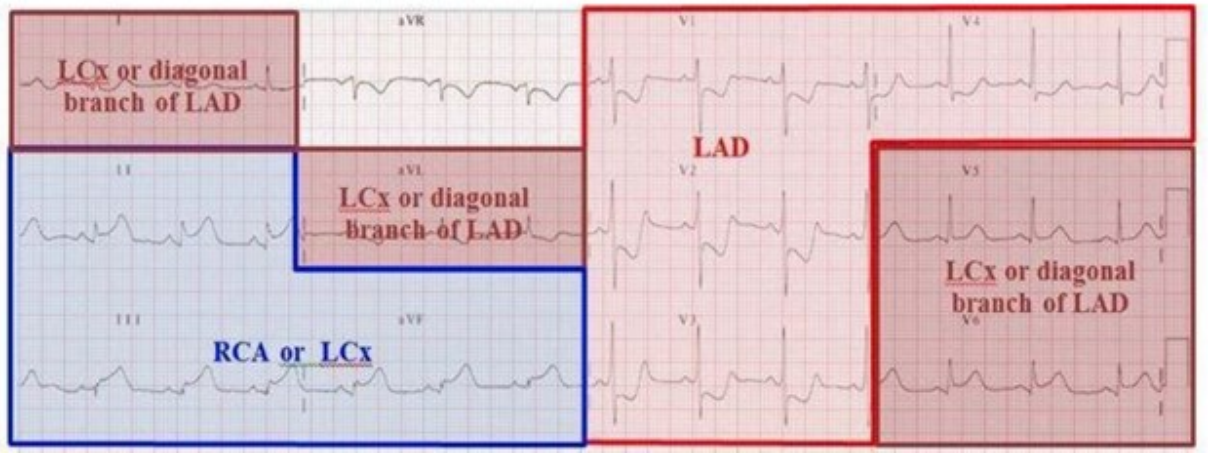




AMI Summary Chart

Leads	Artery	Presentation	Reciprocal Changes
V1, V2 Septal / V3, V4 Anterior	LAD	Classic, Hollywood MI- crushing CPR, diaphoresis	V7, 8, 9 Posterior
Lateral V5, V6	LAD or LCx		Inferior II, III, AVF
Inferior II, III, aVF	RCA or CIRX LCx	1) Epigastric Pain, N/V 2) Syncope 2° bradyarrhythmias from SA or AV node involvement	High Lateral I, aVL
I, aVL Lateral	LCx or LAD	Subtle signs, non-descript CP	Inferior II, III, aVF
Posterior V7, V8, V9	PDA: 80% RCA / 20% LCx	Back pain, Common with inferior	Anterior V1, V2, V3, V4
Right Ventricle V4R, V5R, V6R	RCA	Hypotension, can be associated with Inferior AMI	None

Culprit Artery Chart



APGAR

Sign	0	1	2
Appearance	Blue/Pale	Body pink, extremities blue	Pink
Pulse Rate	None	< 100	>100
Grimace	None	Grimace	Cries
Activity	Limp	Some	Active
Respiration	Absent	Slow/irregular	Strong cry

*APGAR should be measured and documented at the 1 and 5 minute intervals post delivery.

Score Range	Condition	Expectation
7 - 10	No Distress	Routine Care
4 - 6	Moderate Distress	Stimulation/Oxygenation/PPV
< 4	Severe Distress	Neonatal Resuscitation

BLS GUIDELINES

Component	Adults/Adolescents	Children (Age 1 to puberty)	Infant (Age less than 1 year, excluding newborns)
Compression - Ventilation ratio without advanced airway	**1 or 2 rescuers:** 30:2	**1 rescuer:** 30:2 **2 rescuers:** 15:2	
Compression - Ventilation ratio with advanced airway	Continuous compressions at a rate of 100-120/min Give 1 breath every 6 seconds (10 breaths/min)		
Respiratory Arrest with Pulse	Give 1 breath every 5-6 seconds	Give 1 breath every 3 to 5 seconds	
Compression Rate	100 - 120/min		
Compression Depth	2 - 2.4 inches	At least one third AP diameter of the chest (about 2 inches)	At least one third AP diameter of the chest (about 1.5 inches)
Hand Placement	2 hands on the lower half of the sternum	1 or 2 hands on the lower half of the sternum	**1 rescuer:** 2 fingers in the center of the chest **2 rescuers:** 2 thumb-encircling hands in the center of the chest
Chest Recoil	Allow full recoil of the chest after each compression Do not lean on the chest after each compression		
Minimizing Interruptions	Limit interruptions in chest compressions to less than 10 seconds		

Newborn BLS Guidelines

The guidelines for neonatal resuscitation are the same as the infant guidelines listed above with the exception of the compression to ventilation ratios. In the presence of a neonatal cardiac arrest or if the neonate's heart rate is less than 60, presumably due to poor gas exchange, compressions and ventilations should be coordinated at a **3:1** ratio whereas compressions and ventilations are not being given simultaneously. The clinician could elect to increase the ratio to 15:2 if the arrest was presumed to be of cardiac origin.

CONSULT GUIDE (ONLINE MEDICAL DIRECTION)

CONSULTS

This is _____ on Medic _____. I am consulting for: _____.

I have a _____ y/o M/F who called for/is currently experiencing:
_____.

Upon arrival patient was exhibiting:
_____.

Initial vital signs were: _____.

My patients current GCS is: _____.

The interventions we have provided so far is: _____.

My patient has improved/stayed the same/declined with interventions given.

My current vitals are:
BGL-
Temp-
HR-
BP-
SPO2-
RR-
ETCO2-

My ETA to the hospital is _____.

I think my patient would benefit from _____ due to
_____.

What do you think? Do you have any questions/advice?

CONSULT GUIDE (ONLINE MEDICAL DIRECTION)

CONSULTS

What are you consulting for?	
How did your patient present when you first arrived on scene? If they were stable and then became urgent- what contributed to that change?	
What were your patient's initial vital signs?	
What is your patients current GCS and mental status?	
What interventions have you performed so far?	
Have your interventions made the patient better? Stay the same? Or has your patient gotten worse?	
What are your current set of vital signs?	SPO2- _____ on RA/O2 at ____ lpm BGL- TEMP- HR- RR- _____ bpm (assisted or not) BP- ETCO2-
What hospital are you going to and what is your ETA?	
How do you think your patient will benefit from what you are consulting for?	

DONT FORGET TO REFLECT BACK: IS THERE ANYTHING ELSE THAT YOU CAN DO THAT MIGHT HELP THIS PATIENT PRIOR TO CONSULTING FOR WHATEVER IT IS YOU ARE CONSULTING FOR?

DELAYED SEQUENCE INTUBATION (DSI) CHECKLIST

DSI Checklist

Preparation

- ☐ EKG
- ☐ BP (EVERY TWO MIN)
- ☐ SPO2
- ☐ EtCO2
- ☐ NC/NRB/CPAP (circle one)
- ☐ IV/IO (circle one)
- ☐ PEEP (5-15 CMH2O)
- ☐ !!! Correct Hypotension !!!
- ☐ Patient on stretcher with head at 15-30 degrees, ears level with sternum
- ☐ Video laryngoscope/ direct laryngoscope
- ☐ ET tube/ 10cc syringe/Tube tie
- ☐ I-Gel
- ☐ Suction
- ☐ Bougie
- ☐ Stethoscope
- ☐ Ketamine
- ☐ Rocuronium

Sedation & Oxygenation Procedure

- ☐ Ketamine 2.0mg/kg slow IV/IO Ketamine dose: Time:
- ☐ High flow O2 via NC
- ☐ Nasal Cannula and BVM with two handed seal and PEEP at 5cm Pre-intubation Resp. rate:
- ☐ Squeeze bag only if patient is breathing inadequately Pre-intubation EtCO2:
- ☐ If SpO2 drops, or doesn't increase to 94%, Increase PEEP
- ☐ Wait 3 minutes, keeping SpO2 at 94% or greater!

STOP and/or Do Not Progress if SpO2 is lower than 94%, significant bradycardia, cardiac arrest, or Lead medic request STOP. Time that SpO2 reached 94% or greater:

- ☐ Rocuronium 1.0mg/kg slow IV/IO (wait 90 seconds/paralysis)

Rocuronium dose: Time:

Intubation

- ☐ 1st Attempt ET Size: Time: Lowest SpO2 and HR /

  2nd Attempt ET Size: Time: Lowest SpO2 and HR /
- ☐ I-gel size: 3 4 5(circle one) Time: Lowest SpO2 and HR /
- ☐ Ventilator, consider matching initial respiratory rate
- ☐ Place Gastric tube
- ☐ Continued sedation Ketamine 1-2mg/kg/hr or Ketamine 1-2 mg/kg slow IV/IO push
- ☐ Pain management Fentanyl 1 mcg/kg (Elevated HR, BP, or see tears)
- ☐ RASS Score (goal is -5):

Drip Rates - Adult

Dobutamine (Mix 250mg in 250cc) - 1000 mcg/cc

mcg/kg/min	40 kg	50 kg	60 kg	70 kg	80 kg	90 kg	100 kg
5 mcg	12	15	18	21	24	27	30
10 mcg	24	30	36	42	48	54	60
15 mcg	36	45	54	63	72	81	90
20 mcg	48	60	72	84	96	108	120
	Microdrips per minute or cc/hr						

Epinephrine and Norepinephrine (Mix 1mg in 250cc) - 4 mcg/cc

Dosage	2 mcg/min	3 mcg/min	4 mcg/min	5 mcg/min	6 mcg/min	7 mcg/min	8 mcg/min	9 mcg/min	10 mcg/min
	30	45	60	75	90	105	120	135	150
	Microdrips per minute or cc/hr								

Ketamine for Continuous Sedation (Mix 250mg in 250cc) - 1 mg/cc

mg/kg/hr	40 kg	50 kg	60 kg	70 kg	80 kg	90 kg	100 kg
1	40	50	60	70	80	90	100
1.5	60	75	90	105	120	135	150
2	80	100	120	140	160	180	200
	Microdrips per minute or cc/hr						

Nicardipine (Mix 25mg in 250cc) - 100 mcg/cc

Dosage	3 mg/hr	5 mg/hr	7.5 mg/hr	10 mg/hr	12.5 mg/hr	15 mg/hr
	30	50	75	100	125	150
	Microdrips per minute or cc/hr					

Nitroglycerin (Mix 50mg in 250cc) 200mcg/cc

Dosage (mcg/min)	cc/hr	Dosage (mcg/min)	cc/hr
5	1.5	210	63
10	3	220	66
20	6	230	69
30	9	240	72
40	12	250	75
50	15	260	78
60	18	270	81
70	21	280	84
80	24	290	87
90	27	300	90
100	30	310	93
110	33	320	96
120	36	330	99
130	39	340	102
140	42	350	105
150	45	360	108
160	48	370	111
170	51	380	114
180	54	390	117
190	57	400	120
200	60		
Microdrips per minute or cc/hr			

Amiodarone (Mix 250mg in 250cc) 1mg/cc

Dosage (mg/min)	cc/hr
1 mg/min	60

Drip Rates - Pediatric

Dobutamine (Mix 250mg in 250cc) - 1000 mcg/cc

mcg/kg/min	5 kg	10 kg	15 kg	20 kg	25 kg	30 kg	35 kg
5 mcg	2	3	5	6	8	9	11
10 mcg	3	6	9	12	15	18	21
15 mcg	5	9	14	18	23	27	32
20 mcg	6	12	18	24	30	36	42
	Microdrips per minute or cc/hr						

Epinephrine (Mix 1mg in 250cc) - 4 mcg/cc

mcg/kg/min	5 kg	10 kg	15 kg	20 kg	25 kg	30 kg	35 kg
0.1 mcg	8	15	23	**≥20 kg Use Adult Dosaging 2 - 10 mcg/min**			
0.2 mcg	15	30	45				
0.3 mcg	23	45	68				
0.4 mcg	30	60	90				
0.5 mcg	38	75	113				
	Microdrips per minute or cc/hr						

Ketamine for Continuous Sedation (Mix 250mg in 250cc) - 1 mg/cc

mg/kg/hr	5 kg	10 kg	15 kg	20 kg	25 kg	30 kg	35 kg
1	5	10	15	20	25	30	35
1.5	8	15	23	30	39	45	53
2	10	20	30	40	50	60	70
	Microdrips per minute or cc/hr						

END TIDAL CO2 DETECTION ($ETCO_2$)

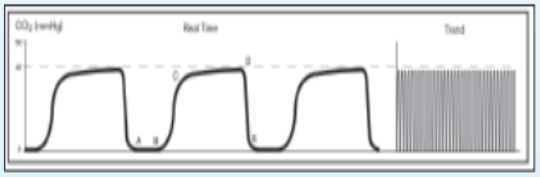
END-TIDAL CO_2

Normal and Abnormal Capnogram Waveforms

Normal Capnogram Waveform

Indications:

- ET tube is correctly positioned
- Proper ventilation is occurring



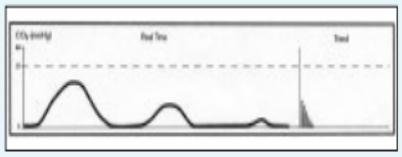
A-B: Baseline
B-C: Expiratory Upstroke
C-D: Expiratory Plateau
D: End-tidal Concentration
D-E: Inspiration

Abnormal Capnogram Waveforms

Esophageal Intubation

Observations:

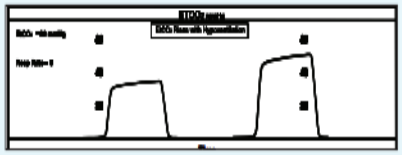
- No CO_2 sensed
- Small transient waveforms



Increasing $EtCO_2$ Level

Possible Causes:

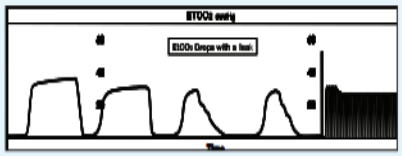
- Decrease in respiratory rate and/or tidal volume (hypoventilation)
- Increase in metabolic rate
- Rapid rise in body temperature (malignant hyperthermia)



Leak

Possible Causes:

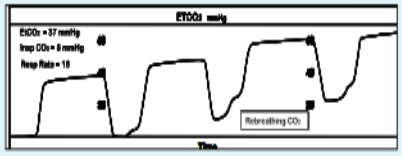
- ET tube cuff may be deflated or ruptured
- ET tube in the vocal cords
- Mask or Bag Mask Valve leak
- Artificial airway is too small for patient



Rebreathing

Possible Causes:

- Mechanical dead space
- Mechanical ventilator failure



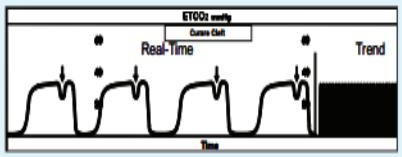
Muscle Relaxants (Curare Cleft)

Possible Causes:

- Patient is mechanically ventilated

Observations:

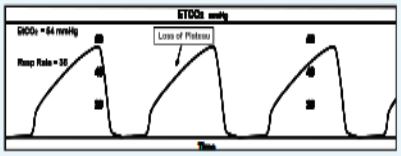
- Depth of cleft is proportional to degree of drug activity



Airway Obstruction

Possible Causes:

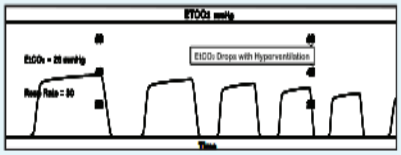
- Partially kinked or occluded artificial airway
- Presence of foreign body in the airway
- Bronchospasm
  - Elevated end-tidal CO_2 valve
  - Loss of alveolar plateau



Decreasing $EtCO_2$ Level

Possible Causes:

- Increase in respiratory rate and/or tidal volume (hyperventilation)
- Decrease in metabolic rate
- Fall in body temperature

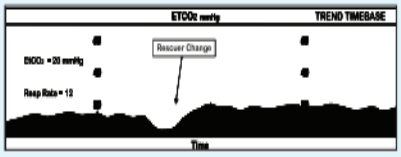


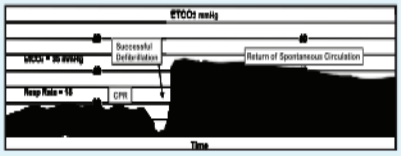
$EtCO_2$ During Cardiac Arrest

$EtCO_2$ increases significantly with the return of effective heart function.

Observations:

- $EtCO_2$ drops during cardiac arrest
- As rescuer tires, a decrease in $EtCO_2$ is observed
- Increases with effective chest compressions and heart function





Fluid Infusion Rates

100 cc / 10 gtts set

Time	5 min	10 min	15 min	20 min	30 min	60 min
	200	100	67	50	33	17
	gtts/min					

100 cc / 60 gtts set or Dial-a-Flow

Time	5 min	10 min	15 min	20 min	30 min	60 min
	1200	600	400	300	200	100
	gtts/min or cc/hr					

250 cc / 10 gtts set

Time	5 min	10 min	15 min	20 min	30 min	60 min
	500	250	167	125	83	42
	gtts/min					

250 cc / 60 gtts set or Dial-a-Flow

Time	5 min	10 min	15 min	20 min	30 min	60 min
	3000	1500	1000	750	500	250
	gtts/min or cc/hr					

500 cc / 10 gtts set

Time	5 min	10 min	15 min	20 min	30 min	60 min
	1000	500	333	250	167	83
	gtts/min					

500 cc / 60 gtts set or Dial-a-Flow

Time	5 min	10 min	15 min	20 min	30 min	60 min
	6000	3000	2000	1500	1000	500
	gtts/min or cc/hr					

1000 cc / 10 gtts set

Time	5 min	10 min	15 min	20 min	30 min	60 min
	2000	1000	667	500	333	167
	gtts/min					

1000 cc / 60 gtts set or Dial-a-Flow

Time	5	10	15	20	30	60
	12000	6000	4000	3000	2000	1000
	gtts/min or cc/hr					

GLASGOW COMA SCALE

Adult GCS

Eye Opening		Verbal Response		Motor Response	
Spontaneous	4	Oriented	5	Follows Commands	6
To voice	3	Disoriented	4	Localizes Pain	5
To pain	2	Incoherent Words	3	Withdrawals from pain	4
None	1	Incomprehensible sounds	2	Decorticate Posturing	3
		None	1	Decerebrate Posturing	2
				None	1

Pediatric GCS

Eye Opening		Verbal Response		Motor Response	
Spontaneous	4	Smiles/Coos; Oriented; Follows Objects	5	Spontaneous Movement	6
To voice	3	Consolable crying	4	Withdraws from touch	5
To pain	2	Inappropriate crying and/or screaming	3	Withdraws from pain	4
None	1	Grunts	2	Decorticate Posturing	3
		None	1	Decerebrate Posturing	2
				None	1

MEDICAL ABBREVIATIONS

This list is the approved abbreviation list for East Baton Rouge Parish EMS.
It is intended that these abbreviations can be used with all capital letters and/or all lower-case letters.

>	greater than
=	equal
A&O	alert and oriented
A/C	antecubital
AIDS	acquired immunodeficiency syndrome
AFD	Alsen Fire Department
ALOC	altered level of consciousness
AMA	against medical advice
AMLS	Advanced Medical Life Support
ASA	acetylsalicyclic acid (aspirin)
BBS	bilateral breath sounds
BFFD	Brownsfield Fire Department
BKA	below knee amputation
BM	bowel movement
BFD	Baker Fire Department
BPM	beats per minute
BRFD	Baton Rouge Fire Department
BRG-MC	Baton Rouge General Mid-City
BSA	body surface area
CA	cancer
CBBS	clear bilateral breath sounds
C/C	chief complaint
CEC	Coroner's Emergency Certificate
CPD	Central Police Department
CHF	congestive heart failure
CM	centimeter
CO	carbon monoxide
C/O	complains of
CP	chest pain
CPR	cardiopulmonary resuscitation
CVA	cardiovascular accident
D50	dextrose 50%
D/C	discontinue(d)
DL	deciliter
DNR	do not resuscitate
DOB	date of birth
DPS	Department of Public Safety
Dx	diagnosis
DWI	driving while intoxicated
ED	emergency department
EJ	external jugular
EMS	emergency medical services
ER	emergency room
ESRD	end-stage renal disease
<	less than
AAA	abdominal aortic aneurysm
ABD	abdominal/abdomen
A-FIB	atrial fibrillation
AED	automated external defibrillator
AKA	above knee amputation
AM	morning
AMI	acute myocardial infarction
ARDS	acute respiratory distress syndrome
BBB	bundle branch block
BCLS	basic cardiac life support
BID	twice a day
BLS	basic life support
BP	blood pressure
BPD	Baker Police Department
BRCC	Baton Rouge Community College
BRG-BB	Baton Rouge General Bluebonnet
BRPD	Baton Rouge Police Department
BSI	body substance isolation
CAD	coronary artery disease
CBG	capillary blood glucose
CCU	coronary/critical care unit
CFD	Central Fire Department
CHD	coronary heart disease
CID	cervical immobilization device
CNS	central nervous system
CO2	carbon dioxide
COPD	chronic obstructive pulmonary disease
CPAP	continuous positive airway pressure
CSF	cerebrospinal fluid
CVFD	Chaneyville Fire Department
D6FD	District 6 Fire Department
DKA	diabetic ketoacidosis
DM	diabetes mellitus
DOA	dead on arrival
DOE	dyspnea on exertion
DVT	deep vein thrombosis
D5W	dextrose 5% in water
ECF	extended care facility
EDD	estimated date of delivery
EKG	electrocardiogram
ePCR	electronic patient care report
ESFD	East Side Fire Department
EBRP	East Baton Rouge Parish

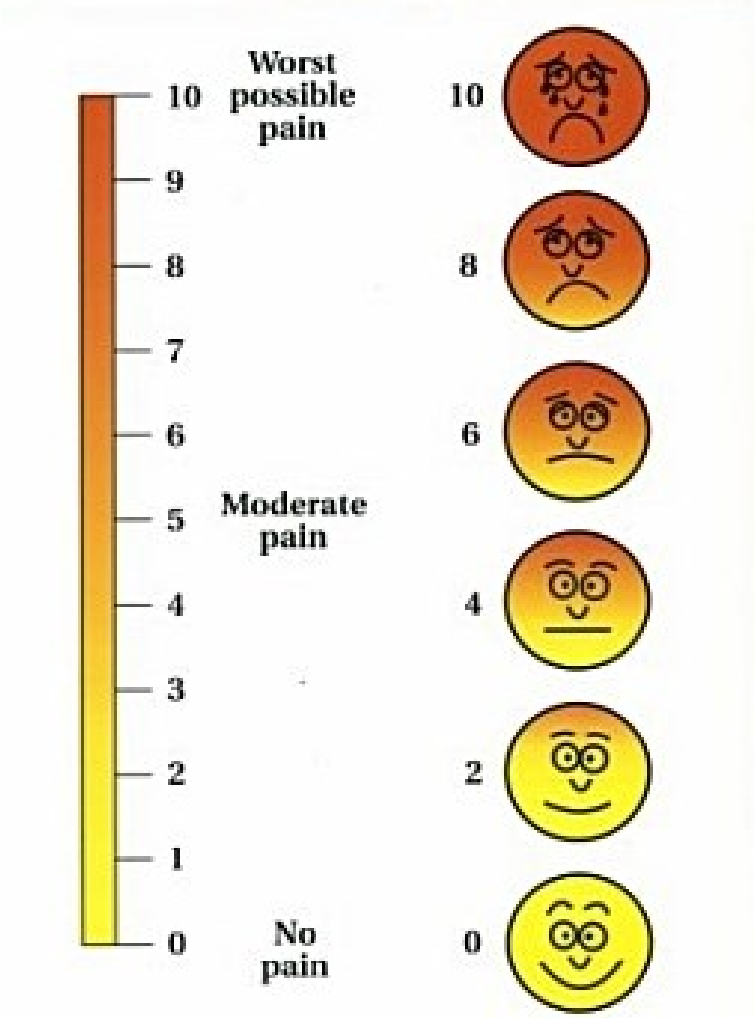
MEDICAL ABBREVIATIONS

EBRSO	East Baton Rouge Sheriff's Office
EtCO2	end tidal carbon dioxide
ETT	endotracheal tube
F	female
Fx	fracture
GCS	**G**lasgow coma score
GI	gastrointestinal
GSW	gunshot wound
GU	genitourinary
HR	heart rate
HAV	hepatitis A virus
HCP	health care professional
HDV	hepatitis D
HEV	hepatitis E
H/O	history of
HPI	history of present illness
HR	heart rate
HX	history
ICP	intracranial pressure
IDDM	insulin-dependent diabetes mellitus
INF	Inferior
IR	incident report
IV	intravenous
J	joule
JT	Joint
KG	kilogram
L	left
LAT	lateral
LLE	left lower extremity
LMP	last menstrual period
LPM	liters per minute
LSB	long spine board
LSU	Louisiana State University
LUQ	left upper quadrant
MAE	moves all extremities
MDI	metered-dose inhaler
MG	milligram
ML	milliliter
mmHg	millimeters of mercury
MS	Morphine Sulfate
NAD	no acute distress
NC	nasal cannula
NIDDM	noninsulin-dependent diabetes mellitus
NKDA	no known drug allergies
NRB	non-rebreather
ETOH	ethyl alcohol
ETI	endotracheal intubation
EXT	extremities
FD	fire department
G	gravida (as in number of pregnancies)
GERD	gastroesophageal reflux disease
GP	general practitioner
GTT	drops
GYN	gynecology
H1N1	hemagglutinin type 1 and neuraminidase type 1
HBV	hepatitis B virus
HCV	hepatitis C virus
HEENT	head, eyes, ears, nose and throat
HIV	human immunodeficiency virus
H2O	water
HPV	human papillomavirus
HTN	hypertension
ICD	implantable cardioverter defibrillator
ICU	intensive care unit
IM	intramuscular
IO	**i**ntraosseous
ISA	initial scene assessment
IVPB	intravenous piggyback
JVD	jugular vein distention
K	potassium
KVO	keep vein open
L&D	labor and delivery
LERN	Louisiana Emergency Response Network
LLQ	left lower quadrant
LOC	level of consciousness
LR	lactated ringers
LSP	Louisiana State Police
LUE	left upper extremity
M	male
MCG	microgram
mEq	millequivalent
MI	myocardial infarction
MM	millimeter
MR	medical release
Na	Sodium
NEB	Nebulizer
NICU	neonatal intensive care unit
NKA	no known allergies
NPO	nothing by mouth
NS	normal saline

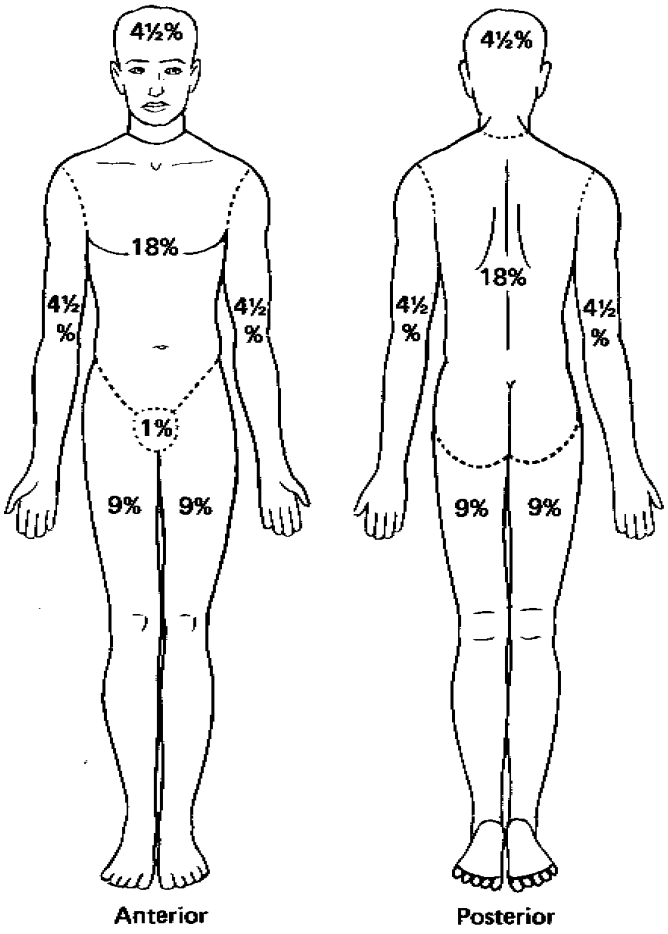
MEDICAL ABBREVIATIONS

NSR	normal sinus rhythm
N/V	nausea and vomiting
OB	obstetrics
OLOL-Peds	Our Lady of the Lake Pediatrics
OPC	Order of Protective Custody
OSHA	occupational safety and health administration
P	para (as in number of children)
PALS	pediatric advanced life support
PD	police department
PEC	physician's emergency certificate
PEARL	pupils equal and reactive to light
PID	pelvis inflammatory disease
PMS	pulse, motor, sensation
PO	orally
PT	patient
PTOA	prior to our arrival
Q	every
RLE	right lower extremity
R/O	rule out
ROSC	return of spontaneous circulation
RUE	right upper extremity
Rx	prescription
SGFD	St. George Fire Department
SpCO	carbon monoxide saturation
SQ	subcutaneous(ly)
SU	Southern University
Sx	symptoms
TBI	traumatic brain injury
TIA	transient ischemic attach
URI	upper respiratory infection
VF	ventricular fibrillation
VT	ventricular tachycardia
W/**O**	without
X	multiplied by
YR	year
ZPD	Zachary Police Department
NSTEMI	non-ST segment elevation myocardial infarction
O2	oxygen
OLOL	Our Lady of the Lake
OMC	Ochsner Medical Center
OR	operating room
OTC	over the counter
PAD	peripheral arterial disease
PCP	primary care physician
PE	physical examination
PEEP	positive end expiratory pressure
PFD	Pride Fire Department
PMHx	past medical history
PNS	peripheral nervous system
POST	Posterior
PTA	prior to arrival
PRN	as needed
R	right
RLQ	right lower quadrant
ROM	range of motion
RR	recorded release
RUQ	right upper quadrant
SBP	systolic blood pressure
SIDS	sudden infant death syndrome
SpO2	oxygen saturation
STEMI	s-t segment elevation myocardial infarction
SUP	superior
Sz	seizure
T/D	treatment and disposition
Tx	treatment
UTI	urinary tract infection
V/S	vital signs
W/	with
WT	weight
Y/O	years old
ZFD	Zachary Fire Department

PAIN SCALE


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

Rule Of 9's


4½%
18%
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4½%
1%
9%
9%
Anterior
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18%
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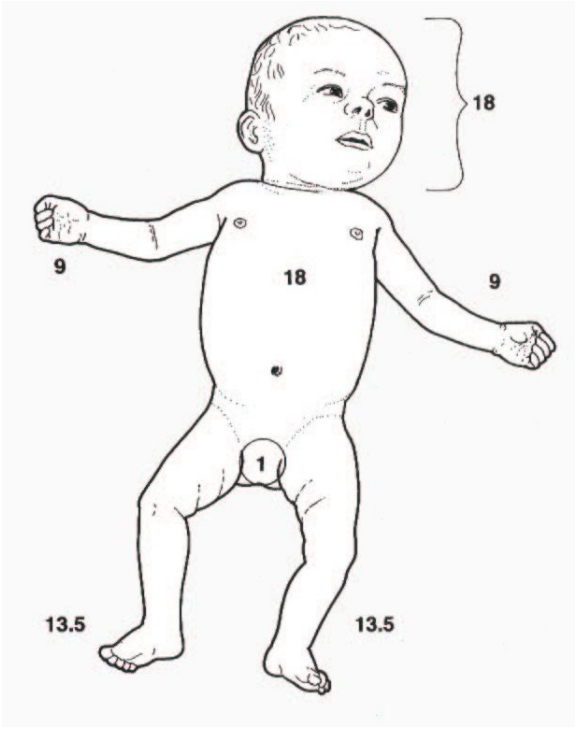
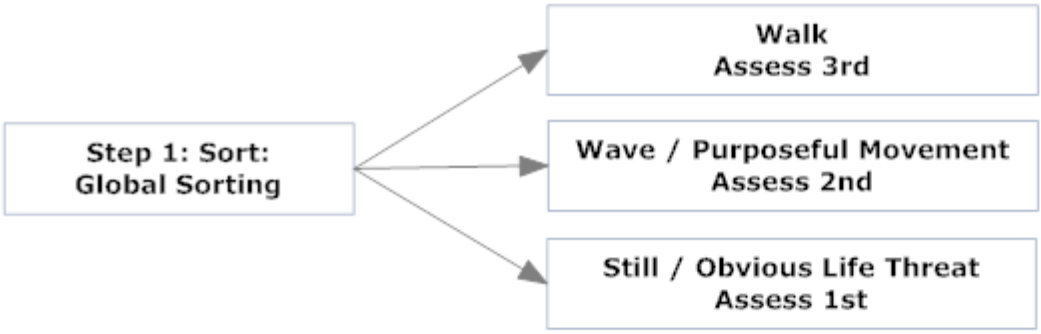
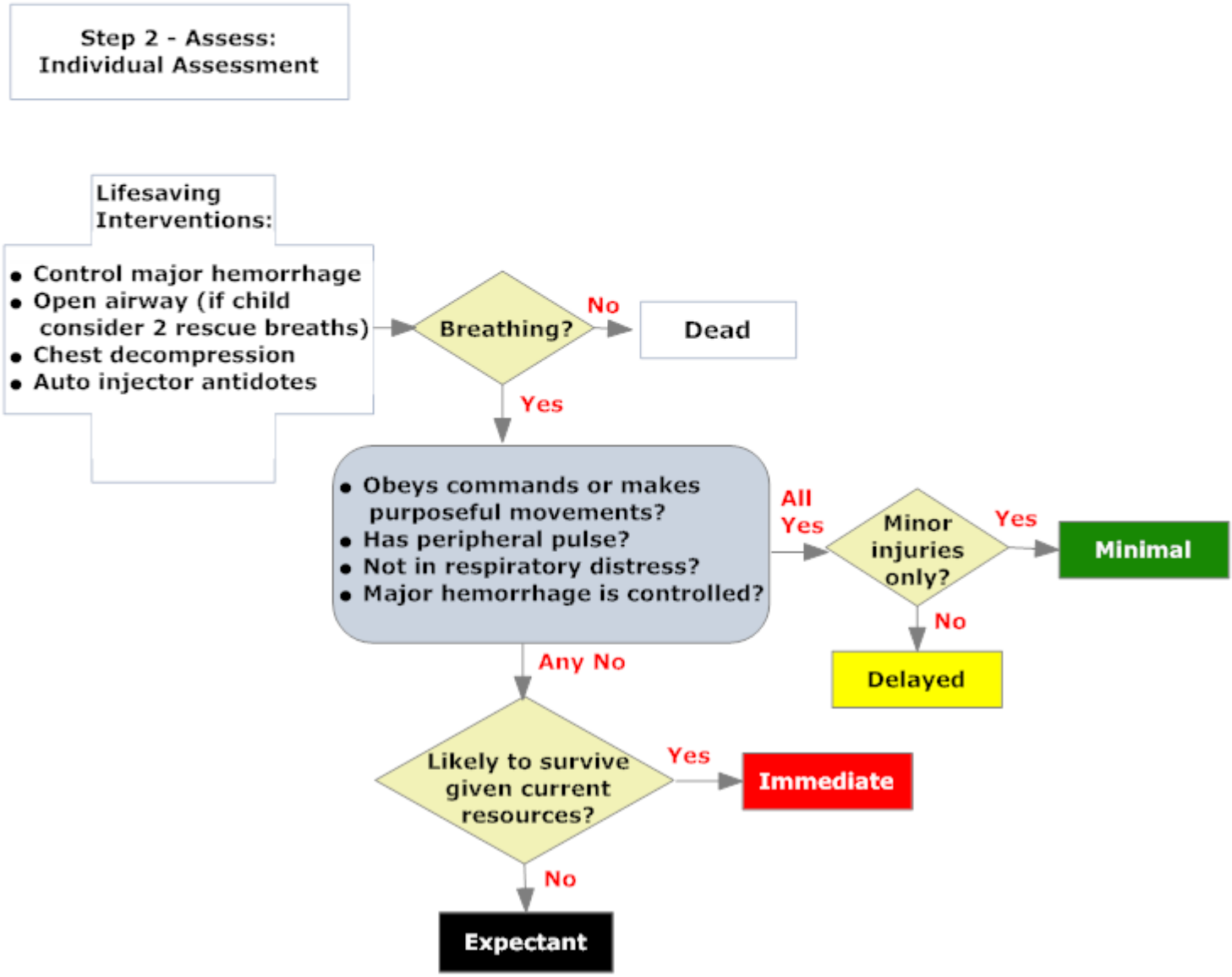
9%
9%
Posterior


18
9
18
9
1
13.5
13.5

SALT TRIAGE


Step 1: Sort:
Global Sorting
Walk
Assess 3rd
Wave / Purposeful Movement
Assess 2nd
Still / Obvious Life Threat
Assess 1st


Step 2 - Assess:
Individual Assessment
Lifesaving Interventions:
• Control major hemorrhage
• Open airway (if child consider 2 rescue breaths)
• Chest decompression
• Auto injector antidotes
Breathing?
No
Dead
Yes
• Obeys commands or makes purposeful movements?
• Has peripheral pulse?
• Not in respiratory distress?
• Major hemorrhage is controlled?
All Yes
Minor injuries only?
Yes
Minimal
No
Delayed
Any No
Likely to survive given current resources?
Yes
Immediate
No
Expectant

LOUISIANA BEMS SCOPE OF PRACTICE MATRIX

Note: Local guidelines may be more restrictive than the Louisiana BEMS Scope of Practice Matrix

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Overview

This revision to the Louisiana Scope of Practice (SOP) has been reformatted to clarify questions about what the SOP prohibits, allows with special training, or is considered within the general scope of EMS professionals.

The Louisiana SOP follows the National Scope of Practice Model and then adds specific interventions at each level of training that the Louisiana EMS Certification Commission (EMSCC) has determined to be reasonable and prudent.

These expansions to the scope are designated as follows:

- Approved – The EMS Certification Commission has approved the skill at the specific training level without additional training required.
- Agency Expansion of Scope (AES) – The EMSCC recognizes that this is a reasonable and prudent expansion of a specific skill, procedure or medication that can be performed with *agency level training and approval*

TABLE 1- LEGEND

Not Approved	Approved	AES
	✓	✓*

Applicability

Eligibility

The presence of a skill or procedure in the Louisiana Scope of Practice does not automatically grant permission for a Louisiana licensed EMS professional to perform the skill or procedure. An agency medical director approved protocol must also be in place.

This Scope of Practice applies to individuals licensed by the Louisiana Bureau of Emergency Medical Services who are working for a Bureau of EMS Approved EMS Agency, or a Private Industrial Employer or hospital located in the State of Louisiana.

Refer to the following matrix for applicability. All must be answered "Yes" to utilize the Louisiana Approved Scope of Practice:

TABLE 2 SOP APPLICABILITY

Louisiana Licensed EMS Professional at defined training level	Yes ☐ No ☐
Approved EMS Agency/ Hospital/Clinic	Yes ☐ No ☐
Medical Director Oversight	Yes ☐ No ☐
Agency Approved Protocols	Yes ☐ No ☐

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Requesting Expansion or Modifications to the Scope of Practice for Skills or Procedures

Each specific skill/ procedure/ medication currently approved is listed in the appropriate section of the matrix. Agency-Specific protocols may limit, but not expand the scope of practice as defined in this document.

New Procedure or Skill

If a specific skill/procedure is not clearly identified in the SOP matrix, the Medical Director or another agency approved individual may submit a formal request to the Louisiana EMSCC for clarification or expansion to the Scope of Practice to include the skill or procedure at a regularly scheduled hearing.

Training Level Based Expansion to a Skill or Procedure

Upon submission of a formal request for expansion of the LA SOP, the EMSCC will deliberate during its regularly scheduled open meeting and decide to designate the skill as Denied, Approved or if agency or state approved special training is required.

Requesting Expansion or Modifications to the Medical Director Approved Medication Section

Emergency Medical Responder (EMR) and Emergency Medical Technician (EMT)

Medication administration by Louisiana licensed Emergency Medical Responders or Emergency Medical Technicians requires a specific Skill or Procedure row defining the medication and its use in the Louisiana SOP. No expansion will be permitted without the involvement and approval of the EMSCC.

Advanced Emergency Medical Technician (AEMT)

Administration of IV medications by AEMT level provider is often a point of concern for EMS agencies and medical directors. It is not the intent of the EMSCC to artificially limit the ability of medical directors to make therapeutic or clinical care decisions, it is to define those medications that would require Special Training prior to their use in patient care.

The EMSCC follows the National Scope of Practice model for AEMTs and designates "analgesia, anti-nausea/ anti-emetics, dextrose, epinephrine, glucagon, naloxone" as approved "✓" medications. Any other medications that the individual agency or medical director wishes to use would be considered as AES (✓*) in the Louisiana Matrix and all AES requirements must be maintained.

TABLE 3 EXAMPLE OF APPROVED MEDICATION SECTION CHANGE TO SOP

Skill/ Procedure	EMR	EMT	AEMT	Paramedic
IV Medications other than analgesia, anti-nausea/ anti-emetics, dextrose, epinephrine, glucagon, naloxone			✓*	✓

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Paramedic

The EMSCC follows the National Scope of Practice model and recognizes that medication administration by a licensed Paramedics does not require AES and that education needs for expansions to Paramedic medication administration can be safely managed by medical directors without the oversight of the EMSCC.

Agency Expanded Scope Special Training – (AES)

Agency submits the request for change to the SOP that are justifiable, are supported by research, required by practice changes, or are in common use by equivalent providers working under another states SOP. If the EMSCC approves and determines that this expansion of a skill, procedure or medication can be safely administered and monitored at the agency level, any Louisiana EMS agency electing to add the skill must:

1. Create and maintain a Medical Director and agency approved protocol defining the activity
2. Maintain documentation demonstrating that all individuals authorized by the agencies medical director to perform these skills/procedures have received initial training.
3. The documentation must specify
    1. Dates of attendance for all individuals trained
    2. Method of instruction
    3. Specific knowledge objectives that address any knowledge/ skill gaps between the skill/ procedure and those taught in the standard curricula at the level of training.
    4. Evaluation measures and Test Scores
4. If the material needed to bridge the knowledge gap is taught by an individual who is not currently licensed as a Louisiana EMS Instructor or the Medical Director approving the optional module, a brief Curriculum Vitae (C.V.) must be included which clearly indicates the instructing individual's qualifications as a Subject Matter Expert.
5. Continuing Education/ competency evaluations on the optional module must be conducted and documented at least every 24 months for every individual who has successfully completed the initial training requirements.

Examples

Example 1- Expansion of a Skill/ Procedure to a Specific Level of Training – Agency Approved

An agency working in a rural area has a requirement to transport otherwise stable patients who have a medicated IV drip containing electrolytes between facilities. Due to limited availability of personnel, they request to create a training program for specific EMT level providers to transport these patients and allow their system to better utilize their limited EMS provider resources.

A review of the SOP shows that medicated IV-line monitoring is already addressed in the matrix. After deliberation, the EMSCC decides that the request is justifiable and that there is no increase in risk to the patient or provider if they have completed the suggested Agency Approved Special Training Module (AES).

The EMSCC would then vote to amend the SOP and add the ✓* designation to the EMT level for those who meet AAST.

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

If the expansion is judged to require State Approved Certification (SES) they would designate it as ✓**

	EMR	EMT	AEMT	Paramedic
Intravenous: Maintenance of Medicated IV Fluids (Electrolytes)		✓*	✓*	✓

Example 2 - Skill/ Procedure Not Currently Included in the Matrix

A medical director identifies the need for his program to operate a Balloon Pump transport unit for a specific hospital program. A review of the SOP shows that this is not currently within the Scope of Practice for Louisiana EMS professionals at any level. The Medical Director would submit a written request to the EMSCC to add this skill/ procedure to the matrix. At this point, the EMSCC would investigate and deliberate on the request at its regularly scheduled meeting. If approved, it would be added to the matrix in the appropriate section and designated as prohibited (no ✓), Special Training Required (✓*) or Approved (✓).

Skill/ Procedure	EMR	EMT	AEMT	Paramedic
Balloon Pump Transport				✓*

Example 3 – Non-Justifiable Expansion

An agency request that the SOP be amended to include Intravenous Access to the EMT Scope of Practice. In deliberation, the EMSCC determines that this is outside the SOP for this level of training and that expansion, even with additional training would not justify the change using a risk/ benefit analysis and considering alternatives.

No change would be made to the SOP document and the EMSCC would deny the request in a written response to the inquiry with the results of their deliberations.

Example 4 – Emergency or Temporary Expansion

During a declared emergency, it is determined that due a defined, time-limited problem, there is a need to allow EMT level providers to perform point of care testing and administration of IM vaccines. The SOP would not be modified. The EMSCC would publish a Letter of Clarification on the Louisiana BEMS webpage which clearly defines the requirements for these providers to perform the skill/procedure and the time-frame and limitations of this expansion.

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Airway Management/Ventilation/Oxygenation

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Airway: Nasal	√	√	√	√
Airway: Oral	√	√	√	√
Airway: Supraglottic		√	√	√
Airway Obstruction: Dislodgement by Direct Laryngoscopy with McGill Forceps			√*	√
Airway Obstruction: Manual Dislodgement Techniques	√	√	√	√
Airway Obstruction: Percutaneous Cricothyrotomy				√
Airway Obstruction: Surgical Cricothyrotomy				√*
Bag-Valve-Mask (BVM)	√	√	√	√
BiPAP Administration and Management				√
CPAP		√	√	√
Carbon Monoxide Monitoring	√*	√	√	√
Chest Decompression: Needle				√
Chest Tube Placement: Assist Only				√
Chest Tube: Monitoring and Management				√
Chest Tube/ Thoracostomy: Finger or Tube				√*
End Tidal CO_2: Monitoring and Interpretation of Wave Form Capnography	√*	√	√	√
Gastric Decompression: NG Tube				√
Gastric Decompression: OG Tube				√
Head Tilt-Chin Lift	√	√	√	√
Endotracheal Intubation				√
Jaw Thrust	√	√	√	√
Medication Assisted Intubation				√*
Mouth-to-Barrier Devices	√	√	√	√
Mouth-to-Mask	√	√	√	√
Mouth-to-Mouth	√	√	√	√

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Mouth-to-Nose	√	√	√	√
Mouth-to-Stoma	√	√	√	√
Oxygen Therapy: High Flow Nasal Cannula				√
Oxygen: Therapy: Humidifiers		√	√	√
Oxygen Therapy: Nasal Cannula	√	√	√	√
Oxygen Therapy: Non-Rebreather Mask	√	√	√	√
Oxygen Therapy: Partial-Rebreather mask		√	√	√
Oxygen Therapy: Simple Face Mask		√	√	√
Oxygen therapy: Venturi Mask		√	√	√
Pulse Oximetry	√	√	√	√
Suctioning: upper airway	√	√	√	√
Positive Pressure Ventilation Devices (Manually Triggered or Automatic Ventilators)			√	√
Suctioning: Tracheobronchial of an Intubated Patient		√	√	√
Tracheostomy Maintenance		√	√	√
Tracheostomy Tube Replacement			√	√
Transport Ventilator (Manual Adjustments)				√

Cardiovascular/Circulation

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Cardiopulmonary Resuscitation (CPR)	√	√	√	√
Cardiac Monitoring: 12 lead ECG Acquisition and Transmission		√	√	√
Cardiac Monitoring: 12 lead Electrocardiogram (interpretive)				√
Cardioversion: Electrical				√
Defibrillation: Automated/Semi-Automated	√	√	√	√
Defibrillation: Manual			√*	√
EKG Rhythm Monitoring and Interpretation of EKG Strips			√*	√
Hemorrhage Control: Direct Pressure	√	√	√	√
Hemorrhage Control: Tourniquet	√	√	√	√

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2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Hemorrhage Control: Wound Packing	√	√	√	√
Transvenous Cardiac Pacing: Monitoring and Maintenance				√
Mechanical CPR Device	√*	√	√	√
Telemetric Monitoring Devices and Transmission of Clinical Data, Including Video Data		√	√	√
Transcutaneous Pacing				√

Splinting, Spinal Motion Restriction (SMR), and Patient Restraint

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Cervical Collar	√	√	√	√
Long Spine Board	√*	√	√	√
Manual Cervical Stabilization	√	√	√	√
Seated SMR (KED, etc.)		√	√	√
Extremity Stabilization-manual	√	√	√	√
Extremity Splinting	√	√	√	√
Splint: Traction		√	√	√
Mechanical Patient Restraint		√	√	√
Emergency Moves for Endangered Patients	√	√	√	√

Medication Administration Routes (for Medications in the Approved Scope of Practice)

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Aerosolized/nebulized	√	√	√	√
Endotracheal Tube				√
Inhaled		√	√	√
Intradermal				√
Intramuscular		√*	√	√
Intramuscular: Auto-Injector	√	√	√	√

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Intranasal			√	√
Intranasal: Unit-Dosed, Premeasured	√	√	√	√
Intraosseous			√	√
Intravenous			√	√
Intravenous Pump Medication Administration			√	√
Mucosal/Sublingual	√	√	√	√
Nasogastric				√
Oral	√*	√	√	√
Rectal				√
Subcutaneous			√	√
Topical				√
Transdermal			√	√
Tetracaine topical ophthalmic drops and Morgan Lens Insertion for eye irrigation as an intervention at specific industrial Sites as part of a treatment plan for exposure to acids and caustics		√*	√*	√
Topical Anesthetic-Ophthalmic		√*	√*	√

Medical Director Approved Medications

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Use of pre-packaged epinephrine kit for IM injection for Anaphylaxis (Supplied and Carried by the EMS Agency)		√*	√	√
Use of Epinephrine (Auto-Injector) for Anaphylaxis (Supplied and Carried by the EMS Agency)	√	√	√	√
Use of Auto-Injector Antidotes for Chemical/Hazardous Material Exposures	√	√	√	√
Use of Opioid Antagonist Auto Injector for Suspected Opioid Overdose	√	√	√	√
Use of Nebulized Sodium Bicarbonate as an antidote for specific toxic inhalation at industrial sites		√*	√	√

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Use of patient supplied prescribed medications for special conditions (Danny's Dose)			√*	√
Immunizations		√*	√	√
Inhaled: Beta/Agonist Bronchodilator and Anticholinergic for Dyspnea and Wheezing		√	√	√
Inhaled: Monitor Patient Administered (i.e. Nitrous Oxide)			√	√
Inhaled: Meter Dose Nebulizer for beta agonist bronchodilator and anticholinergic for Dyspnea/ wheezing: Limited to *Patients Own Prescribed Medication*	√	√		
Inhaled: Opioid Antagonist for Suspected Opioid Overdose	√	√	√	√
IV Medications other than analgesia, anti-nausea/ anti-emetics, dextrose, epinephrine, glucagon, naloxone			√*	√
Maintain an Infusion of Blood or Blood Products				√
Initiation of Blood or Blood Products				√*
Oral Aspirin for Chest Pain of Suspected Ischemic Origin	√	√	√	√
Oral Glucose for Suspected Hypoglycemia	√	√	√	√
Oral Over the Counter (OTC) Analgesics for Pain or Fever	√	√	√	√
OTC Medications, Oral and Topical				√
Parenteral Analgesic for Pain			√	√
Sublingual Nitroglycerin for Chest Pain of Suspected Ischemic Origin: Limited to *Patients Own Prescribed Medication*	√	√		
Sublingual Nitroglycerin for Chest Pain of Suspected Ischemic Origin			√	√
Thrombolytics				√
Topical Anesthetic-Ophthalmic		√*	√	√

IV Initiation/Maintenance Fluids

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Access Indwelling Catheters and Implanted Central IV Ports				√
Central Line: Monitoring				√*

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Intraosseous: Initiation, Peds or Adult			√	√
Intravenous Access			√	√
Intravenous Initiation: Peripheral			√	√
Intravenous Initiation: External Jugular				√
Intravenous: Maintenance of Non-Medicated IV Fluids		√*	√	√
Intravenous: Maintenance of Medicated IV Fluids			√*	√
Umbilical Venous Access				√*

Miscellaneous

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Assisted Delivery (Childbirth)	√	√	√	√
Assisted Complicated Delivery (Childbirth)	√*	√	√	√
Blood Chemistry Analysis				√
Blood Pressure: Automated	√	√	√	√
Blood Pressure: Manual	√	√	√	√
Blood Glucose Monitoring	√*	√	√	√
Eye Irrigation	√	√	√	√
Eye Irrigation: Hands Free Irrigation Using Sterile Eye Irrigation Device				√
Morgan Lens Insertion and eye irrigation at specific industrial Sites as part of a treatment protocol for exposure to acids and caustics		√*	√*	√
Patient Transport		√	√	√
Venous Blood Sampling			√	√

Louisiana Other Skills and Procedures

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Taser Barb Removal	√	√	√	√

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Urinary Catheter Maintenance and Troubleshooting		√	√	√
Digital Nerve Block				√*
ICP Monitoring				√*
Pericardiocentesis				√*
Extremity Wound Closure (Suturing/Stapling)				√*
Urinary Catheter Insertion				√*
Point of Care Ultrasound use and interpretation				√*

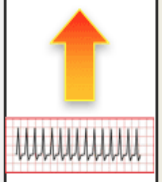
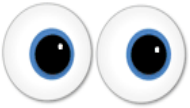
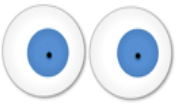
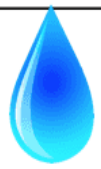
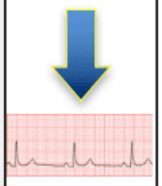
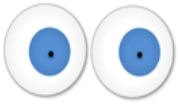
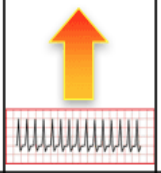
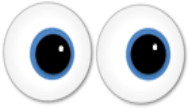
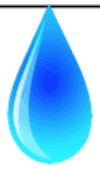
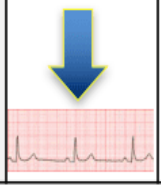
Mobile Integrated Healthcare, Community Wellness, Health Promotion, Prevention, and Emergency Room/Hospitals

SKILL/PROCEDURE	EMR	EMT	AEMT	PARAMEDIC
Determination of Alternate Transport Location		√*	√*	√*
Fall Prevention Assessment		√*	√*	√*
Injury Risk Assessment/Home Safety Assessment		√*	√*	√*
Treat and Release Protocol Implementation		√*	√*	√*
Care Plan Follow-Up				√*
Comprehensive Physical Exam				√*
Ear, Nose, and Throat (ENT) Assessment (Advanced)				√*
Hospital Discharge Follow-Up				√*
Medication Compliance Monitoring				√*
Mental Health Assessment (Advanced)				√*
Oral Health Assessment (Advanced)				√*
Social Evaluation (Advanced)				√*
Physician Extension Under Direct Tele-Medicine Supervision in Accordance with LRS 37:1271				√*
Point of Care Testing				√*

2022 Louisiana Emergency Medical Services (EMS) Scope of Practice

Point of Care Non-Invasive, CLIA Waived Tests or Assessments That Do Not Require Independent Provider Judgment		√*	√*	√*

TOXIDROMES

	HR & BP	Resp.	Temperature	Pupils	Bowel Sounds	Diaphoresis
Anticholinergic **Anticholinergics** –Atropine, scopolamine, glycopyrrolate benztropine, trihexyphenidyl **Antihistamines** – Chlorpheniramine, Cyproheptadine, Doxylamine, Hydroxyzine, Dimenhydrinate, Diphenhydramine, Meclizine Promethazine		No change 		Dilated 		
Cholinergic Organic Phosphorous Compounds: Carbamates • Arecholine, Pilocarpine, Urecholine (Betanechol), Carbachol, Choline, Metacholine, Mushrooms	No change 	No change 	No change 	Pinpoint 		
Opioid Morphine • Codeine • Tramadol • Heroin • Meperidine • Diphenoxylate • Hydromorphone • Fentanyl • Methadone • Propoxyphene • Pentazocine • DXM • Oxycodone • Hydrocodone				Pinpoint 		
Sympathomimetic Caffeine, cocaine, amphetamines, methamphetamines, Ritalin, LSD, Theophylline, MDMA				Dilated 		
Sedative-Hypnotic anti-anxiety agents, muscle relaxants, antiepileptics and preanesthetic medications –Barbituates –Benzodiazepines				No change 		

Trauma Score

Adult Trauma Score

GCS		Systolic BP		Respiratory Rate	
13 - 15	4	> 89	4	10 - 29	4
9 - 12	3	76 - 89	3	>29	3
6 - 8	2	50 - 75	2	6 - 9	2
4 - 5	1	1 - 49	1	1 - 5	1
3	0	0	0	0	0

Pediatric Trauma Score

Assessment / Component	Score		
	2	1	-1
Weight	> 20 kg	10 - 20 kg	< 10 kg
Airway	Normal	Maintainable	Unmaintainable
CNS	Awake	+LOC	Comatose
Systolic BP	> 90 mmHg	50 - 90 mmHg	< 50 mmHg
Open Wounds	None	Minor	Major
Skeletal	None	Closed Fx	Open/Multiple Fx

VITAL SIGNS

Age	SBP	HR	RR
PREEMIE	50 - 90	120 - 170	40 - 70
NB	60 - 100	100 - 160	30 - 60
4MO	70 - 100	105 - 160	30 - 60
6MO	70 - 100	110 - 160	24 - 38
1YR	75 - 105	90 - 150	22 - 30
2YR	75 - 110	85 - 140	22 - 30
3YR	76 - 115	85 - 140	22 - 30
4YR	78 - 115	75 - 120	22 - 26
5YR	80 - 115	70 - 115	20 - 24
6YR	82 - 120	70 - 115	20 - 24
7YR	84 - 120	70 - 110	16 - 22
8YR	86 - 120	70 - 110	16 - 22
9YR	88 - 120	65 - 105	16 - 22
10YR	90 - 120	60 - 100	16 - 22
11YR	90 - 120	60 - 100	16 - 22
12YR	90 - 120	60 - 100	16 - 22
13YR	90 - 120	60 - 100	16 - 22
ADULT	100 - 140	60 - 100	12 - 20

Postural (orthostatic) vital signs should be used as an additional assessment tool in the suspicion of hypovolemia. An initial set of vital signs should be taken with the patient in a supine position. A second set of vital signs should be taken after *one (1) minute* of standing. Indicators of positive orthostatic changes could be any *one* or any *combination* of the following:

1. Increase in pulse rate of ≥ 20 – 30 bpm after standing
2. Drop in systolic blood pressure of ≥ 20 mmHg after standing
3. Significant dizziness, lightheadedness, and/or syncope upon standing

NOTES:

- Certain medications can prevent a patient's pulse from increasing, even in the presence of hypovolemia
- Postural vital signs should not be assessed if a spinal injury is suspected
- Be prepared for the possibility of syncope while having a patient stand

LERN Protocols / References

Table of Contents

LERN DESTINATION PROTOCOL: TRAUMA

Call LERN Communication Center at 1-866-320-8293 for patients with a trauma mechanism and meeting one or more of the following criteria:

Assess for extremis

- Unmanageable airway
- Traumatic cardiac arrest
- Burn patient > 40 % BSA without IV or IO access
- Tension pneumothorax
- Burn patient without patent airway

YES → **Closest ED/Trauma Center**

NO

Measure vital signs and mental status

- Unable to follow commands (Motor GCS < 6)
- RR < 10 or > 29 breaths per minute, (<20 in infant aged <1 year)
- Respiratory distress or need for support
- Room air pulse oximetry < 90%
- Age 0-9: SBP < 70 mmHG + (2 x age in years)
- Age 10-64: SBP < 90 mmHG or HR > SBP
- Age ≥ 65: SBP < 110 mmHG or HR > SBP

NO

Assess injury patterns

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity or suspected flail chest
- Suspected fracture of two or more proximal long bones
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Suspected pelvic fracture
- Skull deformity or suspected skull fracture
- Suspected spinal injury with new motor or sensory loss
- Active bleeding requiring a tourniquet or wound packing with continuous pressure

YES → **Transport to Trauma Center/Trauma Program** These patients should be transported to the highest level of care within the defined trauma system. This is a Level 1 or a Level 2 Trauma Center or Trauma Program. ** If distance or patient condition impedes transport to Level 1 or 2, consider transport to a Level 3 Trauma Center/Trauma Program or most appropriate resourced hospital.*

NO

Assess mechanism of injury

- Falls from height >10 ft (all ages)
- High-risk auto crash
  - -- Intrusion, including roof:
    - > 12 inches occupant site
    - > 18 inches any site
    - Need for extrication for patient entrapped
  - -- Ejection (partial or complete) from automobile
  - -- Death in the same passenger compartment
  - -- Child (Age 0-9) unrestrained or in unsecured child safety seat
  - -- Vehicle telemetry data consistent with a high risk of injury
- Auto vs. pedestrian/bicyclist/ATV thrown, run over, or with significant (>20 mph) impact
- Rider separated from transport vehicle with significant impact (e.g. Motorcycle, ATV, Horse, etc.)

YES → **Transport to Trauma Center/Trauma Program** which, depending upon the defined trauma system, need not be the highest level trauma center/ program. If no Trauma Center/Trauma Program in the region, LCC may route to the most appropriate resourced hospital.

NO

Assess special patient or system considerations

- Older Adults
  - -- Age ≥ 65 with evidence of traumatic injury
  - -- Fall from any height with evidence of significant head impact
  - -- Use of anticoagulant or antiplatelet drugs
- Children
  - -- Age ≤ 5 with evidence of traumatic injury
  - -- Fall from any height with evidence of significant head impact
- Burns
  - -- In conjunction with trauma
  - -- High voltage electrical injuries
- Pregnancy >20 weeks
- Major joint dislocations (hip, knee, ankle, elbow)
- EMS provider judgment

YES → **Transport to Trauma Center/Trauma Program** or hospital capable of timely and thorough evaluation and initial management of potentially serious injuries. Consider consultation with medical control.

NO

Multi / Mass Casualty Incident → NO → **Transport according to local protocol**

LOUISIANA EMERGENCY RESPONSE NETWORK

Destination Protocol
TRAUMA

When in doubt, transport to a trauma center.

Rev. 8/18/2022
Eff. 1/1/2023

LERN Destination Protocol: Stroke

LOUISIANA EMERGENCY RESPONSE NETWORK
Right Place. Right Time. Right Care.

STROKE DESTINATION PROTOCOL

Time of Onset Known

SUSPECTED STROKE:
- Determine TSO: TIME OF STROKE ONSET[1]
- Determine LSN: LAST SEEN NORMAL[1]
- Determine TSN: TIME SYMPTOMS NOTED[1]
- Perform VAN assessment

LERN Communication Center
1-866-320-8293

Time of Stroke Onset Known?

NO → SEE OTHER SIDE

YES

Suspected LVO? (VAN)

YES

- TSO < 4.5 hours → Transport to closest endovascular* capable facility if < 15 min[2] additional transport time. **Otherwise** transport to closest stroke facility
- TSO 4.5 – 24 hours → Transport to closest endovascular* capable facility if <30 min[2] additional transport time. **Otherwise** transport to closest stroke facility
- TSO > 24 hours → Transport to closest stroke facility (Excluding SCOED)

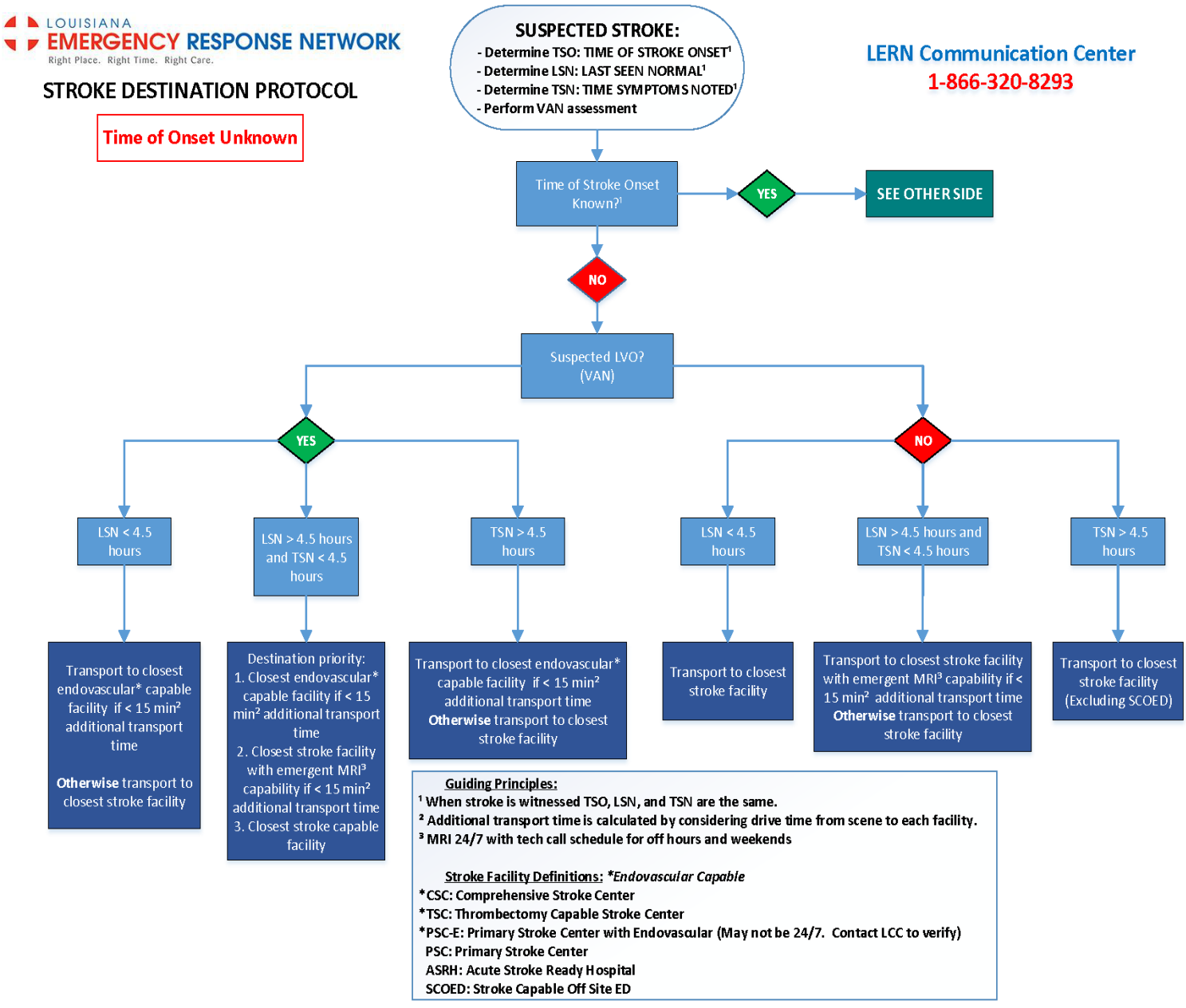
NO

- TSO < 4.5 hours → Transport to closest stroke facility
- TSO > 4.5 hours → Transport to closest stroke facility (Excluding Stroke Capable Off-Site ED)

Guiding Principles:
[1] When stroke is witnessed TSO, LSN, and TSN are the same.
[2] Additional transport time is calculated by considering drive time from scene to each facility.

Stroke Facility Definitions: **Endovascular Capable*
*CSC: Comprehensive Stroke Center
*TSC: Thrombectomy Capable Stroke Center
*PSC-E: Primary Stroke Center with Endovascular (May not be 24/7. Contact LCC to verify)
PSC: Primary Stroke Center
ASRH: Acute Stroke Ready Hospital
SCOED: Stroke Capable Off Site ED

LERN Destination Protocol: Stroke



LERN Fast Assessment

FACE

Ask the person to smile. Does one side of the face droop?

ARMS

Ask the person to raise both arms. Does one arm drift downward?

SPEECH

Ask the person to repeat a simple sentence. Does the speech sound slurred or strange?

TIME

If you observe any of these signs (independently or together)...

LERN VAN ASSESSMENT

LOUISIANA
EMERGENCY RESPONSE NETWORK

Table 1 Vision, aphasia, neglect emergent large vessel occlusion screening tool

Stroke VAN

How weak is the patient? Raise both arms	☐ Mild (minor drift) ☐ Moderate (severe drift - touches or nearly touches ground) ☐ Severe (flaccid or no antigravity) ☐ Patient shows no weakness. Patient is VAN negative

(exceptions are confused or comatose patients with dizziness, focal findings, or no reason for their altered mental status then basilar artery thrombus must be considered; CTA is warranted)

Visual disturbance	☐ Field cut (which side) (4 quadrants) ☐ Double vision (ask patient to look to right then left; evaluate for uneven eyes) ☐ Blind new onset ☐ None
Aphasia	☐ Expressive (inability to speak or paraphasic errors); do not count slurring of words (repeat and name 2 objects) ☐ Receptive (not understanding or following commands) (close eyes, make fist) ☐ Mixed ☐ None
Neglect	☐ Forced gaze or inability to track to one side ☐ Unable to feel both sides at the same time, or unable to identify own arm ☐ Ignoring one side ☐ None

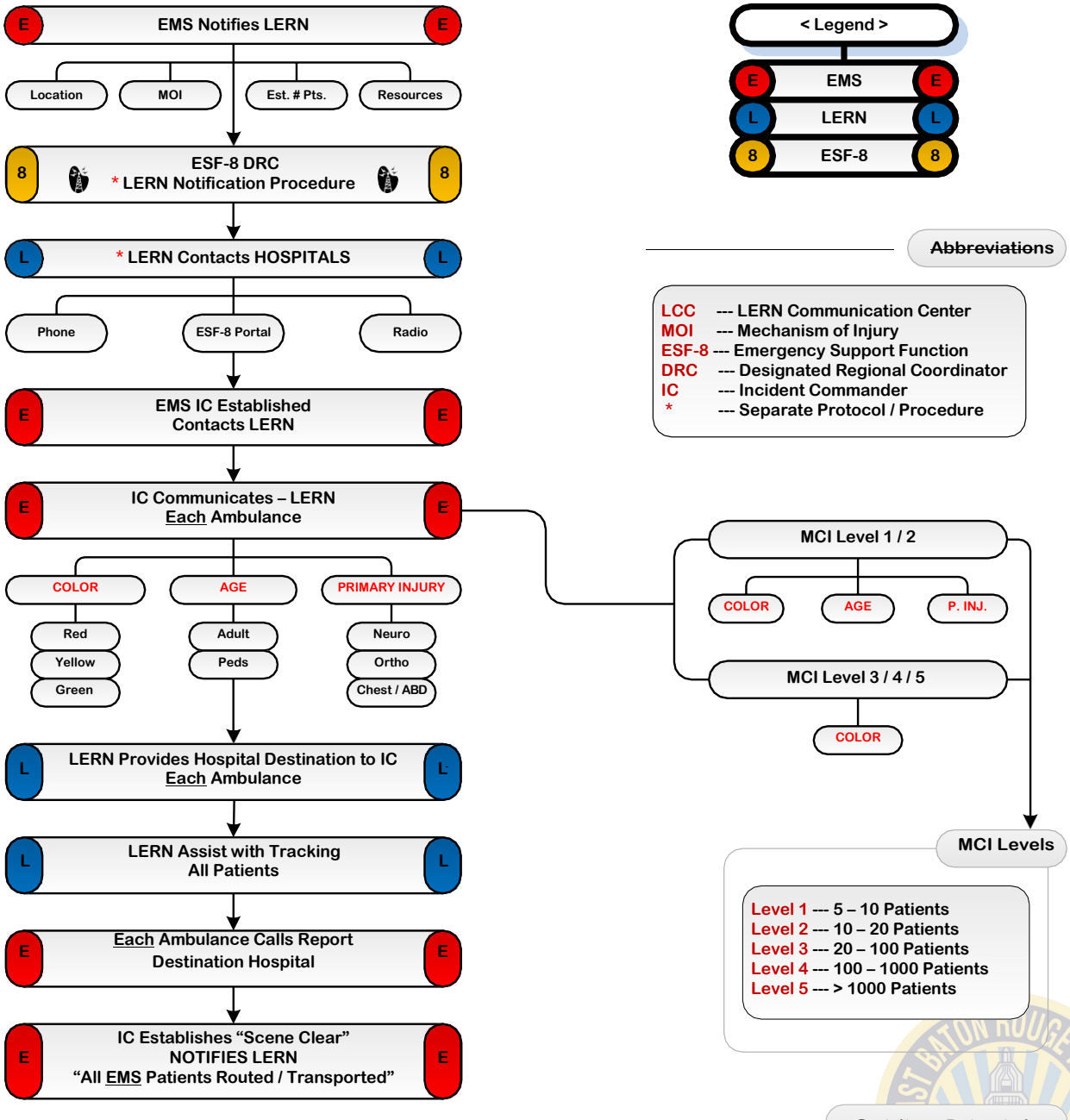
Patient must have weakness plus one or all of the V, A, or N to be VAN positive. VAN positive patients had 100% sensitivity, 90% specificity, positive predictive value 74%, and negative predictive value 100% for detecting large vessel occlusion.
CTA, CT angiography; VAN, vision, aphasia, and neglect.

Source: Teleb MS, Ver Hage A, Carter J, et al.J NeuroIntervent Surg Published Online First: doi:10.1136/ neurintsurg-2015-012131

LERN MCI PROCEDURE

MULTI / MASS CASUALTY INCIDENT (MCI)

LERN < PROCEDURE >



~~Abbreviations~~

LCC --- LERN Communication Center
MOI --- Mechanism of Injury
ESF-8 --- Emergency Support Function
DRC --- Designated Regional Coordinator
IC --- Incident Commander
* --- Separate Protocol / Procedure

~~Guiding Principles~~

> EMS command will attempt to relay information to LERN regarding the number and triage status of family members.
> Medics will contact LERN following the call to provide the necessary patient information to the LCC staff.

SD 3/1/14 ^ rev. 2/21/14 ^ L-pe-np-nba

LOUISIANA EMERGENCY RESPONSE NETWORK

GUIDELINE CHANGELOG

East Baton Rouge Parish
Emergency Medical Services
Guidelines Changelog

2024-03-25

- Guideline
  - Chemical Sedation
    - Change in dose of Midazolam in Adult RASS +2
    - Change in dose of Midazolam in Adult RASS +3
  - Bradycardia (Adult)
    - Remove Dopamine
  - CHF/Cardiogenic Shock
    - Remove Dopamine
  - Delayed Sequence Intubation
    - Remove Etomidate
  - Emergency Childbirth
    - Remove Meconium Aspirator

2024-01-01

- Guidelines
  - Pericardiocentesis – Removed
  - BRPD Blood Draw – Added to Procedures
  - Treat in Place Guideline – Removed
  - Alternative Destination Transports – Ortho- Removed
  - Alternative Destination Transports – Low Acuity- Removed
  - Cefazolin – Added penetrating trauma for usage
  - LERN Stroke Destination Guideline – Revised
  - Minor corrections in fonts

2023-08-04

- Guidelines
  - Delayed Sequence Intubation – Page
    - Added Etomidate
  - Headache/Vertigo – Page
    - Change in Droperidol Dose
    - Added abdominal pain
  - Treat in Place – Page
    - Added Morphine to exclusions
  - Medication Matrix – Page
    - Added Etomidate and Morphine
  - Pain – Page
    - Added to pearls Ketamine considerations

GUIDELINE CHANGELOG

2022-08-01

- Guidelines
  - Pain Management – Page 16
    - AEMT Medication Update
  - Procedural Sedation – Page 17
    - AEMT Medication Update
  - Post Advanced Airway Care – Page 24
    - AEMT Medication Update
  - Allergic Reaction / Anaphylactic Reaction – Page 39
    - AEMT Medication Update
  - Chemical Sedation – Page 41
    - AEMT Medication Update
  - Epistaxis – Page 46
    - Addition of guideline
  - Headache / Vertigo – Page 47
    - AEMT Medication Update
  - Nausea / Vomiting – Page 49
    - AEMT Medication Update
  - Overdose / Toxicity – Page 51
    - AEMT Medication Update
  - Respiratory Distress (Pediatric) – Page 53
    - AEMT Medication Update
  - Stroke / TIA – Page 55
    - Change continuous 12 lead recommendation to just an initial acquisition
  - Crush Injury / Syndrome – Page 58
    - AEMT Medication Update
  - Extremity Injury – Page 59
    - Addition of Cefazolin
  - Treat In Place – Page 69
    - Add pearl for recontacting the physician for unsuccessful plan of care
- Medications
  - Cefazolin – Page 82
    - Addition of medication
  - Diphenhydramine – Page 85
    - Add Chemical Sedation to Guideline area
  - Ketorolac – Page 102
    - Correct spelling
- References
  - LA BEMS Scope of Practice – Page 198 to 208
    - Update to most recent version

Hotfix 2022-09-14

- Cefazolin formulary page update – Page 82
- Invasive Ventilation Tidal Volume Chart update and addition of a Pearl – Page 115
- ADT - Ortho add Fentanyl to Ketamine Pearl – Page 68
- TIP – Page 69

GUIDELINE CHANGELOG

2022-05-01

- Front Matter
  - Guideline Committee – Page 4
    - Addition of Committee member page
  - Table of Contents – Page 6
    - Addition of EMS Explorers guideline
    - Addition of Basic Life Support Exclusion Criteria
- Guidelines
  - EMS Explorers – Page 18
    - Addition of guideline for EMS Explorers
  - Basic Life Support Exclusion Criteria – Page 19
    - Addition of guideline for BLS appropriate patients
  - Airway / Oxygenation – Page 20
    - Add Bi-Level alongside CPAP
  - Crash Airway – Page 21
    - Add option for supraglottic airway
  - Delayed Sequence Intubation – Page 22
    - Addition of guidance regarding premixing push-dose epinephrine
  - Respiratory Distress (Adult) – Page 51
    - Addition of Bi-Level
- Medications
  - Table of Contents – Page 69
    - Remove Etomidate
  - Medication Matrix – Page 70
    - Remove Etomidate
  - Droperidol – Page 88
    - Add pregnancy contraindication
  - Ketorolac – Page 100
    - Change NSAID contraindication to “use within two weeks”
- Procedures
  - Table of Contents – Page 121
    - Addition of Bi-Level
  - Bi-Level Positive Airway Pressure – Page 123,124
    - Addition of new procedure
  - Simple Thoracostomy – Page 170
    - Adjust indications based on feedback from OLOL Trauma Services
- References
  - Table of Contents – Page 177
    - Addition of Consult Guide and DSI Checklist
  - Consult Guide – Page 182, 183
    - Addition of helpful checklist for consulting medical direction
  - Delayed Sequence Intubation Checklist – Page 184
    - Addition of helpful checklist for performing a DSI
  - Louisiana Bureau of Emergency Medical Services Scope of Practice – Page 193-203
    - Update to most recent LABEMS SOP

2022-03-01

- Guidelines
  - Pediatric Routine Medical Care - Page 12
    - Change pediatric age/weight to mirror Handtevy guidance

GUIDELINE CHANGELOG

- Change “Continuous 12 Lead” to “Continuous EKG”
- TIP Guideline - Page 65
  - Addition of Dialysis/Renal patients, lacerations to joint spaces, and temperature greater than 104° F to Absolute Criteria
  - Change Heart rate from 140 to 120 and Respiratory rate from 30 to 24
- Formulary
  - Droperidol - Page 85
    - Add repeat dosing for Headache / Vertigo and Nausea / Vomiting
  - Epinephrine - Pages 87,88
    - Remove ratio-based verbiage for concentration-based verbiage
    - Add IV push dose for shock
  - Fentanyl - Page 90
    - Add single dose maximum
  - Ketamine - Page 95
    - Add IV push dose for continuous sedation, adult only
- Procedures
  - Electrical Therapy - Page 130
    - Change 75 J to 85 J to reflect possible options provided by the X-Series
  - Medication Infusion - Page 154
    - Addition of a procedure page for medication infusions
  - Medication Labeling - Page 155
    - Addition of a procedure page for medication labeling
- References
  - LA BEMS Scope of Practice - Pages 188-193
    - Change title of pages to reflect the scope as belonging to the LA BEMS

2021-11-01

- Guidelines
  - All guidelines
    - Medication / Procedure nodes changed to include provider level information
      - Pages 14 to 65
  - Removed Guidelines
    - Anxious/Violent/Agitated
  - Added Guidelines
    - Chemical Sedation
      - Page 38
    - Headache / Vertigo
      - Page 43
  - Guideline Changes
    - Diabetic
      - Thiamine Removed
        - Page 41
- Formulary
  - Addition of the “Medication Matrix”
    - Indicates provider level information
      - Pages 67, 68
  - Removed Medications
    - Geodon
    - Thiamine

GUIDELINE CHANGELOG

- Ketorolac (Toradol)
  - Dose change from 30 mg to 15 mg
    - Page 97
- Midazolam
  - Addition of RASS score information to dosing
    - Page 104
- Tranexamic Acid (TXA)
  - Dose changed from 1g to 2g
    - Page 117

2021-04-22

- Guidelines
  - ACS / STEMI / NSTEMI / Angina
    - Change minimum SPO2 necessary for withholding oxygen administration from 92 to 90 per AHA guidance
    - Page 27
  - Anxious / Violent / Agitated
    - Reduction of Ketamine dosing for excited delirium
    - Page 36
  - Burns
    - Change fluid administration guidance to ABA pre-hospital recommendations
    - Page 51
  - Cardio-Cerebral Resuscitation (Adult)
    - Change defibrillation dosing to device manufacture recommendations per AHA guidance
    - Remove dual sequential per AHA guidance
    - Page 22
  - CHF / Cardiogenic Shock
    - Adjust for a preference of NTG when treating HTN
    - Remove Lasix
    - Page 30
  - Pain Management
    - Ketamine dosing change for severe pain
    - Page 14
  - Paramedic Initiated Referral
    - Addition of new guideline
    - Page 59
  - Post Airway Care
    - Ketamine dosing adjustment
    - Move Fentanyl out of midline
    - Page 20
  - Post Resuscitation Care
    - Ketamine dosing adjustment
    - Page 25
  - Procedural Sedation
    - Remove ketamine
    - Page 15
  - Tachycardia
    - Adjust cardioversion dosing to device manufacture recommendations per AHA guidance
    - Page 31
- Medications
  - Diltiazem
    - Remove COPD contraindication
    - Page 75
  - Ketamine Formulary
    - Dosing / Indications / Additional information changes
    - Pages 91, 92

GUIDELINE CHANGELOG

2021-01-29

- Change date format on front page and footers to YYYY-MM-DD for revisioning clarity
- Addition of Treat In Place and Alternate Destination Transport Guidelines
  - Added to Guideline Table of Contents
    - Page 7
  - Insertion of Guidelines
    - Pages 60 to 63
- Clarification to seizure definitions in Active Seizure(s) Guideline
  - Page 34

2020-10-14

- Add Mechanical CPR Procedure Page
  - Pages 145-146
- Add McGrath Video Laryngoscopy Procedure Page
  - Pages 143-144

2020-09-03

- Add clarifying language regarding a “full set of vitals” to Adult/Pediatric Routine Medical Care
  - Page 11, 12
- Add “Place patient on mechanical ventilator” to the Post Advanced Airway Care guideline
  - Page 21
- Add i-gel® procedure page
  - Page 137, 138
- Add Invasive Ventilation procedure page
  - Page 139
- Add “Two to fly” verbiage to the DSI guideline
  - Page 19
  - Addition of “must be present at patient side and in agreement” to flowchart
  - Addition of “All advanced airway providers (minimum of two) must be in agreement with DSI (“Two to Fly with DSI”)” to Pearls
- Adjust CPAP procedure page for Zoll® ventilator
  - Page 115, 116
- Adjust Needle Thoracostomy procedure page to reflect new preferred site
  - Page 143, 144
  - Change anterior-axillary to the preferred site
  - Change mid-clavicular to the alternate site
- Pearl addition to emphasize 20g or larger IV placement at or above AC for CTA considerations in Stroke/TIA
  - Page 50
  - Add “Consider placing a 20g or larger IV at or above the antecubital fossa on VAN positive patients to expedite CTA acquisition” to Pearls
  - Re-addition of the ResQPOD procedure page
  - Page 148, 149
- Re-Addition of hypertension definition into ACS/STEMI/NSTEMI/Angina guideline
  - Page 28
  - Add “hypertension is defined as a systolic > 140mmHg and/or diastolic > 90mmHg
- Rename Medication Assisted Intubation procedure page to Delayed Sequence Intubation
  - Page 121
- Update LERN Protocols
  - Page 182
  - Updated the LERN Stroke Destination Protocol reflecting a deprecation of the Level 1/2/3 nomenclature and movement to CSC/TSC/PSC/ASRH
- Verify Louisiana Scope of Practice is current
  - Page 174, 175, 176
  - Addition of BIPAP administration and management for Paramedics
  - Addition of Naloxone (intramuscular) for EMR
  - Addition of Intravenous pump medication administration
- Procedure pages refactored for readability
  - Page 111-157
  - Change to the very readable Open Sans font
  - Informational points changed to bullets; procedures left as numbered lists


EAST BATON ROUGE PARISH
EMERGENCY MEDICAL SERVICES
EMS
DEPARTMENT