Space Coast Regional EMS Medical Protocols

Fourth Edition 2023 – Volume I

Cape Canaveral Fire Department
Cocoa Beach Fire Department
Indialantic Fire Department
Melbourne Beach Fire Department
Patrick Fire & Emergency Services
Brevard County Fire Rescue

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INTRODUCTION

This document is the Emergency Medical Services Protocol for Paramedics and Emergency Medical Technicians working in pre-hospital settings for Brevard County Fire Rescue.

The contents of this protocol are shared by EMS provider agencies within the county. It includes Standing Medical Orders (Standing Orders) of each of all the Medical Directors in the County. Each standing order (protocol) may or may not be approved by the Medical Director of the EMS agencies working under this set of protocols based on the equipment availability or reasonable necessity to carry such equipment due to the nature of the two-tiered ALS response system that has been established in many municipal areas in Brevard County. Due to some variability in the standard of care for medical patients, specific Standing Orders (Protocols) may exist in protocol but not authorized by all EMS Medical Directors in Brevard County. If a protocol or a type of equipment or medication is not authorized by an EMS Medical Director of an ALS agency in Brevard County, this variance in authorization will be noted by an asterisk (*) in each protocol indicating “if available” or “approved” by the Medical Director. Medical Director preference and authorization has been maintained in this manner to assure that EMS care in the pre-hospital setting in Brevard County is standardized as much as possible.

These standing orders are instructions for patient medical care. The intent of this protocol is to include and expand upon standing orders found in the Brevard County regional protocol that is utilized by other EMS providers within Brevard County. This document is meant to serve as a standard among all Brevard County Fire Rescue EMS providers to ensure the highest quality of patient care.

APPROVAL

These protocols are approved by the Brevard County Fire Rescue Medical Director and are effective as of September 16, 2023.

John McPherson, M.D.

ACKNOWLEDGEMENTS

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DOCUMENT STRUCTURE

Areas are alphabetically arranged by medical condition. Appendices are provided for reference. Each condition contains 7 areas with an optional (as needed) area, "Notes", as follows:

Rationale:	Brief overview of the subject
Assessment Checklist:	Suggests potential conditions, which should be evaluated.
ALS – BLS Transport Triage:	Protocols to be used when patient care may be provided by an EMT or Non-Solo Paramedic.
BLS Care:	Basic Life Support Care - This section outlines the approved care for First responders, Emergency Medical Technicians, and Paramedics. Interventions in the BLS Standard of Care Protocol color coded in **BLUE** may be performed by an EMT, Solo Paramedic or Non-Solo Paramedic.
ALS Care:	Advanced Life Support Care - This section outlines the approved care for Paramedics. Interventions in the ALS Standard of Care Protocol color coded in **RED** may only be performed by a Solo Paramedic or by a Non-Solo Paramedic who is under the direct supervision of a BCFR Solo Paramedic. The documentation in the run report must reflect who the BCFR Solo Paramedic was supervising the patient care under this level.
Online Medical Control:	The consultation between EMS providers and an emergency department physician to guide care for an individual patient or EMS incident.
Special Considerations & References:	Additional resources/reference information, differential diagnosis, underlying pathophysiology and/or medication actions. This section is designed to assist field providers with additional information as it pertains to determining the possible root cause of the chief complaint and possible treatment modalities for consideration.
Notes:	Additional comments, cautions, and information.

DOCUMENT MAINTENANCE

The fourth edition of the protocols was approved by the Brevard County Fire Rescue Medical Director and is effective as of September 16, 2023. Updates or revisions are recorded in the Appendix. This record is maintained by the Brevard County Fire Rescue Office of EMS.

PURPOSE AND RATIONALE

"Members are expected to function fully within their scope of training and level of certification and to properly utilize, when available and in working order, the appropriate medical equipment and medication when treating patients."

This protocol is a *guideline* for patient care. It gives authorization to provide approved treatments under the license of the Medical Director. It will guide patient care for common conditions and serve as a framework for discretionary decision making for uncommon conditions. The department protocols supersede all other EMS medical guidelines ie: ACLS, PHTLS, etc.

Any treatment or procedure not identified in protocol should be guided by the most current Department of Transportation (DOT) EMT or EMT-P curricula, American Safety and Health Institute (ASHI), American Heart Association (AHA), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS) or other department accepted pediatric certification, Handtevy Pediatric Resuscitation System (HPRS), International Trauma Life Support (ITLS), Prehospital Trauma Life Support (PHTLS), ALS Toxmedic treatment modalities and Basic Life Support (BLS) curricula. Any deviation from the protocol must be within the provider's scope of practice (BLS and ALS), must be justified by the provider and clearly documented in the ePCR narrative. Providers should, when possible, contact the Emergency Department physician to resolve any questions about patient care.

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.

Transferring Patient to Emergency Department Personnel

If a patient requires ALS intervention throughout transport, for example, airway management with the use of oxygen, the cardiac monitor, and any equipment necessary for monitoring the patient shall be left on the patient until the patient is transferred to emergency department personnel at the receiving hospital or freestanding emergency medicine facility. No EMS transported patient shall be left by the EMS crew until patient turnover has been accomplished between the EMS crew (EMT and/or paramedic) and emergency department nurse, physician or hospital approved medical provider with equal or greater level of training than a certified paramedic. In addition, no crew once in the emergency department with a patient shall leave the emergency department to transport a patient to another emergency department without consulting with the emergency department physician and/or charge nurse.

EMS OPERATIONS

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

On Scene Management

- Scene Safety (BSI and safety protective equipment)
- Scene Size-up
    - Mass Casualty Incident (any incident with 5 or more patients, or when the number and acuity of patients overwhelms the rescuer's ability to provide care in the usual manner)
    - Number of patients
    - Mechanism of Injury/Nature of Illness
    - Condition Action's Needs (CAN)
    - Additional Resources
        - Aeromedical transport
        - Law enforcement
        - Fire suppression units
        - Heavy rescue unit
        - Required Ambulances: 1 ambulance per victim
        - District Chief
        - EMS Chief and Medical Director
    - Motor Vehicle Crash
        - Number of vehicles and victims
        - Entrapment
        - Extrication
        - Road blockage
        - Fuel leakage
        - Airbags deployed
        - Is the driver and/or passenger compartment intact?
    - Trauma, Stroke, Sepsis, and STEMI Alerts
        - Transport to appropriate "Alert" capable receiving facility
    - Online Medical Control

Transport Destinations

ALL CLASS ONE (RED) PATIENTS – Unstable
Class One (Red) patients are patients who are cardiorespiratory compromised, hemodynamically unstable, experiencing uncontrollable hemorrhage and/or do not have a secure airway and/or are in cardiac arrest.

- Shall be transported to the closest hospital emergency department.

ALL CLASS TWO (YELLOW) MEDICAL PATIENTS – Potentially Unstable
Class Two (Yellow) patients are patients who are experiencing a medical emergency and are likely to decompensate if medical attention is not provided immediately.

- Shall be transported to the closest appropriate emergency department or patient's choice of hospital after being informed of the potential complications even death by not being transported to the closest emergency department. In addition, the crews shall obtain a patient care refusal signature from the patient and witnesses.

ALL CLASS THREE (GREEN) PATIENTS – Stable
Class Three (Green) patients are patients who do not require urgent attention by an emergency department physician.

- Shall be transported to the closest appropriate emergency department.

TRAUMA PATIENTS

- All adult trauma alert patients meeting trauma alert criteria, shall be transported to a Trauma Center:
  - Holmes Regional Medical Center (Level II)
  - Orlando Regional Medical Center (Level I)
  - Halifax Medical Center (Level II)
  - Central Florida Regional Hospital (Level II)
- All pediatric trauma alert patients less than 16 y/o meeting trauma alert criteria, shall be transported to Arnold Palmer (APH) Hospital (Level I) Trauma Center, in Orlando.
- Pediatric trauma alert patients who are stable shall be transported by ground if aeromedical transport is not available.
- Pediatric trauma alert patients who are unstable but aeromedical transport is not available may go to the nearest Trauma Center. However, if the pediatric patient has an unstable airway or uncontrollable hemorrhage, the EMS crew may go the closest emergency department for stabilization.
- Trauma patients who arrest in the presence of Fire Rescue personnel, shall be transported to the closest emergency department.
- All intubated trauma transfers **MUST** be sedated by the primary transfer facility.

STEMI ALERTS

- Cape Canaveral Hospital, Holmes Regional Medical Center, Melbourne Regional, Parrish Medical Center, Sebastian River Medical Center and Rockledge Regional are approved STEMI receiving facilities.

STROKE ALERTS

- Holmes Regional Medical Center is an approved Thrombectomy Capable Stroke Center (TCC) for treatment of suspected large vessel occlusion strokes and subarachnoid hemorrhages and Primary Stroke Center (PSC) **(Thrombectomy/Primary Stroke Center)**
- Cape Canaveral Hospital, Palm Bay Community Hospital, Parrish Medical Center, Rockledge Regional and Viera Hospital are approved **Primary Stroke Centers (PSC)**
- For Out of County Stroke capable receiving centers, refer to Hospital Locations in Chapter 8.

PEDIATRIC PATIENTS

- For the purposes of transport, a pediatric patient is considered less than 16 y/o.
- All ALS Pediatric patients shall be transported to the closest emergency department unless it is a Trauma Alert. If Trauma Alert, pediatric patients shall be transported to Arnold Palmer (APH) Hospital (Level I) Trauma Center, in Orlando.
- Pediatric patients receiving long-term care from an out of county hospital shall be transported to the hospital providing care unless the pediatric patient is unstable and will require transport to the closest emergency department.

OBSTETRICAL PATIENTS

- Obstetrical patients greater than 20-weeks and less than 36-weeks of gestation **or** have anticipated complications associated with their pregnancy, shall be transported to any of the following emergency departments:
    - Cape Canaveral Hospital
    - Holmes Regional Medical Center
    - Parrish Medical Center
    - Rockledge Regional Medical Center
- Obstetrical patients with minor complaints unrelated to their pregnancy may be transported to the closest emergency department.
- For imminent delivery, the patient should be transported to the **closest** emergency department.
- As an exception to the above, if the patient and/or patient's OB physician request a destination not listed above, and the patient is stable, the patient may be transported to a different OB facility within reason.

DECOMPRESSION SICKNESS & CARBON MONOXIDE POISONING

- Patients with decompression sickness or carbon monoxide poisoning shall be transported to the closest emergency department. If confirmed, the patient is experiencing decompression sickness or carbon monoxide poisoning, the crew will consult with online medical control for transport to an emergency department that has a hyperbaric chamber. Prior to transport of a patient requiring hyperbaric medicine crews shall:

- Notify Brevard while on scene that transport to an emergency department that has a hyperbaric chamber will be required.
- Brevard shall check the availability of hyperbaric chambers closest to Brevard County. Below is a list of hospital facilities who have hyperbaric chambers and are in order from closest to furthest in distance from Brevard County:
  - Advent Health South – 601 East Rollins, Orlando, FL (407-303-1940)
  - St Mary's Medical Center – 901 45th St, West Palm Beach, FL (561-844-6300)
  - Blake Medical Center – 2020 59th St W, Bradenton, FL (941-792-6611)
  - Mercy Hospital – 3663 S Miami Ave, Miami, FL (305-854-4400)
  - Spring Hill Medical Center – 3719 Dauphin St, Mobile, AL (251-460-5333)

PSYCHIATRIC PATIENTS

- Stable or Unstable psychiatric patients experiencing a medical emergency shall be transported to the closest emergency department for stabilization.
- Psychiatric patients who are not experiencing a medical or traumatic emergency and are being placed under a Baker Act shall be transported by Coastal Health System or Law Enforcement to Circles of Care or Palm Point Behavioral Health Center.

BLS Care
Minimum BLS Standard of Care

INFORMATION

The following BLS Standard Requirements shall be performed on all BLS patients. Whenever possible, verbal consent should be obtained prior to treatment. BLS care is specific for use by the basic provider (EMT).

LEVEL OF CONSCIOUSNESS

- Assess Level of Consciousness (AVPU, GCS)
    - **MENTAL STATUS (AVPU)**
        - **A**lert: to person, place, and time, and event (AAOX4)
        - **V**erbal: responds only to verbal stimuli
        - **P**ain: responds only to painful stimuli
        - **U**nresponsive

AIRWAY

- Positioning: head-tilt/chin-lift or modified jaw thrust for suspected c-spine injury
- Semi-conscious patients with an intact gag reflex shall have a nasopharyngeal airway inserted, unless contraindicated. Unresponsive patients without a gag reflex shall have an oropharyngeal airway inserted, unless contraindicated. If ventilation is required for more than two minutes, a Supra-glottic Airway (SGA) should be inserted.
- Recovery position for spontaneously breathing patients: altered mental status, postictal, suspected drug overdose, etc., if no suspected spinal injury
- Suction as needed.

OXYGEN ADMINISTRATION

- **Oxygen should ONLY be administered in order to maintain a targeted SpO_2 of >92% or maintain at 90% for COPD & asthma patients.**
- Do not withhold oxygen if the patient is dyspneic or hypoxic.
- If oxygen saturation cannot be maintained, ventilatory support should be provided.

VENTILATION

- Adults: 10 breaths/minute **(1 breath every 6 seconds)**
- Children: 20 breaths/minute **(1 breath every 3 seconds**)
- Neonates: 40 breaths/minute **(1 breath every 1.5 seconds)**
- Patients with a pulse that have an advanced airway should be ventilated at a rate of 10 breaths/minute **(1 breath every 6 seconds)**
- 1 breath every 10 seconds permissive hypercarbia

CIRCULATION

- Carotid and radial pulse present, assess capillary refill, assess skin color, condition and temperature.
- Apply AED/LP 15 on all unconscious patients.
- Perform HP-CPR on all cardiac arrest patients and defibrillate as needed.

- After oxygenation and ventilation of 1 minute for infants/children and 30 seconds for neonates (birth to 1 month), begin chest compressions if the heart rate remains below 60 BPM with signs of poor perfusion (AMS).

VITAL SIGNS

- Vital signs:
  - Blood Pressure (Initial blood pressures shall be taken manually)
  - Pulse (rate and quality)
  - Respiratory (rate and quality)
  - Skin (color, condition, and temperature)
  - Pulse Oximetry
  - Capillary Refill
- Patients triaged Red and Yellow will require a minimum of 3 sets of vitals and shall be taken every 5 minutes.
- Patients triaged Green will require a minimum of 2 sets of vitals

GLUCOSE

- A BGL shall be documented for patients with any of the following: a history of diabetes, an altered mental status, general weakness, seizure, syncope/lightheadedness, dizziness, poisoning, stroke, and cardiac arrest.

PATIENT HISTORY

- **CHIEF COMPLAINT:** Why the person called 911
- **HISTORY OF THE PRESENT ILLNESS (O,P,Q,R,S,T,A)**
  - **ONSET:** Did the symptoms appear gradual or sudden?
  - **PALLIATIVE:** What makes the symptoms better?
  - **PROVOKE:** What makes the symptoms worse?
  - **PREVIOUS:** Previous similar episodes?
  - **QUALITY:** (What kind of pain?) pressure, squeezing, aching, dull, etc.
  - **RADIATION:** Does the pain or discomfort radiate? Where?
  - **Severity of pain:** 1-10 scale
  - **Time:** What time did the symptoms begin?
  - **Associated:** What are the associated signs and symptoms?
- **S.A.M.P.L.E. HISTORY**
  - **SIGNS & SYMPTOMS**
  - **ALLERGIES**
  - **MEDICATIONS:** Prescribed, over the counter, or not prescribed to patient
  - **PAST MEDICAL HISTORY**: Heart attack, asthma, COPD, diabetes, hypertension, stroke, etc.
  - **LAST ORAL INTAKE**
  - **EVENTS PRECEDING**

OTHER

- Hemorrhage Control if indicated
- Reassess after interventions or q3-5 minutes
- Assist with Basic and 12 Lead ECG application as indicated by protocol
- IV if department approved

ALS Care
Minimum ALS Standard of Care

INFORMATION
The following ALS standard requirements shall be performed on all ALS patients. Whenever possible, verbal consent should be obtained prior to treatment. ALS care is specific for use by the advanced provider (Paramedic).

AIRWAY

- Advanced airway placement and airway stabilization (if indicated by protocol)
    - Semi-conscious or unresponsive patients with an intact gag reflex shall have an NPA inserted unless contraindicated.
    - Unresponsive patients without a gag reflex shall have an OPA inserted.
    - Patients who require ventilatory support for more than two minutes should be intubated, with the exception of patients in cardiac arrest.
    - If an airway cannot be secured via ETT intubation, a supra-glottic Airway (SGA) should be inserted.
    - If an airway cannot be secured by any other means, and the patient cannot be effectively oxygenated or ventilated, a cricothyrotomy should be performed.

OXYGEN ADMINISTRATION

- Supplemental Oxygen as indicated by protocol
    - Oxygen should ONLY be administered in order to maintain SpO_2 of >92% or maintain at 90% for COPD & asthma patients. Do not withhold oxygen if the patient is dyspneic or hypoxic.
    - Pulse oximetry should be documented (pre and post oxygen administration) and applied for continuous monitoring on all ALS patients.
    - If oxygen saturations cannot be maintained, ventilatory support should be provided.
    - Nasal capnography applied only if indicated by protocol.

VENTILATION

- Ventilatory support shall be accomplished via BVM with either an NPA/OPA, SGA, or ETT intubation.
- The goal is to maintain an oxygen saturation >92% and $EtCO_2$ levels between 35-45 mmHg (with the exception of COPD and asthma patients).
- Any patient with a pulse who requires ventilation with a BVM for greater than two minutes, should be intubated (excluding children).
- Endo-tracheal intubation shall be confirmed by: visualization of the ETT passing through the vocal cords, and continuous $EtCO_2$ monitoring. $EtCO_2$ waveform is the deciding factor if to leave the endotracheal tube in place or remove it.
- Ventilatory Rates
    - Adults: 10 breaths/minute **(1 breath every 6 seconds)**

- Children: 20 breaths/minute **(1 breath every 3 seconds)**
- Neonates: 40 breaths/minute **(1 breath every 1.5 seconds)**
- Patients with advanced airways should be ventilated at a rate of 10 breaths/minute **(1 breath every 6 seconds)**
- 1 breath every 10 seconds permissive hypercarbia

CIRCULATION

- Carotid and radial pulse present, assess capillary refill, assess skin color, condition and temperature.
- Apply AED/LP 15 on all unconscious patients.
- Perform HP-CPR on all cardiac arrest patients and defibrillate as needed.
- After oxygenation and ventilation of 1 minute for infants/children and 30 seconds for neonates (birth to 1 month), begin chest compressions if the heart rate remains below 60 BPM with signs of poor perfusion (AMS).
- If cardiac arrest is present immediately advise "Brevard".

VITAL SIGNS

- Vital signs:
  - Blood Pressure
  - Pulse (rate and quality)
  - Respiratory (rate and quality)
  - Skin (color, condition, and temperature)
  - Pulse Oximetry (Patients with blood PaO_2 saturation of <92% will receive nasal capnography if available.)
  - Capillary Refill
  - Blood glucose level
- Patients triaged Red and Yellow will require a minimum of 3 sets of vitals and shall be taken every 5 minutes.
- Patients triaged Green will require a minimum of 2 sets of vitals
- A blood pressure shall be checked before and after the administration of a drug known to affect blood pressure.
- For the purposes of these protocols, adult hypotension is defined as a systolic blood pressure <100mmHg with signs and symptoms of hypoperfusion or a systolic blood pressure of <90mmHg.
- Initial blood pressures shall be taken manually. A manual blood pressure should be taken to confirm any abnormal or significant change of an automatic blood pressure cuff reading.

$EtCO_2$

- Should be applied to the following patients:
  - In respiratory distress or requiring ventilation support (ETT, SGA, CPAP, etc.)
  - With an altered mental status, seizure, etc.

- Sedated patients or patients receiving pain medication
- Any patients experiencing a medical emergency in which the advanced provider determines that monitoring $EtCO_2$ is required as part of the care being rendered.

ECG MONITORING

- All ALS patients shall be continuously monitored in lead II.
- Patients who present with any of the following cardiac or possible cardiac symptoms shall have a 12 lead ECG performed:
  - Chest/arm/neck/jaw/upper back/shoulder/epigastric pain or discomfort
  - Palpitations
  - Syncope, lightheadedness, general weakness, or fatigue
  - CHF, SOB, or hypotension/hypertension
  - Unexplained diaphoresis or nausea
  - Exposure to Haz-mat
  - Deliberate and/or accidental poisoning
- 12 lead ECGs shall be repeated every 10 minutes and upon a ROSC. If transporting leave cables connected until patient is turned over to the ED staff.

GLUCOSE

- A BGL shall be documented for patients with any of the following: history of diabetes, altered mental status, general weakness, seizure, syncope/lightheadedness, dizziness, poisoning, stroke, and cardiac arrest**.**

PATIENT HISTORY

- History / Physical Exam (SAMPLE, OPQRSTA) ***Refer to BLS section***

INTRAVASCULAR ACCESS

- 0.9% NS, IV or IO as needed (if indicated by protocol)
  - During adult cardiac arrest or if unstable and unconscious requiring intravascular fluid or IV medication, the distal femur is the preferred IO site. The Humeral or Tibia will not be used in adult patients unless the distal femur site is not available due to injury, amputation (current or Prior), or unavailable equipment. If the femoral site is unavailable, the Humeral site should be considered as the alternate site.
  - During pediatric cardiac arrest or if unstable and unconscious requiring rapid intravascular fluid boluses or IV medication, distal femoral IO access is the preferred IO site for age 12 or younger. The femoral IO site is preferred over the Tibia IO site. Humeral IO may be accessed in pediatric patients.

OTHER

- Medication administration (IV or IO) (if indicated by protocol)
- Reassess after interventions or q3-5 minutes
- Issue Alert if required

CHAPTER 1: ADULT CARDIAC CARE

GENERAL INFORMATION

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport and throughout the patient care experience:

- BLS and ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous ECG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Blood Glucose (if indicated by protocol or the patient is experiencing Altered Mental Status)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- Administer oxygen with appropriate device.
- Patients with a SpO_2 sat of < 92% will receive nasal capnography if available.
- If the patient is receiving ECG monitoring prior to arrival at the hospital it will be continued until patient care is transferred to the receiving Nursing Staff.
- If defibrillation is required, the anterior/posterior pad placement shall be used. Anterior placement should be just under the patients left breast and placed so that the LUCAS piston does not come into contact with it. The placement of the posterior pad should be simultaneous with the placement of the back plate of the LUCAS Device. Please refer to Chapter 9 (pg. 362).

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.
Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Please note, some patients (and peers) may interpret a relaxed, slow approach to them as a non-caring attitude.

STANDARD CARDIAC CARE PROTOCOLS/PROCEDURES (ADULT)

RATIONALE

EMS providers will routinely encounter patients experiencing cardiac related emergencies. Therefore, EMS providers must be trained to assess, treat, and differentiate between the numerous underlying causes that lead to cardiac emergencies. Cardiac emergencies must be treated with urgency by EMS field providers and the patient must remain under the care of an advanced level provider until the patient is transferred to the emergency department medical staff. Being observant to cardiac related signs, as well as symptoms being experienced by the patient are extremely important and must be considered as part of the standard of care.

TRANSPORT TRIAGE

BLS	
• These patients are ALS	
ALS	
If any of the following are present, ALS care shall be considered: • Cardiac/respiratory arrest is ALS. • Abnormal ABCs • Shortness of breath • Syncopal episode • Unexplained diaphoresis	• Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating. • Altered mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ACUTE MYOCARDIAL INFARCTION

RATIONALE

Patients with acute myocardial infarction are racing against time to stop the evolving infarction. Treatment is directed to rapidly identifying the infarction, providing increased oxygenation, early notification to the Emergency Department physician, and rapid transport.

History	Signs and Symptoms	Differential
• Age • Medications (Erectile dysfunction medications) • Past medical history (e.g., MI, angina, diabetes, or post-menopausal) • Allergies • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia • Chest pain • Respiratory distress • Hypotension or shock • Altered mental status. • Syncope • Nausea • Abdominal Pain • Diaphoresis • Conduct 12 lead if any of the above are present.	• Acute myocardial infarction • Hypoxia • Pacemaker failure • Hypothermia • Sinus bradycardia • Athletes • Head injury (elevated ICP) or stroke • Spinal cord lesion • Sick sinus syndrome • AV blocks (e.g., 1º, 2º, or 3º) • Overdose

TRANSPORT TRIAGE

BLS
• ALS transport only

ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, pain • Nausea, sweating, SOB, AMS • Cardiac history, with any of the above symptoms	• Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- ASPIRIN:
  - 81mg x4 PO
  - Contraindication:
    - If known hypersensitivity, hemophilia, or currently taking any anticoagulants.

- **NOTE**: *If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12 lead ECG shows ischemic changes such as S-T elevation/depression or inverted T-waves, 324mg of chewable ASA should be administered. If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12 lead ECG does not show ischemic changes such as S-T elevation/depression or inverted T-waves, ASA should be withheld.*

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO. For STEMI, do a blood draw for hospital if tubes available. Each tube should be labeled with patient's legal name, DOB, the date, time drawn, and Medic's last name.
- Provide continuous ECG monitoring (Obtain serial 12 lead ECGs. Consider obtaining a right-side 12 lead or V4R for inferior wall myocardial infarctions and V7, V8 and V9 for posterior wall myocardial infarction).
- Transmit the ECG to the receiving hospital and issue a STEMI alert.
- NORMAL SALINE:
  - Inferior wall myocardial infarction patients, even if normotensive, should receive a 1000mL fluid bolus and SBP must be > 120mmHg before NTG can be given. RV MI patients are likely to develop arrhythmias and hypotension.
- NITROGLYRCERIN (NITROSTAT):
  - 0.4mg (one metered dose or tablet) sublingual every 3-5 minutes up to x3, as needed with chest pain if SBP>90mmHg and IV NS 250 mL/bolus is initiated.
  - Precaution:
    - Do not use NTG if the patient has taken Viagra (male or female) in the last 24 hours or long-acting erectile dysfunction medications; Cialis (tadalafil) in the last 48 hours.
- If hypotension or signs of compensatory shock (tachycardia, increased respiratory rate, diaphoretic and dry mucosa) infuse 500mL NS and reassess vitals.
- FENTANYL:
  - 50mcg IV for chest discomfort, as needed every 5 minutes up to a total of 100mcg if SBP>90mmHg.
- EPINEPHRINE OR PUSH-DOSE PRESSOR EPINEPHRINE:
  - Infuse 2-10 mcg/min IV/IO from Epinephrine drip for hypotension not corrected by fluid challenge **OR** 1-2mL Push Dose Epinephrine titrate to maintain SBP>90mmHg.
- Administer anti-dysrhythmia medications per appropriate protocol.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ASYSTOLE

RATIONALE

Many victims of cardiac arrest may present with an asystolic rhythm by the time rescuers arrive. Consider possible causes of asystole and confirm asystole in two contiguous leads. Early defibrillation x1 may result in cardioversion of occult VFib.

History	Signs and Symptoms	Differential

• Events leading to arrest.
• Estimated downtime.
• Past medical history
• Medications
• End stage renal disease
• Suspected hypothermia
• Suspected overdose
  ○ Tricyclic
  ○ Digitalis
  ○ Beta blockers
  ○ Calcium channel blockers
• DNR or Living Will
	• Pulseless
	• Apneic or agonal respirations
	• No electrical activity on ECG
	• No heart tones on auscultation
		• 5 Hs and 5 Ts
		  ○ Hypovolemia (traumatic or nontraumatic hemorrhage)
		  ○ Hypoxia
		  ○ Hypo/Hyperkalemia
		  ○ Hypothermia
		  ○ Hydrogen ions (acidosis)
		  ○ Toxins/tablets (digitalis, beta blockers, calcium channel blockers)
		  ○ Tamponade – cardiac
		  ○ Thrombosis – pulmonary, cardiac
		  ○ Tension pneumothorax

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• **Cardiac/respiratory arrest is ALS**

Refer to page 32 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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CPR 2 minutes
Check Pulse

Apply Automatic Compression device (LUCAS), if available.
Apply EleGARD Heads-Up CPR device, if available.
Utilize Impedance Threshold device (ResQPOD) and insert SGA (I-gel).

- **If Cardiac Ultrasound is available and Ventricular Fibrillation is observed, follow the Ventricular Fibrillation Protocol. CPR may have to be paused for no more than 10 seconds and the compressor must remain in the hover mode.**
- **If no Ultrasound is available, defibrillation maximum energy setting x1, then follow appropriate protocol.**

IV/IO Access

<u>Epinephrine Drip or IV Bolus</u> (within 5 minutes)

<u>Epinephrine Bolus + Infusion:</u>

- **1mg (1:10,000) x1 IV/IO followed by Epinephrine infusion.**
  - **Mix 2mg (1:1,000) in 100mL of NS, macro drip and set at 60 gtts/min over 16 minutes**

OR

<u>IV Bolus:</u> 1mg (1:10,000) q3-5 minutes; maximum 3mg.

ET Tube (consider using bougie) or may use Supraglottic device as first attempt in place of ETT or if standard endotracheal intubation is unsuccessful after one attempt.

1 breath every 6 seconds (not to exceed 10 breaths per minute)

Consider Immediate Transcutaneous Pacing (In cardiac drug overdose only.)

After three rounds of Epinephrine IV or 2mg Epinephrine via drip, endotracheal or supraglottic intubation, and the patient remains in asystole (no rhythm change noted) you may terminate resuscitation efforts. EMS providers must always consider surroundings, family appropriateness and dignity.

***NOTE: Administer 1mEq/kg Sodium Bicarbonate IV/IO (only if tricyclic antidepressants overdose, renal failure (hyperkalemia), and excited delirium is suspected) and patient must be intubated.**

ATRIAL FIBRILLATION/ATRIAL FLUTTER with RAPID VENTRICULAR RATE

RATIONALE

Atrial fibrillation/atrial flutter is the most common cardiac arrhythmia requiring emergent/urgent treatment. Many patients live with A-fib/A-flutter are on anti-coagulation therapy as well as various antiarrhythmic medications to diminish the risk of thromboembolic Cerebral Vascular Accidents. A-fib/A-flutter can produce a rapid ventricular rate, which may need to be treated in the pre-hospital setting. New onset A-fib/A-flutter (< 48 hours) may be associated with chest pain/acute MI. Long-standing A-fib/A-flutter is generally treated with anticoagulation therapy to prevent thromboembolic CVAs. Hemodynamically unstable A-fib/A-flutter with RVR > 150 bpm should be treated with electrical cardioversion. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP < 90 mmHg, and/or pulmonary edema. Minor complaints such as palpitations and weakness may be treated with supportive care. Suspect long-standing A-fib/A-flutter if the patient is on antiarrhythmic therapy such as digoxin, diltiazem, sotalol, amiodarone with anticoagulation therapy.

History	Signs and Symptoms	Differential
• Age • Medications • Past medical history (e.g., abrupt onset palpitations) • Allergies • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate > 150 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock. • Chest pain • Respiratory distress/Hypoxia • Altered mental status. • Syncope • Nausea • Diaphoresis • Conduct 12 lead after patient's symptoms have been addressed.	• Anxiety and panic attacks • Following bypass surgery • Mitral valve disease • Hyperthyroidism • Heart failure • Ischemic heart disease • Left chamber enlargement.

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Asymptomatic patient with history of A-Fib with a heart rate of < 100 but > 60.
ALS	
• **Cardiac/respiratory arrest is ALS.** • Heart Rate > 100 bpm with other symptoms • Chest tightness, pressure, pain • N/V, diaphoresis, fever, AMS, dehydration	• Cardiac history with other symptoms • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- 12 lead ECG if time permits and the patient is stable.
- If sedation is used, apply nasal capnography if O_2 sats are <92%

UNSTABLE

SEDATION

If time allows, sedate as needed with Versed 5mg, Etomidate 10mg IV/IO or Ketamine 1 mg/kg, may repeat x1.

↓

Start Synchronized Cardioversion at 100J (75J Zoll) for Atrial Flutter

↓

Start Synchronized Cardioversion at 200J (120J Zoll) for Atrial Fibrillation

↓

Synchronized Cardioversion at 300J (150 J Zoll)

↓

Synchronized Cardioversion at 360J (200 J Zoll)

STABLE

Give Diltiazam 0.25 mg/kg IV/IO over 2 minutes (if available) to a max of 25mg.
OR
Amiodarone IV/IO 150mg in 100mL NS over 10 minutes.

↓

Observe

***If Accessory Conduction Pathway is suspected such as Wolff-Parkinson-White (WPW) syndrome, Diltiazem is contraindicated.**

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

BRADYCARDIA

RATIONALE

Some patients are normally bradycardic. Bradycardia is treated only if the patient is medically unstable. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP<90mmHg, and/or pulmonary edema with signs of hypoperfusion such as pallor and diaphoresis. Symptomatic bradycardia is a form of cardiogenic shock.

History	Signs and Symptoms	Differential

• Past medical history
• Heart transplant
• Medications
  ○ Beta blockers
  ○ Calcium channel blockers
  ○ Clonidine
  ○ Digoxin
• Pacemaker
	• Heart rate <60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
	• SBP<90
	• Chest pain
	• Respiratory distress
	• Hypotension or shock
	• Altered mental status.
	• Syncope
		• Acute myocardial infarction
		• Hypoxia
		• Pacemaker failure
		• Hypothermia
		• Sinus bradycardia
		• Athletes
		• Head injury (elevated ICP) or stroke
		• Spinal cord lesion
		• Sick sinus syndrome
		• AV blocks (e.g., 1º, 2º, or 3º)
		• Overdose

TRANSPORT TRIAGE

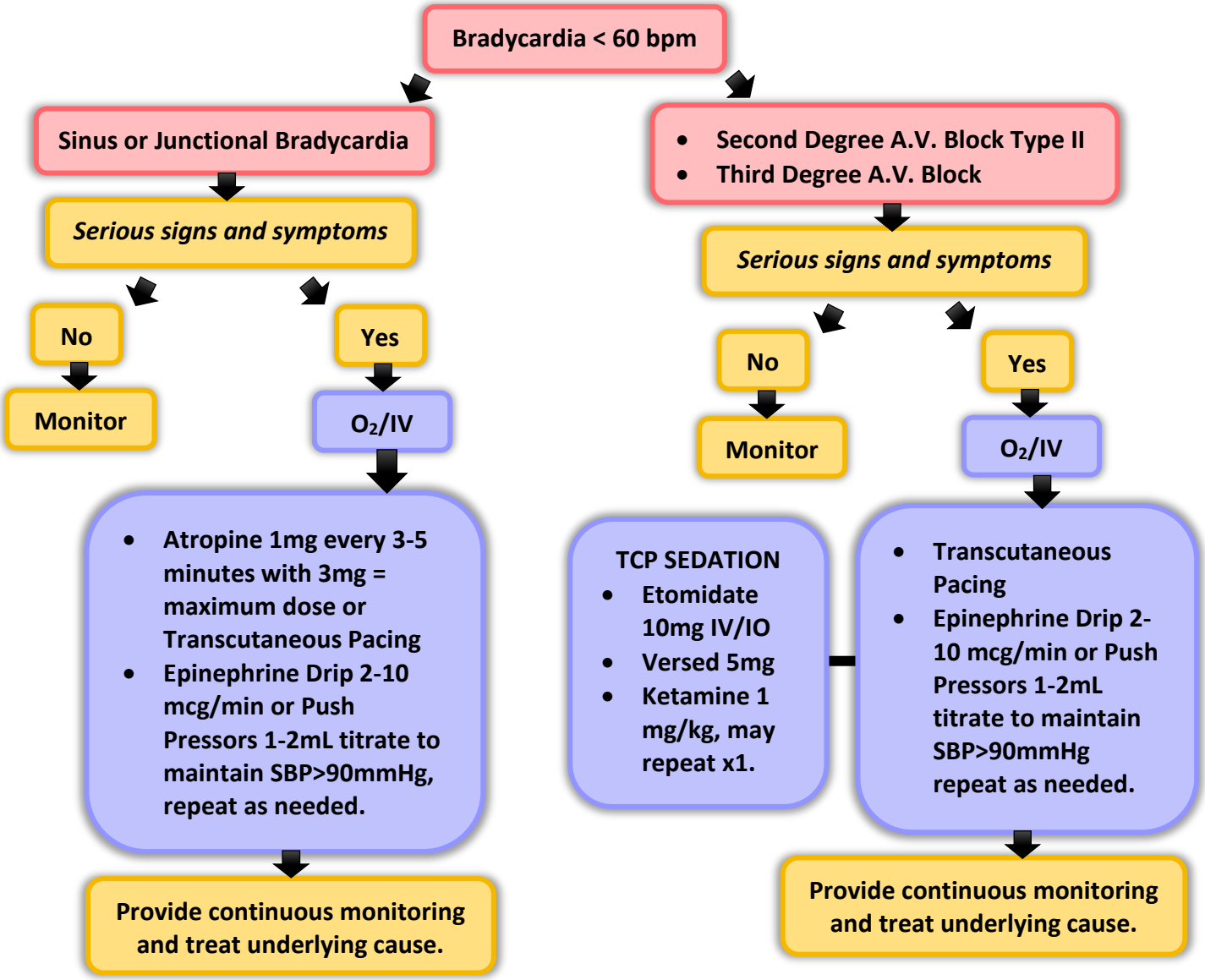
BLS

- Normal VS; baseline mental status
- Asymptomatic patient without cardiac history

ALS

- **Cardiac/respiratory arrest is ALS.**
- Abnormal VS
- Heart Rate < 60 bpm
- Chest tightness, pressure, pain
- N/V, diaphoresis, fever, SOB, AMS, dehydration
- Cardiac history with other symptoms
- Patient on home cardiac monitor
- Recent cocaine or methamphetamine use
- Firing of implanted defibrillator

Refer to page 36 for treatment modality diagram.



EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CARDIOGENIC SHOCK

RATIONALE

Most commonly caused by a severe heart attack, cardiogenic shock is a severe life-threatening condition, in which the heart suddenly can't pump enough blood to meet the body's need and requires rapid intervention. If lung sounds are clear, consider a fluid challenge before using medications to correct symptomatic hypotension. Signs and symptoms of instability include ongoing chest pain, shortness of breath, acute altered level of consciousness, SBP < 90 mmHg, and/or pulmonary edema.

History	Signs and Symptoms	Differential
• Age • Medications • Past medical history (e.g., MI, angina, diabetes, or hypertension) • Allergies • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate may be tachycardic, bradycardic or normocardic with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, and syncope. • Chest pain • Respiratory distress • Altered mental status. • Pulmonary edema • Syncope • Nausea • Diaphoresis • Conduct 12 lead if any of the above are present.	• Large pulmonary embolism • Large myocardial infarction • Ruptured valve or ventricular wall • Aortic dissection • Pericardial tamponade • Myocarditis • Hypertrophic cardiomyopathy • Aortic stenosis • Heart failure • Pacemaker failure • AV blocks • Hypertension, cardiac medications • Overdose

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, SOB, AMS, dehydration	• Cardiac history with other symptoms • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

- Assess signs of shock and cardiac events.
- Place the patient in Trendelenburg position, if hypotensive and lung sounds are clear.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous ECG monitoring.
- Obtain 12 lead ECG – with STEMI Alert if indicated.
- Advanced airway managed as needed.

LEFT VENTRICULAR FAILURE: PULMONARY EDEMA AND HYPOTENSION

- Push Dose Pressor Epinephrine (1:100,000) as noted in Chapter 7 Drug Manual, (pg. 235), if remains hypotensive – SBP<90mmHg after IV fluid bolus.
    - DO NOT administer faster than 1 mL/min.
    - Titrate to SBP>90mmHg, onset 1 minute, duration 5-10 minutes.
    - May titrate BP to max total dose 20mL = 200mcg (using 2 [10mL] syringes)
- Monitor heart rate, blood pressure and lung sounds.
- Minimal IV fluids checking lung sounds/BP.
- No IV NS if CHF or Hemodialysis is present.

RIGHT VENTRICULAR FAILURE: POSITIVE V4R, CLEAR LUNG SOUNDS WITH HYPOTENSION

- IV NS 1,000mL, titrate to SBP>90mmHg, assess lung sounds and BP frequently.
    - May repeat 1,000mL NS fluid challenge as needed.
    - Caution if history of CHF/Hemodialysis
- Push Dose Pressor Epinephrine (1:100,000) as noted in Chapter 7 Drug Manual, (pg. 235), if remains hypotensive – SBP<90mmHg after IV fluid bolus.
- Norepinephrine if Epinephrine unavailable 4-16 mcg/mL = 15-60 gtts/min

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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CARDIOPULMONARY ARREST

RATIONALE

It is essential for victims of a sudden cardiac event or cardiac arrest to receive rapid care. The rescuer must anticipate cervical injury, assess the scene for hazards, and note the patient's environment.

History	Signs and Symptoms	Differential
• Code status (DNR) • Events leading to arrest. • Estimated downtime. • History of current illness • Past medical history • Medications • Existence of terminal illness	• Unresponsive • Apneic • Pulseless	• Medical vs. trauma • VF vs. pulseless VT • Asystole • PEA • Primary cardiac event vs. respiratory arrest or drug overdose

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS**	• Pulseless/Apneic

If a crew has been on-scene for 20 minutes or more, attempting to resuscitate a patient and capnography remains < 10mmHg with an Unwitnessed Ventricular Fibrillation or Pulseless Ventricular Tachycardia cardiac arrest, no bystander CPR was initiated, and patient never had ROSC, **with the exception of asystole** (***see pg. 31 Asystole protocol),*** the crew may elect to either transport the patient to the hospital or contact Medical Control to request the termination of resuscitation.

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- **Determine cardiac rhythm and follow treatments in the appropriate protocol**.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- Capnography monitoring shall be placed after every endotracheal intubation or supraglottic airway insertion (if there is absent or poor waveform activity, the airway adjuncts shall be removed, and the patient ventilated with a bag valve mask device with attached $EtCO_2$ monitor).
- Establish Large Bore IV/IO. A Saline Lock may only be used in conjunction with a second IV/IO access site. All medications will be followed by a 20mL bolus.

- SODIUM BICARBONATE:
  - 1 mEq/kg IV/IO (only if tricyclic antidepressants overdose, renal failure (hyperkalemia), and excited delirium is suspected) and patient must be intubated.
- CALCIUM CHLORIDE:
  - **NOTE:** *Some first responding agencies may carry the following medication.*
  - Consider 1g IV/IO slow (over 2 minutes) for calcium channel blocker overdose.
- Establish second large bore IV or IO.
- Transport or terminate code per protocol.
- With ROSC, obtain a 12 lead ECG and treat abnormalities as per protocol. If indicated transmit to the receiving ER. If a STEMI is present divert to a STEMI receiving facility.
- EPINEPHRINE OR PUSH-DOSE PRESSOR EPINEPHRINE:
  - Initiate Push Pressor Epinephrine 1-2mL IV/IO **OR** Epinephrine drip 2-10 mcg/min titrate to maintain SBP>90mmHg.
- NOREPINEPHRINE (LEVOPHED):
  - If Epinephrine unavailable, 4-16 mcg/mL = 15-60 gtts/min
- Consider the application of ice packs on the groin and axillary region.

NOTE: *Comply with Do Not Resuscitate (DNR) orders per departmental procedures.*

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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CHEST PAIN

RATIONALE

Many patients complain of "chest pain". Age and patient reports may be poor predictors of significant illness. *When in doubt, treat the patient as if the pain is cardiac in nature*. If the patient is hemodynamically unstable, has S-T depressions or T-wave inversions but no S-T elevations, the patient may have acute coronary syndrome (ACS) and will be receiving immediate attention by the emergency department. Evaluate cardiac risk factors, quality of the pain, and signs of cardiac related origins.

History	Signs and Symptoms	Differential
• Age • Medications (Erectile dysfunction medications) • Past medical history (e.g., MI, angina, diabetes, or post-menopausal) • Allergies • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia • Chest pain • Respiratory distress • Hypotension or shock • Altered mental status. • Syncope • Nausea • Abdominal Pain • Diaphoresis	• Myocardial infraction • Dissecting aortic aneurysm • Significant dysrhythmia • Costochondritis • Pulmonary embolism • Pericarditis • Pneumonia • Chronic Obstructive Pulmonary Disease

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Age ≥ 30 • Abnormal VS • Chest tightness, pressure, pain	• N/V, diaphoresis, fever, abnormal breathing, AMS • Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- If the patient is hypotensive, place the patient in the Trendelenburg position.

- ASPIRIN:
  - 81mg x 4 PO
  - Contraindication:
    - If known hypersensitivity, hemophilia, or currently taking any anticoagulants.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Obtain 12 lead ECG.
- Obtain V4R if S-T segment elevation in 2 or more Inferior Leads (II, III, AVF)
- Obtain Posterior ECG if S-T segment depression is present in V1-V4 and no other S-T segment depression or elevation.
- NITROGLYCERIN (NITROSTAT):
  - 0.4mg (one metered dose or tablet) sublingual every 3-5 minutes up to x3 for chest pain with SBP>90mmHg and IV NS 250 mL/bolus is initiated.
  - Contraindications:
    - Viagra or Levitra is taken within 24 hours or Cialis within 48 hours.
    - SBP<90mmHg
    - V4R is positive
- FENTANYL:
  - Administer 50mcg IV/IO of Fentanyl for chest discomfort, as needed every 5 minutes up to a total of 100mcg if SBP>90mmHg.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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PULMONARY EDEMA/CONGESTIVE HEART FAILURE

RATIONALE

Most cases of CHF and pulmonary edema will respond to pre-hospital care. Signs and symptoms include dyspnea on exertion, sitting up or standing (orthopnea) improves breathing, paroxysmal nocturnal dyspnea, worsening pedal edema, rales upon inspiration, or JVD.

History	Signs and Symptoms	Differential
• Age • Medications (ACE inhibitors, ARBs, Beta blockers, diuretics) • Past medical history (e.g., MI, angina, diabetes, or hypertension) • Allergies • High levels of cholesterol and/or triglycerides • Poor diet • Sedentary lifestyle • Overweight or obese • Stress • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate typically > 100 with associated hypertension • Chest pain • Respiratory distress/hypoxia • Altered mental status. • Pedal edema worsening • Diaphoresis • Conduct 12 lead if any of the above are present.	• Acute myocardial infarction • Hypoxia • Pacemaker failure • Sick sinus syndrome • AV blocks (2^{o} or 3^{o}) • Overdose • Pulmonary embolism • Cardiac tamponade • Acute valvular dysfunction • Thyrotoxicosis • Noncompliance with diuretic/hypertension medication • COPD

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS	• Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

BLS CARE

- Assess patient's temperature. **If febrile, consider pneumonia and see pg. 109 *Sepsis* protocol.**
- Administer oxygen by appropriate device.
- Place patient in upright position.

ALS CARE

- Establish IV/IO
- Provide continuous ECG monitoring.
- Obtain 12 lead ECG.
- Apply nasal capnography if O_2 sats are < 92%
- NITROGLYCERIN (NITROSTAT):
  - 0.4mg (one metered dose or tablet) sublingual every 3-5 minutes up to x3 for chest pain with SBP>90mmHg and IV NS 250 mL/bolus is initiated.
  - Contraindications:
    - Right Ventricular Infarction (S-T elevation in V4R)
    - Viagra or Levitra taken within 24 hours or Cialis within 48 hours.
    - SBP<90mmHg
- Consider CPAP. The patient must be awake, alert, oriented and able to follow commands to use CPAP. Evaluate the need for advanced airway *(see pg. 64 **Airway Management** **Protocol**).*
- VERSED (MIDAZOLAM):
  - If CPAP, Versed 1mg IV/IO for anxiety with CPAP. May repeat x1 after 5 minutes.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. Wheezing should be treated with bronchodilators (cardiac asthma).

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

PULSELESS ELECTRICAL ACTIVITY

RATIONALE

Pulseless electrical activity (PEA) describes any electrical cardiac activity that is not pulse producing. PEA may be the result of an underlying treatable condition. Transient PEA is commonly seen immediately after defibrillation and may require push dose Epinephrine. Do not treat pulseless ventricular tachycardia with this protocol.

History	Signs and Symptoms	Differential

• Events leading to arrest.
• Estimated downtime.
• Past medical history
• Medications
• End stage renal disease
• Suspected hypothermia
• Suspected overdose
  ○ Tricyclic
  ○ Digitalis
  ○ Beta blockers
  ○ Calcium channel blockers
• DNR or Living Will
	• Pulseless
	• Apneic or agonal respirations
	• Electrical activity present, but no pulse detected.
	• No heart tones on auscultation
		• 5 Hs and 5 Ts
		  ○ Hypovolemia (traumatic or nontraumatic hemorrhage)
		  ○ Hypoxia
		  ○ Hypo/Hyperkalemia
		  ○ Hypothermia
		  ○ Hydrogen ions (acidosis)
		  ○ Toxins/tablets (digitalis, beta blockers, calcium channel blockers)
		  ○ Tamponade – cardiac
		  ○ Thrombosis – pulmonary, cardiac
		  ○ Tension pneumothorax

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• **Cardiac/respiratory arrest is ALS**

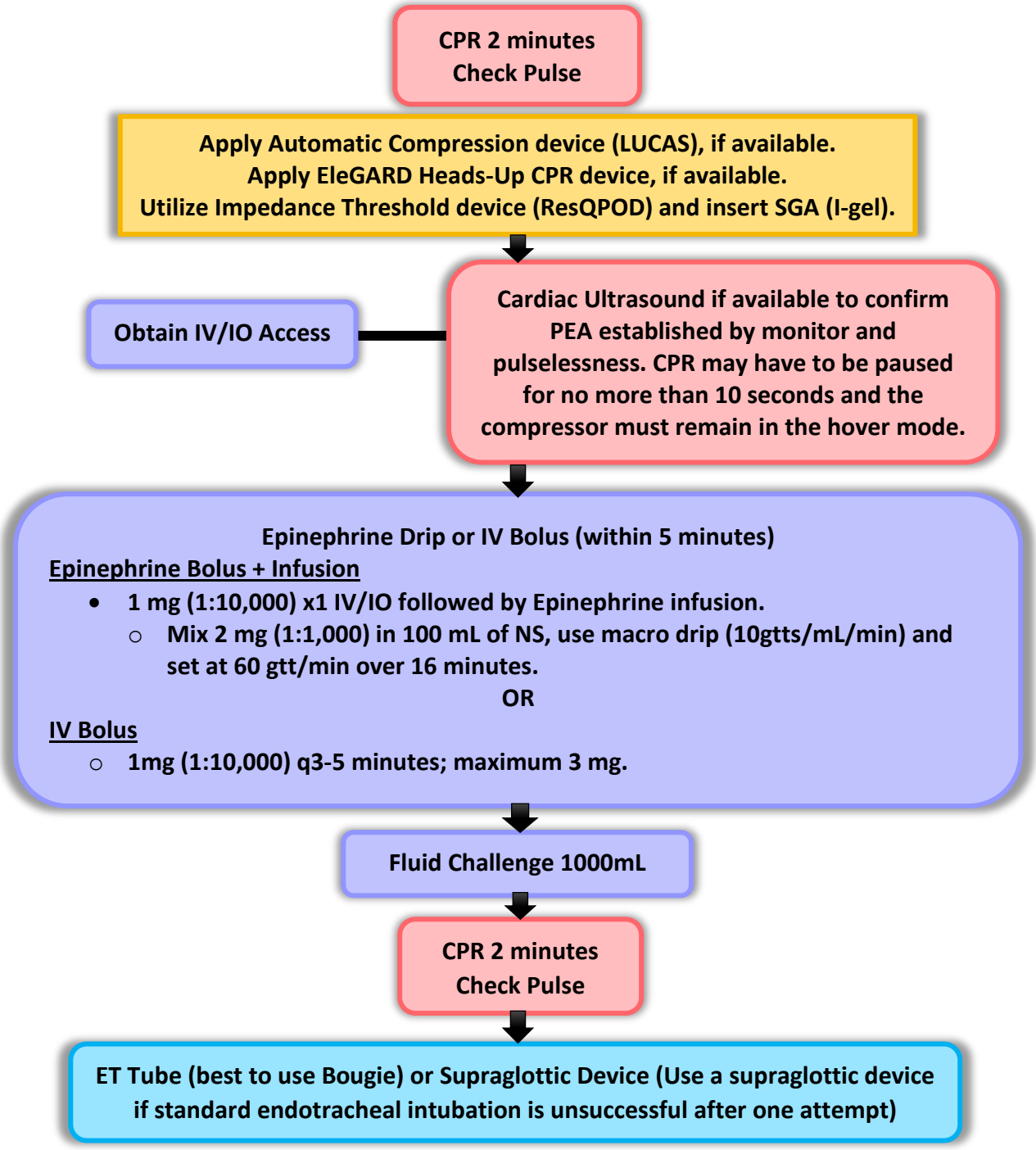
Refer to page 46 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139



NOTE:

- Administer 1 mEq/kg Sodium Bicarbonate IV/IO (only if tricyclic antidepressants overdose, renal failure (hyperkalemia), and excited delirium is suspected) and patient must be intubated.
- Consider Calcium Chloride *(Some first responding agencies may carry the following medication.)* 1g IV/IO slow (over 2 minutes) if calcium channel blocker overdose is suspected.
- Consider Glucagon 10mg IV/IO if beta blocker overdose is suspected.
- Rapid IVF bolus with pressure bag before Epinephrine if thought to be hypovolemic/septic.

SUPRAVENTRICULAR TACHYCARDIA (NON-ATRIAL FIBRILLATION)

RATIONALE

Supraventricular tachycardia (SVT) describes several conditions. Determining the underlying rhythm and cause may be essential for care. Non Afib SVT is a rapid heart rate that develops when the normal electrical impulses of the heart are disrupted and the electrical signal passes more rapidly through an extra electrical pathway from the sinus node. Heart rates > 150 beats/min without P wave should be treated as SVT. Rapid intervention is required in the unstable patient. Unstable is defined as having any of the following: *severe chest pain, dyspnea, hypotension, acute CHF, or acute myocardial infarction.*

History	Signs and Symptoms	Differential
• Age • Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, Digoxin, Amphetamine, Cocaine) • Past medical history (e.g., abrupt onset palpitations) • Allergies • Drugs (e.g., nicotine and illegal drugs) • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate > 150 with narrow, regular complexes • Chest pain • Respiratory distress • Altered mental status. • Syncope • Nausea • Diaphoresis • Conduct 12 Lead after patient's symptoms have been addressed.	• WPW or other accessory pathway arrhythmia • Electrolyte imbalance • Exertion, pain, anxiety, or emotional stress • Drug effect/overdose (see **History**) • Hyperthyroidism • Other arrythmias: ○ Atrial/sinus tachycardia ○ Atrial fibrillation/flutter ○ Multifocal atrial tachycardia ○ Ventricular tachycardia

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS	• Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

UNSTABLE

SEDATION

If time permits and patient not rapidly deteriorating, sedate as needed with Versed 5mg, Etomidate 10mg, or Ketamine 1 mg/kg, may repeat x1.

↓

Synchronized Cardioversion 100 J (75 J Zoll)

↓

Synchronized Cardioversion 200 J (120 J Zoll)

↓

Synchronized Cardioversion 300 J (150 J Zoll)

↓

Synchronized Cardioversion 360 J (200 J Zoll)

STABLE

Vagal Maneuvers

↓

Adenosine 12mg rapid IVP, followed by 20mL saline flush. May repeat once.

↓

If A-Fib/Flutter is seen, give Diltiazam 0.25 mg/kg IV/IO over 2 minutes (if available) to a max of 25mg
OR
Amiodarone IV/IO 150mg in 100mL NS over 10 minutes.

↓

Observe

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

VENTRICULAR ECTOPY

RATIONALE

Ventricular ectopy is common. It is important to identify the cause, especially when faced with bradycardia. **Ventricular ectopy is treated if the patient has chest pain, hypotension, if there are more than 6 ectopic beats/minute, or if there are persistent multifocal ectopic beats. If the ventricular beats are rate dependent meaning the underlying rhythm is bradycardic and PVCs are present care shall be directed at increasing the heart rate.**

History	Signs and Symptoms	Differential
• Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin) • Diet (e.g., caffeine and chocolate) • Drugs (e.g., nicotine and illegal drugs) • Past medical history • History of palpations/heart racing • Syncope/near syncope • Renal failure • Missed dialysis.	• Heart rate may be normocardic, tachycardic or bradycardic. • Systolic BP may be hyper or hypotensive. • Dizziness, chest pain, shortness of breath, altered mental status, or diaphoresis. • Acute Pulmonary Edema	• Heart disease • Myocardial infarction • Electrolyte imbalance • Exertion, pain, or emotional stress • Fever • Hypoxia • Hypovolemia or anemia • Drug effect/overdose (see **History**) • Hypothyroidism • Pulmonary embolus

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Asymptomatic patient without cardiac history	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS	• Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

Assess the need for acute suppressive therapy when the following are present: chest pain, hypotension, if there are more than 6 ectopic beats/minute, or if there are persistent multifocal ectopic beats.

↓

Oxygen

↓

Amiodarone (150mg IV/IO in 100mL NS over 10 minutes)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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VENTRICULAR FIBRILLATION & PULSELESS VENTRICULAR TACHYCARDIA

RATIONALE

Ventricular fibrillation and pulseless ventricular tachycardia, require immediate treatment. Attempt to also identify the cause of dysrhythmia and correct it. Chest compressions and rapid defibrillation are a priority. The effect of medication therapy and immediate ALS/BLS airway management should not delay high quality chest compressions and defibrillation.

History	Signs and Symptoms	Differential
• Events leading to arrest. • Estimated downtime. • Prior resuscitation attempts • Past medical history • Medications • Known terminal illness. • Pacemaker/Defibrillator	• Pulseless • Apneic	• Medical vs. trauma • VF vs. pulseless VT • Asystole • PEA • Primary cardiac event • Respiratory arrest • Pneumonia • Pulmonary embolism • Opiate overdose • Pacemaker/Defibrillator

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• **Cardiac/respiratory arrest is ALS**

Refer to page 52 & 53 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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CPR Chest compressions & ventilations 30:2 (5 cycles, 2 minutes)

↓

Defibrillate 200 J (120 J Zoll). Followed by CPR without checking for pulses.

↓

CPR for 2 minutes = 200 chest compressions
Pulse check after completion of 2 minutes of CPR – If pulse producing rhythm displayed, stop CPR, and treat as per protocol.

↓

Apply Automatic Compression device (LUCAS), if available.
Apply EleGARD Heads-Up CPR device, if available.
Utilize Impedance Threshold device (ResQPOD) and insert SGA (I-gel).

↓

Defibrillate 300 J (150 J Zoll). Followed by CPR without checking for pulses.

↓

CPR for 2 minutes = 200 chest compressions
Pulse check after completion of 2 minutes of CPR – If pulse producing rhythm displayed, stop CPR, and treat as per protocol.

↓

ET Tube (best to use with Bougie) or Supraglottic (if standard endotracheal intubation is unsuccessful after one attempt use a supraglottic device)

AND

Epinephrine Drip or IV Bolus (within 5 minutes)

<u>Epinephrine Bolus + Infusion:</u>

- 1 mg (1:10,000) x1 IV/IO followed by Epinephrine infusion.
  - Mix 2 mg (1:1,000) in 100 mL of NS, use macro drip (10 gtts/mL/min) and set at 60 gtt/min over 16 minutes.

OR

<u>IV Bolus:</u>

- 1mg (1:10,000) q3-5 minutes; maximum 3 mg.

↓

Defibrillate 360 J (200 J Zoll). Followed by CPR without checking for pulses.

↓

(Continued on the next page)

CPR for 2 minutes = 200 chest compressions
Pulse check after completion of 2 minutes of CPR – If pulse producing rhythm displayed, stop CPR, and treat as per protocol.

↓

Amiodarone 300mg in 30mL NS over 30 seconds give IV/IO.

↓

A repeat dose of 150mg bolus over 30 seconds may be given for recurrent VF/Pulseless VT.

↓

If Ventricular Fibrillation has been refractory to current treatment modality, you may consider Double Sequential Defibrillation at maximum Joules setting.

↓

If a crew has been on-scene for 20 minutes or more, attempting to resuscitate a patient, and capnography remains less than 10mmHg without obtaining pulses, never had ROSC, no bystander CPR, and was not a witnessed arrest, the crew may elect to either transport the patient to the hospital or contact Medical Control to request the termination of resuscitation.

NOTE:

- **Administer 1 mEq/kg Sodium Bicarbonate IV/IO (only if tricyclic antidepressants overdose, renal failure (hyperkalemia), and excited delirium is suspected) and patient must be intubated.**
- **If Polymorphic V-Tach (Torsades) is present, defibrillate 200 J (120 J Zoll). *Do not synchronize for cardioversion.***

VENTRICULAR TACHYCARDIA (with pulse)

RATIONALE

This life-threatening condition is uncommon but responds well to emergency cardiac treatment. Rapid intervention is required in the unstable patient. Unstable is defined as any of the following: chest pain, dyspnea, decreased level of consciousness, hypotension, CHF, or acute myocardial infarction.

History	Signs and Symptoms	Differential
• Medications (e.g., Adderall, diet pills, thyroid supplements, decongestants, and Digoxin) • Diet (e.g., caffeine and chocolate) • Drugs (e.g., methamphetamine, cocaine) • Past medical history • History of palpations/heart racing • Syncope/near syncope • Renal failure • Missed dialysis. • Hyperthyroid	• Heart rate > 150 • SBP<90 • Dizziness, chest pain, shortness of breath, altered mental status, or diaphoresis. • Acute Pulmonary Edema	• WPW or other accessory pathway arrythmia • Sick sinus syndrome • Atrial/sinus tachycardia with aberrancy • Atrial fibrillation/flutter with aberrancy • Multifocal atrial tachycardia with aberrancy • Myocardial infarction • Hypoxia • Drug effect/overdose (see **History**) • Renal failure • Hyperkalemia

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, pain • N/V, diaphoresis, fever, abnormal breathing, AMS	• Patient on home cardiac monitor • Recent cocaine or methamphetamine use • Firing of implanted defibrillator

UNSTABLE

Immediate Synchronized Cardioversion 100 J
100 J (75 J Zoll)
200 J (120 J Zoll)
300 J (150 J Zoll)
360 J (200 J Zoll)
If Polymorphic V-Tach (Torsades) is present:
Defibrillate 200 J (120 J Zoll)
Do not synchronize for cardioversion

If conversion occurs, follow the stable algorithm. If cardioversion (monomorphic)/defibrillate (polymorphic) is unsuccessful, add anti-dysrhythmia agents in conjunction with cardioversion. Sedation as time permits Versed 5mg, Etomidate 10mg IV/IO or Ketamine 1 mg/kg IV/IO, may repeat x1. Do not delay cardioversion/defibrillation to achieve IV access.

STABLE

Consider Adenosine if rhythm regular and QRS monomorphic.

Amiodarone 150mg in 100mL NS over 10 minutes.

If polymorphic V Tach is present (Torsades de Pointes):
Magnesium Sulfate (2 grams = 2 vials IV/IO in 100mL NS over 10 minutes)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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CHAPTER 2: ADULT MEDICAL CARE

GENERAL INFORMATION

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport and throughout the patient care experience:

- BLS and ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous ECG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Blood Glucose (if indicated by protocol or the patient is experiencing Altered Mental Status)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- Administer oxygen with appropriate device.
- Patients with a SpO_2 sat of < 92% will receive nasal capnography if available.
- If the patient is receiving ECG monitoring prior to arrival at the hospital it will be continued until patient care is transferred to the receiving Nursing Staff.
- If defibrillation is required, the anterior/posterior pad placement shall be used. Anterior placement should be just under the patients left breast and placed so that the LUCAS piston does not come into contact with it. The placement of the posterior pad should be simultaneous with the placement of the back plate of the LUCAS Device. Please refer to Chapter 9 (pg. 362).

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.
Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Please note, some patients (and peers) may interpret a relaxed, slow approach to them as a non-caring attitude.

STANDARD MEDICAL CARE PROTOCOLS/PROCEDURE (ADULT)

RATIONALE

The majority of requests for Emergency Medical Services are non-emergent illness or injuries. The paramedic may consider many of these incidents *routine*. The citizens who request our service will not feel that these are *routine*. Remember that many patients are not good medical historians and may not be able to tell you exactly what is wrong. Good listening skills are essential in the patient interview. *Expect the unexpected.* Patients without critical illness or injuries may refuse without paramedic encouragement and thoughtful persuasion.

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-life-threatening area (toe, hand, wrist, shoulder, etc.)	• Medical chief complaint symptoms or criteria does not require ALS care
ALS	
If any of the following are present, ALS care shall be considered: • Abnormal ABCs • Altered mental status. • Chest pain • Shortness of breath	• Hemodynamically unstable • Syncopal episode • Unexplained diaphoresis • Abdominal pain • Sepsis

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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ABDOMINAL PAIN/GI BLEED

RATIONALE:

A differential diagnosis of abdominal pain can be complex. Nausea, vomiting, and diarrhea are often associated with abdominal pain and have numerous causes ranging from food poisoning and water borne diseases, viruses, bacteria, medication side effects. Abdominal pain is defined as any pain that is associated with the abdomen and adjacent flank areas. Lower back pain associated with radiating abdominal pain can also be classified as abdominal pain. Prolonged evaluation in the field is not appropriate. Suspect a severe underlying problem. Prompt and gentle transport is required.

ABDOMINAL PAIN

History	Signs and Symptoms	Differential
• Age • Past medical/surgical history • Medications • Onset • Provocation • Quality (e.g., crampy, constant, sharp, dull, etc.) • Region/radiation/referred. • Severity (0 – 10 scale) • Time (duration/repetition) • Fever • Last meal eaten. • Last bowel movement/emesis • Menstrual history (pregnancy) • Trauma vs non traumatic	• Hypotension • Pain (location/migration) • Tenderness • Nausea • Vomiting • Diarrhea • Dysuria (painful or difficult urination) • Constipation • Vaginal bleeding/discharge • Pregnancy **Associated symptoms: (Helpful to localize source)** Fever, headache, weakness, malaise, myalgia, cough, headache, mental status change, or rash	• Pneumonia or pulmonary embolus • Liver (hepatitis) • Peptic ulcer disease/gastritis • Gallbladder • MI • Pancreatitis • Kidney stone • Abdominal aneurysm • Appendicitis • Bladder/prostate disorder • Pelvic (PID, ectopic pregnancy, or ovarian cyst) • Spleen enlargement • Diverticulitis • Bowel obstruction • Gastroenteritis (infectious) • Ovarian or testicular torsion

LOWER GI BLEEDING

History	Signs and Symptoms	Differential
• Age • Past medical history • Renal disease • Medications (pepto bismol, NSAID, ASA, warfarin, lovenox, etc.) • Number of episodes • Alcohol use/abuse • Weight loss	• Jaundice • Hematochezia (bright red blood per rectum) • Hematemesis • Syncope	• Diverticulitis • Cancer • Inflammatory diarrhea (Crohn's) • Peptic/gastric ulcer(s) • Mallory Weiss tear • Gastritis/esophagitis • Vascular malformation • Infectious diarrhea

UPPER GI BLEEDING

History	Signs and Symptoms	Differential
• Alcohol use • Varices • Medications (e.g., ibuprofen, ASA, steroids) • Stress • GERD • Ulcers • Vomiting • Liver disease	• Coffee ground emesis • Hematemesis (bright red blood) • Tachycardia • Hypotension • Black, tarry stool	• Varices/heavy bleeding/mouth • Gastritis • Bleeding ulcer • Epistaxis • Hemoptysis • Mallory Weiss tear

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Diarrhea	• Constipation • Chronic issues without any acute changes
ALS	
• Female of child bearing age with ABD pain • Female age 12-50 who has ABD pain, fainted, or has systolic BP<90 (ectopic pregnancy) • AMS, Fever, diaphoresis, Ascites • VS not normal for age and size	• Evidence of bleeding in stool/urine/vomit • Flank pain/back pain with difficult and/or painful urination. • History of kidney stones

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Obtain 12 lead ECG *if cardiac etiology is suspected.*
- ZOFRAN (ONDANSETRON):
  - 4mg IV/IO/IM, if actively vomiting (if available). May repeat once in 5 minutes, if needed.
  - 4mg ODT PO if not actively vomiting. May repeat once in 5 minutes.
- DROPERIDOL (INAPSINE):
  - 2.5mg IM/IV for vomiting refractory to Zofran. May repeat x1 in 10 minutes.
- NORMAL SALINE:
  - IV fluid bolus 500mL if G.I. bleeding is present but normotensive.
  - 1000-2000mL and 2nd IV if G.I. bleeding is present and patient is hypotensive.
- Keep SBP>90mmHg.

MODERATE TO SEVERE PAIN:

- FENTANYL:
  - 100mcg IV/IO/IN; if SBP>90mmHg.

SEVERE PAIN REFRACTORY TO OPIOIDS:

- KETAMINE:
  - 50mg IV/IO over 1 minute; may repeat x1 as needed within 5 minutes. 100mg IM/IN, may repeat x1 as needed in 5 minute intervals.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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AIRWAY MANAGEMENT

RATIONALE

Endotracheal intubation or placement of a subglottic device is the preferred method to stabilize an airway. Secure a patent airway in all patients with persistent GCS equal or < 8, respiratory failure requiring BVM. HEAVEN is an acronym for six key attributes that can help crews determine the likelihood an emergency-intubation patient will pose a difficult airway. It stands for **H**ypoxemia, **E**xtremes of size, **A**natomic challenges, **V**omit/blood/fluid, **E**xsanguination/anemia, and **N**eck mobility issues.

INDICATIONS FOR ADVANCED AIRWAY MANAGEMENT

- Impending airway obstruction (angioedema, epiglottitis)
- Failure to Oxygenate
- Failure to Ventilate
- Decreased LOC – GCS 8 or less (TBI, sepsis, medication/drug overdose)
- Pulmonary edema/COPD/Hypoxia refractory to CPAP/100% O_2 NRB FM
- Airway trauma/Burns
- Anaphylaxis
- Cardiopulmonary arrest

TRANSPORT TRIAGE

BLS	
• Baseline normal ventilation and respiratory effort	• Normal VS; baseline mental status
ALS	
• Abnormal ventilation or respiratory effort	• Patient on home apnea monitor

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess respiratory effort for rate and quality.
- Assess gag reflex.
- Open airway (use jaw thrust if suspected cervical injury).
- Place appropriate airway device (oral, nasal, or supraglottic device).
- If using a BVM, ventilate at a rate of 10 breaths per minute.
- Suction airway, if indicated.

ALS CARE

AIRWAY

- Advanced airway placement and airway stabilization (if indicated by protocol)
    - Semi-conscious or unresponsive patients with an intact gag reflex shall have an NPA inserted unless contraindicated.
    - Unresponsive patients without a gag reflex shall have an OPA inserted.
    - Patients who require ventilatory support for more than two minutes should be intubated, with the exception of patients in cardiac arrest.

- If an airway cannot be secured via ETT intubation, a Supraglottic Airway (SGA) should be inserted.
- If an airway cannot be secured by any other means, and the patient cannot be effectively oxygenated or ventilated, a cricothyrotomy should be performed.

OXYGEN ADMINISTRATION

- Supplemental Oxygen as indicated by protocol.
  - Oxygen should ONLY be administered in order to maintain SpO_2 of >92% or 90% for COPD & asthma patients and not to exceed 99% unless otherwise noted in protocol. Do not withhold oxygen if the patient is dyspneic or hypoxic.
  - If oxygen saturations cannot be maintained, ventilatory support should be provided.
  - Nasal capnography applied only if indicated by protocol.

VENTILATION

- Ventilatory support shall be accomplished via BVM with either an NPA/OPA, SGA, or ETT intubation.
- The goal is to maintain an oxygen saturation >92% and $EtCO_2$ levels between 35-45mmHg (with the exception of COPD and asthma patients).
- Any patient with a pulse who requires ventilation with a BVM for > two minutes, should be intubated (excluding children and opiate induced respiratory failure).
- Endo-tracheal intubation shall be confirmed by visualization of the ETT passing through the vocal cords, and continuous $EtCO_2$ monitoring. $EtCO_2$ waveform is the deciding factor if to leave the endotracheal tube in place or remove it.
- Ventilatory Rates
  - Adults: 10 breaths/minute **(1 breath every 6 seconds)**
  - Children: 20 breaths/minute **(1 breath every 3 seconds)**
  - Neonates: 40 breaths/minute **(1 breath every 1.5 seconds)**
  - Patients with advanced airways should be ventilated at a rate of 10 breaths/minute **(1 breath every 6 seconds)**
  - 1 breath every 10 seconds permissive hypercarbia
- Delayed Sequence Intubation (if applicable). Refer to the Chapter 9 for specific instructions.
- Initiate advanced life support care (reference ALS Care page 21)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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MEDICATION SEQUENCE FOR INDUCTION OF ANESTHESIA FOR INTUBATION

Alternate Medications used for Sedation during RSI (due to drug shortage): • **If Ketamine unavailable, use Etomidate.** • **If Etomidate unavailable, use Versed.**		**And**	**Alternate Paralytic (due to drug shortage):** • **If Succinylcholine unavailable, use Rocuronium.**
Adult Dose	**Ketamine** 200mg IV/IO **OR** **Etomidate** 20mg IV/IO (Max 40mg for Lg adults) **OR** **Versed (Midazolam)** 5mg IV/IO. May repeat 1x prn. Max total dose 10mg. 10mg IM/ IN	**And**	**Succinylcholine (Anectine)** 1.5 mg/kg IV/IO max 200mg **OR** **Rocuronium (Zemuron)** 50mg IV/IO, may repeat once, max dose 100mg
Pediatric Dose	**Ketamine** Handtevy Book 1 mg/kg slow IV/IO 2 mg/kg IM/IN **OR** **Etomidate** Handtevy Book (or 0.3 mg/kg IV/IO max of 20mg) **OR** **Versed (Midazolam)** 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg. 0.2 mg/kg IN/IM, max single dose of 5mg May repeat either route 1x prn, in 5 minutes. Max total dose 10mg	**And**	**Succinylcholine (Anectine)** 2 mg/kg IV/IO **OR** **Rocuronium (Zemuron)** 1 mg/kg IV/IO, may repeat once, max dose 50mg

Primary Choice	**Ketamine**	**And**	**Succinylcholine (Anectine)**
Adult Dose	200mg IV/IO		1.5 mg/kg IV/IO max 200mg
Pediatric Dose	Handtevy Book 1 mg/kg slow IV/IO 2 mg/kg IM/IN		2 mg/kg IV/IO
2nd Choice	**Etomidate**	**And**	**Succinylcholine (Anectine)**
Adult Dose	20mg IV/IO (Max 40mg for Lg adults)		1.5 mg/kg IV/IO max 200mg
Pediatric Dose	Handtevy Book (or 0.3 mg/kg IV/IO max of 20mg)		2 mg/kg IV/IO

3rd Choice	Versed (Midazolam)	And	Succinylcholine (Anectine)
Adult Dose	5mg IV/IO. May repeat 1x prn. Max total dose 10mg. 10mg IM/ IN		1.5 mg/kg IV/IO max 200mg
Pediatric Dose	0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg. 0.2 mg/kg IN/IM, max single dose of 5mg May repeat either route 1x prn, in 5 minutes. Max total dose 10mg		2 mg/kg IV/IO
4th Choice	**Fentanyl**	**And**	**Succinylcholine (Anectine)**
Adult Dose	100-300mcg IV/IO (3 mcg/kg max dose)		1.5 mg/kg IV/IO max 200mg
Pediatric Dose	1 mcg/kg IV/IO		2 mg/kg IV/IO
5th Choice	**Etomidate Only**		
Adult Dose	20mg IV/IO (Max 40mg for Lg adults)		
Pediatric Dose	Handtevy Book (or 0.3 mg/kg IV/IO max of 20mg)		

POST INTUBATION MANAGEMENT (IF SEDATION IS REQUIRED POST-INTUBATION)

Continued Sedation	
Adult Dose	**Ketamine** 200mg IV/IO, may repeat x 1 prn **OR** **Versed (Midazolam)** 5 mg IV/IO. May repeat 1x prn. Max total dose 10mg. 10mg IM/ IN
Pediatric Dose	**Ketamine** Handtevy Book 1 mg/kg slow IV/IO 2 mg/kg IM/IN **OR** **Versed (Midazolam)** 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg. 0.2 mg/kg IN/IM, max single dose of 5mg May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

ALLERGIC REACTIONS

RATIONALE

This condition is more common than the potentially more serious anaphylactic reaction. Allergic reactions may require treatment prior to or during rapid transport.

History	Signs and Symptoms	Differential
• Onset and location • Food allergy/exposure • Medication allergy/exposure • New clothing, soap, or detergent • Past history of reactions • Past medical history • Medication history • Envenomation	• Itching or hives • Erythema • Urticaria • Rash • Difficulty swallowing • Tongue swelling • Normotensive • Normal respiratory rate and SpO_2 • Wheezing	• Angioedema (ace inhibitor) • Cellulitis • Contact dermatitis. • Food or medication ingestion • Envenomation

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Lungs clear to auscultation.
• No difficulty breathing or swallowing	• No rash, hives, itching or redness to the skin
ALS	
• Difficulty breathing or swallowing.	• Facial, neck, tongue swelling
• Condition worsening	• Stridor
• Altered mental status.	• Bronchospasm
• Known history of anaphylaxis	• Epi-pen injected.
• Rash, hives, or itching may be present	• Low blood pressure, Tachycardia

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.

- If intubated and post intubation sedation is required, refer to page 67.
- BENADRYL (DIPHENHYDRAMINE):
  - 0.5 mg/kg IV/IO/IM (max 50mg)
- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 125mg IV or IM
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat treatment if indicated for wheezing.
- Observe for the development of Anaphylaxis.
- Attempt to determine the source of the allergic reaction.
- Poison Control: (800) 222-1222 or (800) 282-3171.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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ANAPHYLAXIS

RATIONALE

Anaphylaxis is rare and life threatening. It may be mistaken for cardiac arrest by the time EMS providers arrive. Anaphylaxis carries a high mortality rate and may become resistant to management if treatment is delayed. Exercise caution to avoid confusing anaphylaxis and an allergic reaction.

History	Signs and Symptoms	Differential
• Onset and location • Insect sting or bite • Food allergy/exposure • Medication allergy/exposure • New clothing, soap, or detergent • Past history of reactions • Past medical history • Medication history	• Itching or generalized urticaria. • Coughing, wheezing or respiratory distress (bronchospasm) • Chest or throat constriction • Difficulty swallowing • Hypotension • Tachycardia • Nausea or vomiting • Feeling of impending doom • Tongue/lip swelling • Stridor • Altered mental status.	• Urticaria (generalized) • Anaphylaxis • Angioedema (Ace inhibitor) • Aspiration or airway obstruction/foreign body • Vasovagal event • Asthma or COPD exacerbation • CHF exacerbation

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• Difficulty breathing/swallowing. • Facial, neck, and/or tongue swelling • Stridor, bronchospasm • Condition worsening • Hypotensive shock	• Altered Mental Status • Known history of anaphylaxis • Rash, hives, or itching may be present. • Use of epi pen

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Assist with administration of Epi-Pen, if available.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO

- Provide continuous ECG monitoring.
- Apply Nasal capnography if O_2 sat is <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat treatment if indicated for moderate/severe respiratory compromise with or without bronchospasms. Repeat as indicated. (If available).
- NORMAL SALINE:
  - Administer a fluid challenge 1000 mL NS if patient is hypotensive.

MODERATE RESPIRATORY COMPROMISE:

- EPINEPHRINE (1:1,000):
  - 0.3 mL, 1:1,000 (1 mg/mL) IM
  - **For not responding to DuoNeb or for stridor.**

EXTREME RESPIRATORY COMPROMISE (WORSENING/ANGIODEMA/BRONCHOSPASM) OR PROFOUND HYPOTENSION:

- EPINEPHRINE OR PUSH-DOSE PRESSOR EPINEPHRINE:
  - Infuse 2-10 mcg/min IV/IO from Epinephrine drip for hypotension not corrected by fluid challenge **OR** 1-2mL Push Dose Epinephrine titrate to maintain SBP>90mmHg.

- BENADRYL (DIPHENHYDRAMINE):
  - 0.5 mg/kg IV/IO or IM (maximum 50mg)
- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 125mg IV/IO/IM, if available
- See pg. 37 *Cardiogenic Shock protocol*.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ASTHMA/BRONCHITIS

RATIONALE

Asthma is a common disease that may rapidly become life threatening. Most asthma patients treat themselves, but occasionally require EMS intervention. Asthmatic patients usually wait until their self-treatments fail before making an EMS request. This increases their chance of presenting in acute distress or status asthmaticus. Rapid recognition and prompt treatment is crucial. Airway management with an ET tube or subglottic device may be necessary.

History	Signs and Symptoms	Differential

• Age
• Medications
• Past medical history (e.g., Asthma, Chronic Bronchitis, COPD
• Allergies
• Recent physical exertion
• Onset
• Provocation
• Quality (e.g., pressure, constant, sharp, dull, etc.)
• Region/Radiation/Referred
• Severity (0 – 10 scale)
• Time (onset/duration/repetition)
	• Heart rate may be > 100
	• Restlessness
	• Respiratory distress
	  ○ Persistent coughing
	  ○ Tachypnea
	  ○ Expiratory wheezing
	  ○ Hypoxia
		• Congestive Heart Failure
		• Bronchiectasis
		• Cystic Fibrosis
		• Chronic Bronchiolitis
		• COPD
		• Asthma

TRANSPORT TRIAGE

BLS	
• Baseline normal ventilation and respiratory effort not requiring treatment	• Normal VS; baseline mental status
ALS	
• Abnormal ventilation or respiratory effort • Home oxygen or chronic steroids	• Wheezes, decreased breath sounds with Shortness of breath • Chest tightness

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO

- Monitor ECG. Provide continuous cardiac monitoring.
- Apply Nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat treatment if indicated for wheezing.
- Consider CPAP if patient's respiratory status is not improving. The patient must be awake, alert, oriented and able to follow commands to use CPAP.

MODERATE TO SEVERE RESPIRATORY COMPROMISE NOT IMPROVING:

- EPINEPHRINE (1:1,000):
  - Consider 0.1-0.3mL 1:1,000 (1 mg/mL) IM

EXTREME RESPIRATORY COMPROMISE (STATUS ASTHMATICUS):

- PUSH-DOSE PRESSOR EPINEPHRINE:
  - Consider 10-20mcg (1-2mL) over 1-2 minutes IV/IO (bronchospasm, stridor); repeat as needed every 5 minutes. Maximum total dose 20mL = 200mcg = 2 syringes.

- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 125mg slow IV, IO or IM (if available)
- MAGNESIUM SULFATE:
  - 2g IV/IO in 100mL over 10 minutes for asthma not responding to other treatment if bronchospasm and hypoxia persist.
- Do not delay Advanced Airway Management if indicated.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

BEHAVIORAL EMERGENCIES

RATIONALE

Patients with agitated delirium are very difficult to manage. High risk patients with risk management concerns can often lead to injury of EMS personnel if patients are not managed properly. They are generally young adult males, often times very febrile, tachycardic, diaphoretic, combative and surprising strength while resisting to be restrained. Substance abuse with stimulants commonly associated with signs and symptoms include anxiety, agitation, confusion, affect change, hallucinations, delusional thoughts, bizarre behavior, combative/violent behavior, and expression of suicidal/homicidal thoughts. Assessment of the patient's mental status is a component of the primary survey. An altered mental status could be caused by a variety of reasons and should be noted using GCS and AVPU.

History	Signs and Symptoms	Differential
• Situational crisis • Psychiatric illness/medications • Injury to self or threats to others • Medical alert tag • Substance abuse/overdose	• Anxiety, agitation, or confusion • Delusional thoughts, bizarre behavior, or hallucinations • Expression of suicidal/homicidal thoughts • Diaphoretic • Febrile • Tachycardic • Dry mouth/lips • Minimal clothing	• Altered mental status. • Alcohol intoxication • Toxin / substance abuse – methamphetamine/cocaine • Medication effect/overdose • Withdrawal symptoms – opiates/alcohol – delirium tremens • Hypoglycemia • Acute psychosis – bipolar, manic state, paranoid schizophrenia

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • No other ALS priority symptoms • Patients with senile dementia	• History of TBI with normal VS • Suspected alcohol intoxication
ALS	
• Altered mental status • Blood sugar < 60mg/dL • Violent, with suspicion of overdose or other medical cause	• Suffocation • Suspicion of overdose • Suspicion of alcohol or drug withdrawal syndrome (DTs)

EXCITED DELIRIUM

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

- Administer oxygen by appropriate device.
- Administer high flow oxygen by non-rebreather if tolerated.
- Restraints will be used only when the patient is likely to harm themselves or others. **If combative and violent do not attempt to restrain until ketamine is given.** Patients who must be restrained should be placed so that the airway can be effectively monitored. *(See Ch. 9 **Restraint Protocol**)*
- Document the patient's temperature.
- Contact Poison Control at (800) 282-3171 or (800) 222-1222, if indicated.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO. **DO NOT ATTEMPT IV** in the combative patient with uncontrolled agitated delirium, until sedated and restrained.
- Provide continuous ECG monitoring when possible.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- Apply Nasal capnography if O_2 falls below 92% when possible.

UNCOOPERATIVE (INTERFERING OR PREVENTING TREATMENT REQUIRED FOR EMERGENT CHIEF COMPLAINT) AND *NON-VIOLENT:*

- DROPERIDOL (INAPSINE):
  - **Alcohol** – 5mg IM/IV; may repeat x1 in 5 minutes.
  - **Psychosis** – 5mg IM/IV; may repeat x1 in 5 minutes.
  - **Severe Anxiety** – 2.5mg IM/IV. May repeat x1 in 5 minutes.
- VERSED (MIDAZOLAM):
  - **Sympathomimetics** – 2mg IV, 4mg IM/IN; may repeat x1 in 10 minutes.

ONCE THE PATIENT IS SEDATED AND MORE MANAGEABLE:

- Apply NC $EtCO_2$ to monitor closely for hypoventilation/apnea once medicated.
- Establish IV access and deliver IV fluids wide open for the treatment of the lactic acid build up and dehydration.
- SODIUM BICARBONATE:
  - Add 50mEq into a 1000mL NS bolus if $EtCO_2$<25mmHg.
- **Continuous ECG monitoring and 12 lead.**
- **Restraints**

VIOLENT / COMBATIVE PATIENTS

UNCOOPERATIVE (INTERFERING OR PREVENTING TREATMENT REQUIRED FOR EMERGENT CHIEF COMPLAINT) AND *VIOLENT:*

- KETAMINE:
  - 4 mg/kg IM/IN; maximum dose 400mg
  - 2 mg/kg IV as a redose in 10 minutes if not adequately sedated to a total max dose of 600mg
- If no improvement, consider RSI.
- SODIUM BICARBONATE:
  - Add 50mEq into a 1000mL NS bolus if $EtCO_2$ is < 25mmHg.

IF PATIENT IS PRESENTING WITH A DANGER TO SELF/OTHER:

- KETAMINE:
  - 4 mg/kg IM, maximum per dose 200mg.
  - 4 mg/kg IN is allowed if IM route is not accessible. May repeat dose in 10 minutes with maximum total dose 600mg or 400mg if over age 65.
- DROPERIDOL (INAPSINE):
  - 10mg IM/IV **ONLY if Ketamine is not available.** May repeat 5mg in 10 minutes if uncontrolled combative agitated delirium persists.
- VERSED (MIDAZOLAM):
  - 5mg IV for patient restrained with conventional methods and IV access has been established without difficulty. May repeat as needed to a max 10 mg IV if not hypotensive in 10 minutes.
  - **NOTE: You may administer Versed IV or IN to maintain sedation, after IM Ketamine administration, in the patient experiencing agitated delirium.**

ONCE THE PATIENT IS SEDATED AND MORE MANAGEABLE:

- Apply NC $EtCO_2$ to monitor closely for hypoventilation/apnea once medicated.
- Establish IV access and deliver IV fluids wide open for the treatment of the lactic acid build up and dehydration.
- SODIUM BICARBONATE:
  - Add 50mEq into a 1000mL NS bolus if $EtCO_2$<25mmHg.
- **Continuous ECG monitoring and 12 lead.**
- **Restraints**

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CARBON MONOXIDE INHALATION

RATIONALE

Carbon monoxide poses a threat to the patient and the rescuer. Use caution in assessing the CO inhalation patient and always administer high flow O_2. Normal diagnostic methods such as pulse oximetry may give normal readings when it is not. This exposure interferes with oxygen exchange on the cellular level. Always consider this exposure in any kind of airway burn or smoke inhalation.

History	Signs and Symptoms	Differential
• Industrial or closed space fire • Facial burns • Previous CO poisoning • Propane powered equipment (e.g., power mower, tractor, gas powered equipment) • Gas home heaters, natural gas stoves, kerosene heaters • Gas clothes dryer or hot water heater • Multiple people or pets with similar symptoms	• AMS • Malaise/Fatigue • Flu-like symptoms • Weakness • Headache • Dizziness • Blurred vision • Ataxia • Seizure • Nausea/vomiting/cramping • Chest pain • Hypoxia	• Diabetic emergency • Infection/sepsis • Myocardial infarction • Head injury/trauma • Ingestion/toxic exposure • Cerebral vascular accident

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Breathing normally	• No chemical exposure (Hazmat) • SPCO2 < 10% with no symptoms
ALS	
• Hazmat incident • Difficulty breathing • Altered mental status. • Abnormal VS • Hypoxia of unknown cause	• Smoke inhalation • Poisoning • Burns • SPCO > 10% with other symptoms

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Remove patient from source of exposure. Take precautions against toxic environment.
- Assess for signs including vomiting, altered mental status, seizure, flushing, cyanosis, or cherry red skin (late sign).
- Assess for symptoms including headache and tinnitus.
- Administer 100% oxygen by appropriate device.

- Keep patient quiet to minimize oxygen demand.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Assess the patient's Carbon Monoxide level using the rainbow sensor in place of pulse oximetry. Follow the table below for treatment guidelines.
- Apply Nasal Capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat treatment if indicated for wheezing.
- Transport to the closest emergency department.
- **Consider the need early for administering the Cyanokit for any patient with suspected smoke inhalation and/or an elevated Carbon Monoxide level. Call the District Chief early for Cyanokit if you suspect the need to administer.**

SpCO %	Signs & Symptoms	Pre-Hospital Treatment
0-4	Possible minor headache	Observe
5-9	Headache	100% oxygen, reassess after 10 minutes on 100% oxygen
10-19	Dyspnea, headache	100% oxygen and transport to closest appropriate facility
20-29	Headache, nausea, dizziness	100% oxygen and transport to closest appropriate facility
30-39	Severe headache, vomiting, altered LOC	100% oxygen and transport to closest appropriate facility
40-49	Confusion, syncope, tachycardia	100% oxygen and transport to closest appropriate facility
50-59	Seizures, shock, apnea, coma	Secure airway and 100% oxygen and transport to closest appropriate facility
>59	Coma, death	Secure airway and 100% oxygen and transport to closest appropriate facility

- **Consider transport to hospital with hyperbaric chamber.**

DECOMPRESSION SICKNESS & CARBON MONOXIDE POISONING

Patients with decompression sickness or carbon monoxide poisoning shall be transported to the closest emergency department. If confirmed, the patient is experiencing decompression sickness or carbon monoxide poisoning, the crew will consult with online medical control for transport to an emergency department that has a hyperbaric chamber. Prior to transport of a patient requiring hyperbaric medicine crews shall:

- Notify Brevard while on scene that transport to an emergency department that has a hyperbaric chamber will be required.
- Brevard shall check the availability of hyperbaric chambers closest to Brevard County. Below is a list of hospital facilities who have hyperbaric chambers and are in order from closest to furthest in distance from Brevard County:
    - Advent Health South – 601 East Rollins, Orlando, FL (407-303-1940)
    - St Mary's Medical Center – 901 45th St, West Palm Beach, FL (561-844-6300)
    - Blake Medical Center – 2020 59th St W, Bradenton, FL (941-792-6611)
    - Mercy Hospital – 3663 S Miami Ave, Miami, FL (305-854-4400)
    - Spring Hill Medical Center – 3719 Dauphin St, Mobile, AL (251-460-5333)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CEREBROVASCULAR EVENT: STROKE/TIA

RATIONALE

Rapid identification of possible stroke victims is essential. "Time is brain" applies to the stroke victim in the same way that "time is muscle" applies to AMI patients. Rapid identification and transportation of the stroke victim is crucial. Notifying the emergency department of a "Stroke Alert" may speed patient treatment upon arrival to the hospital.

History	Signs and Symptoms	Differential

• Last seen normal.
• A&O Status and GCS
• Family members phone number
• Previous stroke or TIA or brain hemorrhage
• Major surgery within last 2 weeks
• Signs of active bleeding, including Melena
• Associated diseases (DM, HTN, CAD)
• Atrial fibrillation
• Medications (blood thinners)
• History of TBI
• History of brain tumor,
	• Altered mental status.
	• Weakness or paralysis
	• Blindness or other sensory loss
	• Aphasia or dysarthria
	• Syncope
	• Vertigo or dizziness
	• Vomiting
	• Headache
	• Seizure
	• Respiratory pattern change
	• Hypertension/hypotension
	• Diplopia or double vision
	• Ataxia
		• See Altered Mental Status
		• TIA
		• Sepsis
		• Seizure/Todd's paralysis
		• Hypoglycemia
		• Stroke
		  ○ Thrombotic or embolic (~85%)
		  ○ Hemorrhagic (~15%)
		• Brain tumor
		• Trauma – TBI
		• Dialysis or renal failure
		• Bell's Palsy
		• Alcohol withdrawal

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• Weakness, paralysis, numbness, speech, or movement problems new from baseline • Altered mental status	• A sudden change in mental status • Abnormal breathing • Symptoms not baseline

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- If the Cincinnati Pre-hospital Stroke Assessment is positive, you will now conduct the VAN Stroke Assessment to detect large vessel occlusions (LVO).

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

- Perform focused history and physical assessment, including neurological assessment.
- Establish onset of signs/symptoms.
- Do not delay transport for detailed secondary assessment.
- Elevate head of bed 30°.
- **When calling a "Stroke Alert," be sure to convey to the hospital and Brevard if the patient is VAN Positive (Large Vessel Occlusion) or VAN Negative.**

TRANSPORT TO THE NEAREST APPROPRIATE HOSPITAL

- **Comprehensive or Thrombectomy Stroke Center (HRMC)**
  - VAN+ *(suspected large vessel occlusion)*
- **Primary Stroke Center (All county hospitals *except* Melbourne Regional Medical Center)**
  - VAN- *(suspected small vessel occlusion)*
  - LKW > 24 hours

- Establish **TWO** IVs/IOs. If possible, establish large bore in the AC.
- Do a blood draw for hospital if tubes available. Each tube should be labeled with patient's legal name, DOB, the date, time drawn, and Medic's last name.
- Apply Nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- DEXTROSE (D50):
  - If glucose check is < 60 mg/dL, administer D50 25 Gm IV/IO and repeat neuro exam.
- DEXTROSE (D10):
  - If D50 is unavailable, administer D10 in the 250mL of NS may be administered using a large bore IV catheter and a maximum infusion set (10gtts/mL or 15gtts/mL).
  - The entire 250mL (25G) must be infused as quickly as possible.
- Complete Stroke Alert Form and have a copy available for the receiving facility.
- **AEROMEDICAL TRANSPORT:**
  - If the patient is north of the Pineda Causeway (mainland and beachside), south of Malabar Road (mainland), south of Station 64 (beachside) and west of I-95 (county-wide) **AND** transport is required to a Stroke Center capable of endovascular/thrombectomy therapy, the ground paramedic crew shall convey to the Flight team which hospital has been notified and is capable of providing the required therapy.
- The following is a list of in-county Comprehensive, Endovascular/Thrombectomy capable and Primary Stroke Centers:

- Holmes Regional Medical Center **(Thrombectomy/Primary Stroke Center)**
- Cape Canaveral Hospital, Palm Bay Community Hospital, Parrish Medical Center, Rockledge Regional and Viera Hospital are approved **Primary Stroke Centers**
- For Out of County Stroke capable receiving centers please refer to Hospital Locations in Chapter 8.

Stroke Checklist

- ✓ Review Contraindications
- ✓ Place patient in heads up position to 30°
- ✓ Conduct Cincinnati Stroke Assessment (FAST) neuro assessment and if positive proceed to VAN assessment.
- ✓ Blood draw
- ✓ Antecubital AC IV (preferred)
- ✓ Early notification of Stroke Alert < 10 minutes
- ✓ Obtain Last Known Well
- ✓ Family member phone number
- ✓ LVO's transported to the closest Thrombectomy Stroke Center (Holmes Regional Medical Center) or Comprehensive Stroke Center
- ✓ Refer to State Criteria

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CEREBROVASCULAR EVENT: SUBARACHNOID HEMORRHAGE (STROKE ALERT WITH HEMORRHAGE)

RATIONALE

Of the 800,000 strokes annually in the US, 56,000 of these are subarachnoid hemorrhages (SAH). The average age for SAH is <55 and the mortality rate is 50%. 15% of these patients die before reaching the hospital. SAH is bleeding around the brain as the result of a partial or complete rupture in a cerebral vessel (aneurysm). The standard of care for treating this time critical brain hemorrhage is rapid transport to a hospital that provides interventional neurological care. Classic symptoms are acute onset of "the worst headache of my life" with transient loss of consciousness, neck pain and often times, high blood pressure. These symptoms commonly follow exertion. Patients taking anticoagulation medications are at a higher risk of SAH. The SAH Stroke Alert protocol below is based on the Ottawa SAH rule.

History	Signs and Symptoms	Differential
• Age • Medications • Past medical history (e.g., Hypertension, recent significant physical exertion) • Allergies • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)' • Headache/migraines • Seizures • Hypertension	• Severe Headache (Worst Headache, Neck Pain) • Brief Loss of Consciousness • Stiff, painful flexion • Vomiting • Problems with Vision • Nausea • Seizures • Sensitivity to light • Drooping eyelid • Trouble speaking • Acute altered mental status	• Ischemic Stroke • Transient Ischemic Attack (TIA) • Acute Hypertensive Crisis • Migraine/vascular headache • Hypoglycemia • Pituitary Apoplexy • Cerebral Venous Thrombosis • Meningitis

Criteria for Stroke Alert with Hemorrhage must include all of the following:

1. **Age >40 years**
2. **"Thunderclap" headache (peak intensity immediately)**
3. **Witnessed or reported loss of consciousness.**
4. **Onset during exertion**
5. **On exam, limited neck flexion with pain and stiffness**
6. **Plus, one of the following:**

- **GCS < 12**
- **Seizure at onset**
- **SBP > 180 mmHg**
- **Nausea and vomiting**

***If less than 6 criteria are identified but the index of suspicion for the presence of an intracerebral hemorrhage is high, then use Paramedic judgement.**

Then Stroke Alert with hemorrhage and transport to Comprehensive Stroke Center (CSC) or Thrombectomy Capable Stroke Center (TSC) providing endovascular therapy.

Exclusion Criteria:

- ***History of recurrent headaches; ≥ 3 episodes in 6 months***
- ***Previous history of SAH***
- ***Brain tumors or shunts***
- ***Traumatic head injuries***

TRANSPORT TRIAGE

BLS	
• Moderate Headache	
ALS	
• Hypertension	• Nausea/vomiting
• Severe Headache	• Altered Mental Status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- If the Cincinnati Pre-hospital Stroke Assessment is positive, you will now conduct the VAN Stroke Assessment to detect large vessel occlusions (LVO) *(see pg. 80 **Cerebrovascular Event: Stroke/TIA Protocol**).*

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- If Stroke Alert with hemorrhage criteria is met, call a "**Stroke Alert with hemorrhage.**"
- If no hemorrhage criteria met but Van+ or Van-, call a Stroke Alert.
- ZOFRAN (ONDANSETRON):
  - Treat nausea/vomiting with 4mg IV/IO/IM. May repeat once in 5 minutes, as needed.
- DROPERIDOL (INAPSINE):
  - 2.5mg IM/IV for vomiting refractory to Zofran. May repeat x1 in 10 minutes.
- Establish **TWO** IVs/IOs. If possible, establish large bore at the right AC.
- Do a blood draw for hospital if tubes available. Each tube should be labeled with patient's legal name, DOB, the date, time drawn, and Medic's last name.
- Provide continuous cardiac monitoring.

- Apply Nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- DEXTROSE (D50):
  - If glucose check is < 60 mg/dL, administer 25 Gm IV/IO and repeat neuro exam.
- DEXTROSE (D10):
  - If D50 is unavailable, administer D10 in the 250mL of NS may be administered using a large bore IV catheter and a maximum infusion set (10gtts/mL or 15gtts/mL).
  - The entire 250mL (25G) must be infused as quickly as possible.
- Notify Brevard of a **Stroke Alert with hemorrhage** to be transported to the nearest stroke center providing endovascular therapy (Holmes Regional Medical Center).
- Complete Stroke Alert form and have a copy available for the receiving facility.
- Air medical transport if the patient is north of the Pineda Causeway (mainland and beachside), south of Malabar Road (mainland), south of Station 64 (beachside) and west of I-95 (county-wide).

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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CHILDBIRTH EMERGENCIES

RATIONALE

Childbirth is a normal process. Abnormal presentations of hand, foot, umbilical cord, or heavy vaginal bleeding require rapid intervention at the nearest hospital with an obstetrician immediately available. Most serious hazards of delivery are treatable through prompt intervention. If eminent birth (crowning), then transport to the nearest hospital.

History	Signs and Symptoms	Priority Symptoms

• Due date
• Time contractions started/how often.
• Rupture of membranes
• Time/amount of any vaginal bleeding
• Sensation of fetal activity
• Past medical and delivery history
• Medications
• Gravida/Para status
• High risk pregnancy
• Multiple gestations
	• Contractions
	• Vaginal discharge or bleeding
	• Crowning or urge to push.
	• Meconium
		• Abnormal presentation
		  ○ Buttock
		  ○ Foot
		  ○ Hand
		• Prolapsed cord
		• Placenta previa
		• Abruptio placenta
		• Crowning at < 36 weeks gestation
		• Severe vaginal bleeding
		• Multiple gestation

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Illness during pregnancy without ALS priority symptoms
ALS	
• Bleeding or miscarriage • Baby born; in distress: premature, meconium present, APGAR < 9	• 3rd trimester bleeding • Breech or abnormal presentation • High-risk or known complications

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Mother:
  - Administer oxygen by appropriate device.
  - Be prepared to manage shock.
  - Identify gravid, para, contraction timing and duration, prenatal care (or lack of it), past or known complications, medication or drug use, and last menstrual period.
  - If the patient is hypotensive, consider placing the patient on her left side.
  - Deliver the baby as indicated (crowning present).

- Manage complications as needed.
- Administer external uterine massage after delivery and have mother nurse baby if willing to do so.

- Baby:
  - Initiate basic life support care (reference BLS Care page 19)
  - Suction and maintain a patent airway.
  - Administer oxygen by appropriate device.
  - Dry and keep the baby warm.
  - Perform APGAR scoring assessment at one minute and then again in five minutes post-delivery. Continue APGAR scoring assessment every five minutes until arrival at the hospital.
  - Observe the airway for meconium and fluids.

Criteria	0 points	1 point	2 points
Heart Rate	Absent	<100	>100
Respiratory Rate	Absent	Slow, irregular	Good, crying
Muscle Tone	Flaccid	Some flexion	Active motion
Reflex Irritability	No response	Grimace	Cough or sneeze
Color	Blue or Pale	Pink with blue	Extremities Fully pink

ALS CARE

- Establish IV/IO at TKO rate for mother. Fluid challenge if hypotension not corrected by BLS care.
- Provide continuous EKG monitoring.
- Meconium suctioning, if indicated.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

RATIONALE

Patients frequently present with C.O.P.D. Proper management may shorten the patient's hospital stay and distress. Treatment is directed at increasing oxygen delivery without decompensating the patient's respiratory drive.

History	Signs and Symptoms	Differential

• Age
• Medications
• Past medical history (e.g., Asthma, Chronic Bronchitis, COPD
• Allergies
• Recent physical exertion
• Onset
• Provocation
• Quality (e.g., pressure, constant, sharp, dull, etc.)
• Region/Radiation/Referred
• Severity (0 – 10 scale)
• Time (onset/duration/repetition)
• Home O_2?
• Last time admitted.
• Ever intubated.
• End of life orders
• Tobacco or vaping?
	• Heart rate may be > 100.
	• Restlessness
	• Altered mental status.
	• Syncope
	• Nausea
	• Diaphoresis
	• Conduct 12 Lead if any of the above are present.
	• Respiratory distress
	  ○ Persistent cough
	  ▪ Productive
	  ▪ Dry
	  ○ Short of breath or wheezing
	  ○ Rapid respiratory rate
		• Congestive Heart Failure
		• Bronchiectasis
		• Cystic Fibrosis
		• Chronic Bronchitis
		• Pneumonia
		• COPD
		• Asthma

TRANSPORT TRIAGE

BLS	
• Baseline normal ventilation and respiratory effort	• Normal VS; baseline mental status
ALS	
• Abnormal ventilation or respiratory effort	• Patient on home oxygen and pulse oximeter

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess respiratory status and effort.
- Administer oxygen by appropriate device.

- Interview patient regarding history of respiratory infection, productive cough, ventilator use, home oxygen use, home nebulizer use, and hospitalizations.
- Place the patient in a position of comfort.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous ECG monitoring.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat as indicated unless chest pain present or HR > 140 bpm. May administer nebulized drugs prior to vascular access.
- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 125mg Slow (> 30 seconds) IV/IO/IM (if available).
- Apply Nasal capnography if O_2 sats are <92% as indicated.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- Consider CPAP if the patient is not improving with DuoNeb and oxygen. The patient must be awake, alert, oriented and able to follow commands to use CPAP. If the patient is obtunded, hypoxic and in respiratory distress consider positive pressure ventilation with a BVM, subglottic device or proceed to RSI or DSI protocol with ETT placement.
- VERSED (MIDAZOLAM):
  - If CPAP, Versed 1mg IV/IO for anxiety with CPAP. May repeat x1 after 5 minutes.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

DIABETIC EMERGENCIES (HYPERGLYCEMIA)

RATIONALE

The hyperglycemia patient may suffer from severe dehydration and hyperosmolar coma resulting in a decreased level of consciousness and life-threatening metabolic acidosis.

History	Signs and Symptoms	Differential
• Past medical history • Medications (insulin, pills) • Recent blood glucose check • Last meal • Compliance with diet/meds • Blood sugar log • Admitted for diabetes? When?	• Altered mental status. • Combative or irritable • Diaphoresis • Seizure • Abdominal pain • Nausea or vomiting • Weakness • Dehydration • Deep or rapid breathing	• Alcohol or drug use • Toxic ingestion • Head injury • Seizure • Stroke • Altered mental status.

TRANSPORT TRIAGE

BLS	
• Normal VS; conscious and alert (baseline) • Breathing normally	• High blood sugar – no associated symptoms
ALS	
• Altered mental status. • Unconscious	• Rapid breathing • High blood sugar (> 300 mg/dL) with other ALS priority symptoms

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess for Kussmaul respirations (irregular respiratory rate)
- Administer oxygen by appropriate device.
- Inquire of the conscious patient about a history of diabetes, insulin dependence and compliance with medications.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- NORMAL SALINE:
    - IV/IO NS rapid infusion if patient shows signs of dehydration, has a blood glucose level >300 mg/dL, or has decreased level of consciousness 20 mL/kg NS fluid bolus followed by 500 mL/hour drip.

- Apply Nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

DIABETIC EMERGENCIES (HYPOGLYCEMIA)

RATIONALE

Acute hypoglycemia (or insulin shock) may very quickly cause brain damage and must be rapidly treated. Hypoglycemic emergencies have a rapid onset. Patients who are treated for insulin shock frequently recover consciousness rapidly and refuse transportation. Do not delay treatment/transport because of this possibility.

Corrective measures for hypoglycemia are highly successful. The patient's mental condition may deteriorate, and seizure activity or coma may develop. Some patients become agitated, develop psychotic behavior or cerebrovascular-event-like symptoms such as hemiplegia, paresthesia, or cranial nerve palsy. Always suspect hypoglycemia in any patient with an unexplained altered mental status.

History	Signs and Symptoms	Differential

• Past medical history
• Medications
• Recent blood glucose check
• Last meal
• Compliance with diet/meds
• Blood sugar log
	• Altered mental status.
	• Combative or irritable
	• Diaphoresis
	• Seizure
	• Nausea or vomiting prolonged.
	• Weakness
	• Infection
	  ○ ARI/Pneumonia
	  ○ Cellulitis
		• Alcohol or drug use
		• Toxic ingestion
		• Trauma or head injury
		• Seizure
		• Stroke
		• Altered mental status.
		• Sepsis

TRANSPORT TRIAGE

BLS	
• Normal VS; conscious and alert (baseline) • Breathing normally	• Low blood sugar corrected with oral glucose on-scene
ALS	
• Unconscious • Altered mental status • Glucose < 60 with other symptoms	• Abnormal breathing (slow or rapid) • Dehydration or Hypotension

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess for last insulin injection and food intake.
- Administer oxygen by appropriate device.
- Assist administering oral glucose, gel or paste, if conscious and if available.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

- Establish IV/IO
- Provide continuous cardiac monitoring.
- DEXTROSE (D50):
  - Administer 25G IV/IO if glucose is < 60 mg/dL. May repeat if glucose continues to be < 60 mg/dL and patient is symptomatic.
- DEXTROSE (D10):
  - If D50% 25G is unavailable, administer D10% in the 250 mL of NS, infused as quickly as possible.
- GLUCAGON:
  - If unable to establish IV or IO and glucose < 60 mg/dL, administer Glucagon 1mg IM, may repeat within 25 minutes, if necessary.
- VERSED (MIDAZOLAM):
  - If seizures, 2mg IV/IO. May repeat 1x prn, in 5 minutes if seizure reoccurs or does not subside. Max total dose 10mg
  - 4mg IN/IM. Consider if actively seizing.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

DROWNING EMERGENCIES

RATIONALE

Drowning is a process resulting in primary respiratory impairment from submersion in a liquid medium. This definition implies that a liquid-air interface is present at the entrance to the victim's airway and can prevent the individual from breathing oxygen. Outcome may include delayed morbidity. There is a possibility with any introduction of liquid to the lungs of a delayed worsening in condition even up to several hours. Drownings should always be treated, even if the patient presents little to no adverse symptoms. The terms wet drowning, dry drowning, active or passive drowning, near-drowning, secondary drowning, and silent drowning should be discarded. If the patient is old enough or known to know how to swim-immobilize. If patient can't swim, consider it a drowning and immobilization may be withheld.

History	Signs and Symptoms	Differential

• Age
• Duration of submersion
• Water temperature
• Type of water (salt, fresh, pool, etc.)
• SCUBA Diving
• Trauma possible? (Diving into pool)
	• Airway – Clear vs. Foam vs. water/vomit
	• Spontaneous Breathing
	• AMS
	• Cold/Shivering
	• Motor neuro exam/priapism
	• Bradycardia
	• Hypothermia
		• Hypothermia
		• Hypoglycemia
		• CNS dysfunction
		  ○ Seizure
		  ○ Head injury
		  ○ Spinal cord injury

TRANSPORT TRIAGE

BLS	
• Normal VS • Normal Breathing	• No Trauma
ALS	
• Abnormal breathing • Altered mental status. • Decreased or absent vital signs	• Vomiting • Coughing

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- **Spinal immobilization if cause unwitnessed by BCFR personnel or if trauma suspected.**
- Thorough suctioning of airway
- Administer 100% oxygen NRB.
- Place patient in supine/left lateral recovery position.
- Keep patient warm and transport expeditiously.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

- Establish IV/IO
- Provide continuous ECG monitoring.
- Apply Nasal Capnography if O_2 sats are <92%
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- Consider CPAP at 7.5 cmH2O for patients with significant hypoxia or dyspnea. The patient must be awake and able to follow commands to use CPAP, if the patient is unable to assist by holding the mask and follow commands proceed to RSI/DSI.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ENVIRONMENTAL COLD EMERGENCIES

RATIONALE

Cold related emergencies are possible. These situations often involve water. The wide range of temperatures between day and night can cause problems for the unprepared. Use of alcohol and various drugs can affect how a patient reacts to cold. The elderly and young are also particularly susceptible to hypothermia.

History	Signs and Symptoms	Differential
• Age • Exposure to decreased temperatures but may occur in normal atmospheric temperatures. • Time and length of exposure • Drug or alcohol use • Infection or sepsis • Past medical history • Medications	• AMS • Cold or clammy skin • Shivering • Extremity pain or sensory abnormality • Bradycardia • Hypotension or shock	• Sepsis • Environmental exposure • Hypoglycemia • CNS dysfunction ○ Seizure ○ Head injury ○ Spinal cord injury

TRANSPORT TRIAGE

BLS	
• Normal VS and baseline mental status • No other symptoms	
ALS	
• Cardiac history (CAD, MI, hypertension) • Altered mental status. • Tympanic < 95 degrees F	• Change in skin color; ○ Frostbite: pale, grey, numb “bloodless” skin ○ Hypothermia: pale, cyanosis with decreased mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess for shivering, lethargy, muscle stiffness, decreased mental status, discoloration of skin, and numbness.
- Remove wet clothing and protect patient against heat loss and wind chill.
- Place patient in horizontal position, avoiding rough movement and excess activity.
- Completely dry patient and cover with insulated blankets.
- Heat packs to groin/axilla/chest.
- Administer oxygen by appropriate device.
- Assess the patient’s temperature.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- DEXTROSE (D50):
  - If glucose check is < 60 mg/dL, administer D50 25 Gm IV/IO and repeat neuro exam.
- DEXTROSE (D10):
  - If D50 is unavailable, administer D10 in the 250mL of NS may be administered using a large bore IV catheter and a maximum infusion set (10gtts/mL or 15gtts/mL).
  - The entire 250mL (25G) must be infused as quickly as possible.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ENVIRONMENTAL HEAT EMERGENCIES

RATIONALE

Cooling the patient suffering a heat emergency protects the body and CNS from possible permanent damage. Careful evaluation and a good history of the event are essential. Be aware that some people are more sensitive to heat than others, with the elderly and pediatric being the most susceptible. When evaluating these patients, assess the patient's environmental conditions. Decreased level of consciousness is often a symptom of severe heat emergencies.

History	Signs and Symptoms	Differential
• Exposure to increased temperatures, humidity, or extreme physical exertion • Time and length of exposure or last seen. • Fatigue or muscle cramping • Poor oral intake of fluids • Past medical history • Medications • Medications impairing physiological cooling (opioids, antihistamines, amphetamines, cocaine, diuretic, hypertension meds)	• AMS • Hot, dry, and/or sweaty skin • Hypotension or shock • Seizures • Nausea • Tachycardia • Elevated temperature	• Fever/Sepsis • Hyperthyroidism • Drug induced hyperthermia (NMS – Neuroleptic Malignant syndrome) • Delirium tremens (DTs) • Heat cramps • Heat exhaustion • Heat stroke • Hypovolemia shock

TRANSPORT TRIAGE

BLS	
• Normal VS and baseline mental status • No other symptoms	
ALS	
• Cardiac history (CAD, MI, hypertension) • Altered mental status. • Tympanic > 101 degrees F	• Heat exhaustion: perfuse diaphoresis, dehydration. • Heat stroke: red, dry skin with decreased mental status, hypovolemic shock

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess the patient's temperature.
- Move patient to cool environment and remove clothing.
- Place the heat exhaustion patient in a supine position with feet elevated.
- Place the heat stroke patient in a semi-reclining position (with head elevated 15-30 degrees if normotensive).

- Sponge with cool water or cover with a wet sheet and fan the patient.
- Apply cold packs to lateral chest wall, groin, axilla, carotid arteries, temples and behind knees if rapid cooling is required.
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- NORMAL SALINE:
  - Infuse 1000 mL NS. May repeat x1.
  - If SBP<90mmHg, administer NS fluid boluses in increments of 500mL NS to keep SBP>90mmHg.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

OVERDOSE
(UNKNOWN ETIOLOGY)

RATIONALE

Not all cases of poisoning or overdose are life threatening immediately. If the patient has decreased LOC and you suspect overdose, every effort should be made to get a SAMPLE history. Use calm management and be prepared for a violent interaction, immediate airway management, severe dysrhythmias, or even cardiopulmonary arrest. Take protective measures and use law enforcement to assist, as needed.

History	Signs and Symptoms	Differential
• Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, and quantity. • Time of ingestion • Reason (suicidal, accidental, or criminal) • Available medications in home • Past medical history and medications • Prior overdose	• Mental status changes • Hypo or hypertension • Decreased respiratory rate. • Tachycardia or dysrhythmias • Seizures • S.L.U.D.G.E.M. • Vision impairment • Pupillary changes • IV drug use – injection sites	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Aspirin • Antidepressant/antipsychotic meds • Stimulants • Anticholinergics • Cardiac medications • Solvents, alcohols, or cleaning agents • Insecticides (organophosphates) • Delirium Tremens • Alcohol withdrawal

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Unknown substance ingestion
ALS	
• Altered mental status. • Speech impairment • Impaired respiratory effort • Opiate overdose • Alcohol	• Cocaine, amphetamines, and other stimulants • Violent, agitated behavior • Hyperthermia

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Secure all possible sources of the overdose and transport them to the hospital with the patient.

- Remain particularly alert to early signs of airway compromise and hypoglycemia.
- Administer oxygen by appropriate device.
- Monitor for rapid changes in condition and behavior.
- Patients who must be restrained should be placed so that the airway can be effectively monitored. *(See Ch. 9* ***Restraint Protocol****)*
- Document the patient's temperature
- Contact Poison Control at (800) 222-1222 or (800) 282-3171.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous ECG monitoring.
- If glucose level is 60 mg/dL, follow pg. 92 **Hypoglycemia protocol**.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- Apply Nasal capnography if O_2 sats are <92%.

ADMINISTERING NARCAN (NALOXONE) – IV ACCESS:

- If respiratory depression or failure and opiate overdose is suspected, administer Narcan 2mg IV in increments of 0.5mg every 30 seconds until respiratory effort improves.
- If Methadone or Fentanyl or its derivatives (Carfentanyl, Acrylfentanyl) are suspected and some response to Narcan is noted, administer Narcan up to an additional 4mg in incremental doses of 0.5mg every 30 seconds until respiratory depression improves.
- *If the patient responds to Narcan then the patient may be attended by a Non-Solo Paramedic.*
    - Narcan is only given until the patient's respirations improve; achieving a full reversal may make the patient a management problem. Over aggressive treatment with Narcan can precipitate immediate opiate withdrawals symptoms and aggressive, agitated, even violent behavior may occur.

ADMINISTERING NARCAN (NALOXONE) – NASAL ROUTE:

- If IV access is not available and patient meets above criteria, administer Narcan 2mg via nasal route. If Fentanyl suspected, administer 2mg in each nares.
    - **NOTE:** Response to nasal Narcan will be delayed with less notable improvements than with the equivalent dose given IV because a significant portion of the medication is ineffective in the posterior oral pharynx.

NEBULIZED NARCAN (NALOXONE):

- Nebulized Narcan may be given to maintain patient's respirations while not completely reversing the opiate effects. This may be used in place of other treatments if the patient has spontaneous respirations to avoid the sudden "wake up violence" that is sometimes seen.
    - To administer mix 2mg Narcan with 3mL NS and place in a nebulizer cup. Attach the nebulizer cup to an aerosol mask for administration.

ANTIDOTES FOR MEDICATION OVERDOSE	
Medication	**Treatment**
Tricyclic Antidepressants (TCD) examples: • Amitriptyline • Imipramine (Tofranil) • Nortriptyline (Pamelor)	Sodium Bicarbonate Dosage: 1 mEq/kg of 50mL of 8.4% $NaHCO_3$ if QRS > 100 ms
Beta blockers examples: • Atenolol (Tenormin) • Metoprolol (Betaloc, Lopresor) • Propranolol (Inderal)	Push-Dose Pressor Epinephrine Dosage: 1-2mL = 10-20mcg IV/IO titrate to maintain SBP>90mmHg Glucagon Dosage: 10mg IV/IO, repeat every 10 minutes as needed to keep hr > 60 BPM
Calcium channel blockers examples: • Amlodipine (Norvasc) • Diltiazem (Cardizem, Tiazac, others) • Verapamil (Calan SR, Verelan)	Push-Dose Pressor Epinephrine Dosage: 1-2mL = 10-20mcg IV/IO titrate to maintain SBP>90mmHg Calcium Chloride *(some first responding agencies may carry the following medication):* Dosage: 1g IV/IO slow (over 2 minutes)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

PAIN MANAGEMENT

RATIONALE

Pain management is an important part of patient care. Some patients, either by a medical condition or traumatic injury, require pre-hospital management of their pain to improve a medical condition and/or decrease anxiety. This protocol should be used with discretion or receiving physician direction.

ASSESSMENT CHECKLIST

- Suspected bone fractures
- Musculoskeletal injuries
- Burns

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria • Sprains or minor fractures
ALS	
• Abnormal ABCs • Altered mental status. • Significant mechanism, injury to possibly dangerous area	• Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Immobilize, elevate, and apply ice to injured areas.
- Place the patient in a position of comfort.
- Administer oxygen by appropriate device if indicated.
- Evaluate the possible use of other medication and/or alcohol during the interview.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Apply Nasal capnography if O_2 sats are <92%.
- DROPERIDOL (INAPSINE):
    - For severe migraines, refractory to home care, 2.5mg IM/IV. Repeat in 5 minutes as needed to a total dose of 5mg.

CHEST PAIN/AMI

- FENTANYL:
  - Administer 50 mcg IV/IO of Fentanyl for chest discomfort, as needed every 5 minutes up to a total of 100 mcg if SBP > 90 mmHg.

ABDOMINAL PAIN

- FENTANYL:
  - 100 mcg IV/IO/IN; if SBP>90mmHg.

FOR PAIN MANAGEMENT (FRACTURES, BURNS)

- FENTANYL:
  - 100 mcg IV/IO/IM (1mcg/kg), may repeat x2
  - 200 mcg IN if unable to establish an IV/IO, may repeat x2
- KETAMINE:
  - If pain refractory to Fentanyl, administer Ketamine 50mg IV/IO over 1 minute or 100mg IM/IN. May repeat x1 within 5 minutes as needed.
- Fentanyl > 300mcg or Ketamine > 100mg with on-line medical control orders.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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POISONING

RATIONALE

Poisonings by substances other than medications can present with a variety of symptoms. Sometimes the victim will present with a different chief complaint and be unaware of being poisoned. The rescuer must perform a careful and complete interview. *Poisonings may include pesticides, petroleum, and cleaning solvents; either by ingestion, inhalation, or absorption. The rescuer must be alert to the possible need to manage the scene and the patient as a hazardous materials exposure and to prevent contamination of the rescuers and the apparatus.*

History	Signs and Symptoms	Differential
• Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, and quantity. • Time of ingestion • Reason (suicidal, accidental, or criminal) • Available medications in home • Past medical history and medications	• Mental status changes • Hypo or hypertension • Decreased respiratory rate. • Tachycardia or dysrhythmias • Seizures • S.L.U.D.G.E.M. • Vision impairment • Pupillary changes • Delirium Tremens • Ataxia • Hypoxia	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Aspirin • Depressants • Stimulants • Anticholinergics • Cardiac medications • Solvents, alcohols, or cleaning agents • Insecticides (organophosphates) • CYA/TIA

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	
ALS	
• Altered mental status. • Unable to speak clearly • Abnormal breathing	• Cleaning products, pesticides, acid, or lye • Violent (Rule out hypoxia, occult cerebral bleed, overdose, head trauma, etc.)

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Remove the victim from the source (rescuer should wear appropriate PPE).
- Decontaminate the victim, as needed.
- HazMat Alert
- Assess for SLUDGEM syndrome (salivation, lacrimation, urination, defecation, gastrointestinal upset, emesis, and/or miosis). Indicates organophosphate or carbamate poisoning.
- Administer oxygen by appropriate device.

- Suction, if indicated.
- Do not use a helicopter to transport any hazardous materials exposure patient.
- Contact Poison Control at (800) 222-1222 or (800) 282-3171.
- Consider CO inhalation *(see pg. 77 **Carbon Monoxide Inhalation protocol**)*

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO at a TKO rate.
- Provide continuous cardiac monitoring.
- If glucose level is < 60 mg/dL, follow pg. 92 **Hypoglycemia protocol.**
- Apply Nasal capnography if O_2 sats are <92%.
- DUODOTE AUTO INJECTOR (PRALIDOXIME CHLORIDE/ATROPINE) & ATROPINE:
    - For the organophosphate or carbamate poisoning victim, administer DuoDote Auto Injector **THEN** administer Atropine 2mg IV/IO at 5 minute intervals until symptoms are controlled.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

SEIZURE DISORDER

RATIONALE

Termination of seizures protects patients from hypoxia that can cause brain injury. Frequently the rescue team never witnesses the seizure activity. This makes careful information gathering and observation important.

SEIZURE – ACTIVE

For seizure witnessed by EMS, whether treated or not.

History	Signs and Symptoms	Differential
• Reported or witnessed seizure. • Previous seizure history • Medical alert tag • Seizure medications • History of trauma • History of diabetes • History of pregnancy • Time of seizure onset • Document number of seizures • Alcohol use, abuse, or abrupt cessation • Fever	• Altered mental status. • Tonic/clonic movements – seizure • Incontinence • Seizure activity • Evidence of head trauma • Unconscious • Incontinence • Tongue biting • Blank stare • Rhythmic facial movement	• Head trauma • Metabolic, hepatic, or renal failure • Brain tumor • Hypoxia • Electrolyte abnormality • Drugs or medication non-compliance • Alcohol withdrawal • Eclampsia • Stroke • Benzodiazepine withdrawal • Epilepsy disorder

SEIZURE – POST

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

History	Signs and Symptoms	Differential
• Reported or witnessed seizure. • Previous seizure history • Medical alert tag • Seizure medications • History of trauma • History of diabetes • History of pregnancy • Time of seizure onset • Document number of seizures • Alcohol use, abuse, or abrupt cessation • Fever	• Altered mental status postictal. • Sleepiness • Incontinence • Evidence of head trauma • Unconscious • Incontinence • Bitten tongue/oral trauma.	• Head trauma • Metabolic, hepatic encephalopathy • Tumor • Hypoxia • Electrolyte abnormality • Drugs or medication non-compliance • Infection or meningitis • Alcohol withdrawal • Eclampsia • Stroke • Hyperthermia • Hypoglycemia • Epilepsy disorder

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Breathing normally
ALS	
• Pregnancy • Trauma • Diabetic • Cardiac history (CAD, MI, hypertension)	• Continuous or multiple seizures • Abnormal breathing • No seizure history

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Passively protect the patient from self-injury.
- Administer oxygen by appropriate device.
- If the patient was not protected from injury during the activity, immobilize the patient's spine.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- If blood sugar is less than 60mg/dL, follow pg. 92 **Hypoglycemia protocol**.
- Apply nasal capnography if O_2 sats are <92%.
- VERSED (MIDAZOLAM):
  - If actively seizing, give Versed 4mg IM/IN as needed every 5 minutes (maximum dose 10mg) while attempting IV access.
  - If IV/IO is established, administer Versed 2 mg as needed every 5 minutes. Maximum total dose 10mg.
- KETAMINE:
  - For status epilepticus **(seizures refractory to benzodiazepines)**:
    - 1 mg/kg IV/IO over 1-2 minutes; may repeat x1 in 10 minutes as needed. Max single dose 100mg. Maximum total dose 200mg.
    - 2 mg/kg IM/IN
- MAGNESIUM SULFATE:
  - If seizure is eclampsia related, then administer Magnesium Sulfate 2gm IV/IO (use caution to dilute before administration) and administer over 10 minutes.
  - If patient is >20 weeks gestation or up to 6 weeks post partum, consider pre-eclampsia.
- Evaluate the need for advanced airway ***(see pg. 64 Airway Management protocol).***
- Consider RSI for airway maintenance in status epilepticus. Remember, using paralytic medication masks underlying seizure activity.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

SEPSIS/SEPSIS ALERT

RATIONALE

Sepsis is a rapidly progressing, life threatening condition due to systemic infection. Severe sepsis must be recognized early and treated aggressively to prevent progression to shock and death. Sepsis may be identified when the following markers of the Systemic Inflammatory Response Syndrome (SIRS) are present in a patient with:

1. Suspected infection
2. Temperature > 38° C (100.4° F) OR < 36° C (96.8° F)
3. Respiratory Rate > 20 breaths/min
4. Heart Rate > 90 beats/min

In addition to physiologic markers of SIRS, severe sepsis may cause hypoxia and inadequate organ perfusion, resulting in severe metabolic acidosis marked by elevated blood lactate levels and decreased $EtCO_2$ levels (measured by capnography). Sepsis is a bacterial (occasionally viral) infection spreading into the blood stream, causing fever. Severe sepsis and septic shock are a result of unchecked bacterial growth causing vasodilation with an associated decrease in end organ perfusion. Decreased mental status, hypoxia with respiratory failure, renal insufficiency, and/or severe hypotension (distributive shock) requires large amounts of IV fluid infusion and vasopressor agents to decrease rapid morbidity and mortality. Suspect infection with decreased/altered level of consciousness.

The purpose of a Sepsis Alert is to provide pre-arrival Emergency Department notification in order to facilitate rapid assessment and treatment of a suspected severe sepsis patient.

History	Signs and Symptoms	Differential
• Age (common in elderly and very young) • Presence and duration of fever • Previously documented infection or illness (UTI, pneumonia, meningitis, encephalitis, cellulitis, or abscess) • Recent surgery or invasive procedure • Immunocompromised • Bedridden or immobile patients • Prosthetic or indwelling devices • Immunization status	• Hyper or hypothermia • Rash or excessive bruising • Chills • Myalgia • Markedly decreased urine output • AMS • Delayed capillary refill. • Hypo/Hyperglycemia	• Shock (hypovolemic or cardiogenic) • Dehydration • Hyperthyroidism • Hypothyroidism • Medication or drug interaction • Non-septic infection • Allergic reaction or anaphylaxis • Toxicological emergency • Hyperthermia/heat stroke • DKA/HHS

SEPSIS ALERT CRITERIA

Temperature > 38° C (100.4° F) OR < 36° C (96.8° F) AND one of the following:

- $EtCO_2 \leq 25$ mmHg
- Hypotension, SBP < 90 mmHg
- Decreased level of consciousness (especially in the elderly)

HIGH RISK FACTORS

- Immunocompromised, diabetics, patients on long term steroids
- Indwelling catheters
- Surgery in the last 6 weeks

TRANSPORT TRIAGE

BLS	
• $EtCO_2 \geq 30$mmHg or ≤ 45mmHg • SBP > 90mmHg	• Temperature between 36° C (96.8° F) and 38° C (100.4° F). • Normal Baseline Mental Status
ALS	
• Suspected infection • Altered Mental Status • Temperature > 38° C (100.4°F) or <36°C (96.8°F)	• Respiratory Rate > 20 breaths/min • Heart Rate > 90 beats/min • $EtCO_2 \leq 25$ mmHg • SBP < 90 mmHg

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device to maintain an O_2 sat above 95%.
- Record the patient's temperature.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Full ALS assessment and treatment.
- Initiate a Sepsis Alert to the receiving hospital through dispatch. Provide them with the patient's age, sex, ETA, temperature, blood pressure if Hypotensive, and $EtCO_2$.
- Do a blood draw for hospital if tubes available. Each tube should be labeled with patient's legal name, DOB, the date, time drawn, and Medic's last name.
- Establish a large bore IV or IO.
- NORMAL SALINE:
    - 1 liter, regardless of blood pressure. Assess lung sounds every 500cc. Total amount of IVF should not exceed 2000mL (500mL if hemodialysis or CHF patient).
    - If Hypotensive (SBP<90mmHg), administer fluid bolus of 30 mL/kg. If an IO is established, the distal femur is the preferred site.
- Establish a secondary large bore IV.

- Apply nasal capnography and report $EtCO_2$ with sepsis alert.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- VERSED (MIDAZOLAM):
    - If intubated, sedate with Versed IV 5mg. May be repeated as needed to maintain sedation to a maximum total dose of 10mg.
- Obtain a 12 lead ECG.
- If SBP remains < 90mmHg after a 1000mL fluid bolus, administer Vasopressor Agents.
- ROCEPHIN:
    - 1g IV/IO/IM over 1-2 minutes if SBP<90mmHg and temperature > 100.4 or < 96.8. Rocephin must be reconstituted with 10mL of NS, prior to administration.
    - *Preferred site for IM is the gluteus maximus. The dose shall be divided into 2 syringes, each containing 500mg.

VASOPRESSOR AGENTS

- PUSH-DOSE PRESSOR EPINEPHRINE:
    - Administer 10-20mcg (1-2mL) titrate to maintain an SBP>90mmHg for profound hypotension.
    - For mixing instructions, refer to Drug Manual.

OR

- EPINEPHRINE (IV VASOPRESSOR DRIP):
    - 1-4 mcg/mL = 15-60 gtts/min
- NOREPINEPHRINE (LEVOPHED):
    - If Epinephrine unavailable, 4-16 mcg/mL = 15-60 gtts/min

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

SYNCOPE

RATIONALE

Assessment of the patient's mental status is a component of the primary survey and should be noted using GCS and AVPU. A syncopal episode can result from a variety of reasons and can be confused with other cases of loss of consciousness and can result in head and other injuries. Severe pain may result in syncope.

History	Signs and Symptoms	Differential
• History of cardiac, stroke or seizures • Occult blood loss (GI or ectopic) • Females: LMP or vaginal bleeding • Fluid loss: nausea, vomiting or diarrhea. • Past medical history • Medications • Recent air travel	• Loss of consciousness with recovery • Lightheadedness or dizziness • Palpitations • Pulse irregularity • Hypotension	• Vasovagal • Orthostatic hypotension • Cardiac syncope • Micturition or defecation syncope • Psychiatric • Stroke – hemorrhagic • Hypoglycemia • Seizure • Shock • Toxicological, including alcohol. • Medication effect (hypotension) • Pulmonary embolism • AAA • Ectopic pregnancy

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Single fainting episode, now awake and alert with normal VS	• Near fainting episode, now awake and alert with normal VS
ALS	
• Abnormal VS • Multiple recent fainting episodes • Females with abdominal pain age 12-50	• Abnormal breathing • Cardiac history (CAD, MI, hypertension) • Altered mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Evaluate the need for law enforcement.
- Administer oxygen by appropriate device.
- Contact Poison Control at (800) 222-1222 or (800) 282-3171, if indicated.

- Patients who must be restrained should be placed SUPINE on the stretcher and a person must be dedicated to monitor the patient's airway.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- If glucose level is < 60 mg/dL, follow pg. 92 **Hypoglycemia protocol.**
- Establish IV/IO
- NORMAL SALINE:
  - If hypotensive or orthostatic vitals are positive, give fluid boluses in 500mL increments as needed.
- Provide continuous cardiac monitoring.
- Obtain 12 lead ECG.
- Apply Nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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VOMITING

RATIONALE

Although nausea and vomiting are common symptoms of gastrointestinal viruses or a side effect of medications, they are often times symptoms of more serious medical problems. Uncontrolled vomiting can lead to aspiration pneumonia and severe hypoxia.

History	Signs and Symptoms	Differential
• Age • Time of last meal • Last emesis/bowel movement • Improvement or worsening with food or activity. • Duration of problem • Contact with other sick person. • Past medical history • Past surgical history • Medications • Allergies • Menstrual history (Pregnancy) • Travel history • Bloody emesis/diarrhea	• Abdominal pain • Character of pain (constant, intermittent, dull, sharp, etc.) • Distension • Constipation • Diarrhea • Anorexia • Radiation **Associated symptoms (helpful to localize source):** Fever, headache, blurred vision, weakness, malaise, myalgia, cough, dysuria, mental status changes, and rash	• CNS (increased pressure, headache, stroke, CNS lesions, trauma, or hemorrhage, vestibular) • MI • Drugs (NSAIDs, antibiotics, narcotics, chemotherapy) • GI or renal disorders • Diabetic ketoacidosis • Gynecologic disease (ovarian torsion, PID) • Infections (pneumonia, influenza) • Electrolyte abnormalities • Food or toxin induced. • Medication or substance abuse • Pregnancy • Psychological

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Nausea
ALS	
• Abnormal VS	• Abnormal breathing
• Suspected food poisoning	• Cardiac history (CAD, MI, hypertension)
• Females with abdominal pain age 12-50	• Altered mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Place the patient in a position of comfort.
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

- Establish IV
- Provide continuous cardiac monitoring.
- ZOFRAN (ONDANSETRON):
  - 4mg ODT PO if nauseous but not actively vomiting.
  - 4mg IV/IO/IM. May repeat IV dose once in 5 minutes, if needed.
- DROPERIDOL (INAPSINE):
  - 2.5mg IM/IV for vomiting refractory to Zofran. May repeat x1 in 10 minutes.
- Treat other more serious signs and symptoms first (chest pain, unstable vital signs).

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CHAPTER 3: ADULT TRAUMA CARE

GENERAL INFORMATION

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport and throughout the patient care experience:

- BLS and ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous ECG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Blood Glucose (if indicated by protocol or the patient is experiencing Altered Mental Status)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- Administer oxygen with appropriate device.
- Patients with a SpO_2 sat of < 92% will receive nasal capnography if available.
- If the patient is receiving ECG monitoring prior to arrival at the hospital it will be continued until patient care is transferred to the receiving Nursing Staff.
- If defibrillation is required, the anterior/posterior pad placement shall be used. Anterior placement should be just under the patients left breast and placed so that the LUCAS piston does not come into contact with it. The placement of the posterior pad should be simultaneous with the placement of the back plate of the LUCAS Device. Please refer to Chapter 9 (pg. 362).

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.
Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Please note, some patients (and peers) may interpret a relaxed, slow approach to them as a non-caring attitude.

STANDARD TRAUMA CARE PROTOCOLS/PROCEDURES (ADULT)

RATIONALE

Traumatic injuries require prompt care and transport to the appropriate medical facility. Always suspect cervical injury. Note the mechanism of injury and other conditions that may affect patient care. *Remember the Golden Hour* – 1 hour from injury to surgery – to stop internal hemorrhage and prevent death from traumatic injury (this hour is not a time limit for trauma alerts).

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Significant mechanism, injury to possibly dangerous area	• Altered mental status. • Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- **Refer to BLS Standard of Care (page 19) and On-scene Management (page 15)**
- *Cervical immobilization shall be completed for:*
  - Any patient reporting trauma above the nipple line and midline cervical tenderness
  - Any patient that is suspected to be intoxicated, disoriented, or obtunded and is suspected to have significant trauma (either apparent or reported)
  - Any of the above patients will be immobilized, regardless of whether they are ambulatory upon your arrival.

ALS CARE

- **Refer to ALS Standard of Care (page 21) and On-scene Management (page 15)**

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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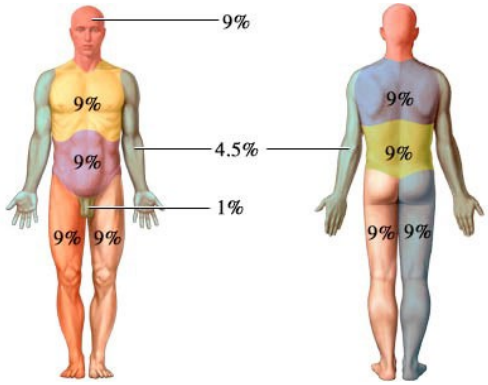
GLASCOW COMA SCALE					
EYE OPENING		VERBAL RESPONSE		MOTOR RESPONSE	
4	Spontaneous	5	Oriented	6	Obeys
3	To Voice	4	Confused	5	Localize
2	To Pain	3	Inappro. Words	4	Withdraw
1	None	2	Unintelligible	3	Flexion
		1	None	2	Extend
				1	None



ADULT TRAUMA TRIAGE CRITERIA
(adult = 16 years of age or older)

ANY 1 IN THIS CATEGORY (RED)

- The patient requires active airway assistance (other than supplemental O_2).
- The heart rate is > 120 bpm without radial pulse.
- The systolic BP is < 90 mmHg without a radial pulse.
- Best motor response is less than or equal to 4 or the Glasgow coma scale is less than or equal to 12.
- There are 2nd or 3rd degree burns greater than or equal to 15% or more of the total body surface area. (If there are 2nd or 3rd degree burns to the palms of the hand, soles of the feet or genitalia or any 2nd or 3rd degree circumferential burn, while not considered trauma alert criteria, medics should strongly consider transporting to a burn center.)
- There is amputation proximal to the wrist or ankle.
- There is penetration injury to the head, neck, or torso, excluding superficial wounds where the depth of the wound can be determined.
- There are two or more long-bone fracture sites. Suspected ankle and wrist fractures are not included. Suspected hip fractures are not included unless the hip fracture is subsequent to an MVC or fall from a height of greater than 10 feet. **NOTE: Known or suspected fractures of the radius and ulna on the same forearm are considered one fracture site. Known or suspected fractures of the tibia and fibula on the same leg are considered one fracture site.**
- There is paralysis, loss of sensation, or suspicion of spinal injury.

ANY 2 IN THIS CATEGORY (BLUE)

- The respiratory rate is 30 or more.
- Sustained heart rate is 120 beats per minute or more.
- Best motor response is 5 or less on the Glasgow Coma Scale
- There is major degloving injury or flap avulsion greater than 5".
- There is a gunshot wound (GSW) to an extremity.
- There is one long-bone fracture from an MVC or from a fall of 10 feet or greater.
- The patient's age is 55 or older.
- The patient was ejected from a motor vehicle, including motorcycle, moped, ATV, or open body of a pick-up truck.
- The patient caused steering wheel deformity by impact.

*The EMT or paramedic can also issue a "Trauma Alert" if, in his judgment, the trauma patient's condition warrants it. This will be documented, as required in section 64E-2, F.A.C.

ANIMAL BITES and STINGS

RATIONALE

Treatment will depend on several factors including the type of animal involved, size of bite, number of bites, whether or not envenomation occurred, possible patient sensitivity, and type of bite. The rescuer evidence of any allergic reaction should be noted (Refer to the anaphylaxis protocol as needed). Bites from bats, skunks, and raccoons should be reported to Brevard County Sheriff's Animal Services at 321-633-2024. Gather as much information on the animal as possible.

History	Signs and Symptoms	Differential
• Type of bite or sting • Description or photo of creature for identification, if safe to do so. • Time, location, size of bite or sting • Previous reaction to bite or sting. • Domestic vs. wild • Tetanus and Rabies risk • Immunocompromised patient	• Rash, skin break, or wound. • Pain, soft tissue swelling, or redness. • Blood oozing from the bite wound. • Evidence of infection • Shortness of breath or wheezing • Allergic reaction, hives, or itching. • Hypotension or shock	• Animal bite • Human bite • Snake bite (poisonous) • Spider bite (poisonous) • Insect sting/bite (bee, wasp, ant, or tick) • Infection risk • Rabies risk • Tetanus risk

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Superficial or minor bites	• Spider or insect bites, no other symptoms
ALS	
• Peripheral bites with serious hemorrhage • Severe central bites (see trauma alert criteria) • Large carnivores, zoo, or exotic animals	• Snake bite • Altered mental status • Abnormal VS

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Irrigate and cleanse wound
- Administer oxygen by appropriate device.
- If jelly fish sting, irrigate the site with copious sterile fluid to wash the tentacles (nematocysts). Do not scrub the affected area.
- Assess degree of bite/sting marks, outline edematous, erythematous, and ecchymotic areas with a Sharpie, noting the time.
- Administer oxygen by appropriate device.
- Immobilize and elevate any extremities bitten by a snake.

- Keep patient supine and calm.
- Remove stingers if present, taking care to avoid compressing the site.
- Identify the animal, if possible.
- For marine sting, use vinegar to flush site.
- Do NOT apply ice or cold packs to snake bites or marine stings.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Treat specific signs and symptoms as needed by applicable protocol.
- See Allergic Reaction (pg. 68) and Anaphylaxis protocol (pg. 70)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

BURNS

RATIONALE

Burn management requires aggressive care for inhalation injuries or large area burns (>15% of BSA). Prolonged treatment in the field is not justified. Pain from burns can be severe. Early, aggressive airway management is often necessary for significant airway burns.

History	Signs and Symptoms	Differential
• Type of exposure (heat, gas or chemical) • Inhalation injury • Time of injury • Other trauma • Past medical history • Medications	• Burns, pain, or swelling. • Dizziness • Loss of consciousness • Hypotension/shock • Airway compromise or distress could be presented as hoarseness or wheezing.	• Superficial – red and painful (do not include in TBSA) • Partial thickness – blistering • Full thickness – painless with charred or leathery skin • Chemical injury • Thermal injury • Radiation injury • Blast injury

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Small burns < 15%	• Sunburn or minor burns
ALS	
• Large burns (> 15% is a Trauma Alert) • Explosions; chemical burns (Hazmat) • Difficulty breathing • Altered mental status. • Burns on face involving nose or mouth- Consider transport directly to Burn Center	• Burns to the palms, soles of the feet and genitals - consider transport directly to Burn Center • Circumferential burns - consider transport directly to Burn Center

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Suction airway as needed.
- Monitor oxygen saturation.
- Administer oxygen by appropriate device. 100% facemask nonrebreather if CO toxicity is suspected.
- Cover with burn sheets and irrigate the skin with copious sterile fluids unless BSA > 15%.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO

- Provide continuous cardiac monitoring.
- NORMAL SALINE:
  - If burns are > 15% (2nd or 3rd degree) BSA, or extensive full thickness burns to hands and face, begin fluid resuscitation at a rate of 500mL NS per hour. Begin fluid resuscitation by administering 500mL fluid bolus if SBP<90mmHg. If patient has SBP>90mmHg, maintain IV at KVO rate.
- Apply Nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- If there are signs of possible airway burns such as singed facial hair or soot around the nose or mouth and symptoms of respiratory distress such as hoarseness, stridor or wheezing consider the airway compromised and perform RSI to secure airway.
- For hypovolemia, follow the Traumatic Shock protocol (pg. 134).

PAIN CONTROL (SEVERE PAIN):

- FENTANYL:
  - 100 mcg IV/IO/IM (1mcg/kg), may repeat x2
  - 200 mcg IN if unable to establish an IV/IO, may repeat x2
- KETAMINE:
  - 50mg IV/IO over 1 minute; may repeat x1 as needed within 5 minutes. 100mg IM/IN, may repeat x1 as needed in 5 minute intervals.
- If inadequate pain control after maximum dosage of medication administered, contact medical control for additional pain medication.
- When requesting additional pain medication, be sure to provide GCS, vital signs, SpO_2 and O2 supplementation, if any.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CHEST INJURY

RATIONALE

Trauma to the chest is deceptive. Any chest wall injury associated with breathing difficulty should be considered serious. Chest injury patients may deteriorate rapidly. Frequent assessments are advised.

History	Signs and Symptoms	Differential
• Time of injury • Mechanism (blunt vs. penetrating) • Damage to structure or vehicle • Location of patient in structure or vehicle • Restraints or protective equipment use. • Past medical history • Medications	• Evidence of trauma • Pain, swelling, deformity, lesions, or bleeding • AMS • Unconscious • Respiratory distress or failure • Hypotension or shock • Arrest	• Chest: ○ Tension pneumothorax ○ Flail chest ○ Pericardial tamponade ○ Open chest wound. ○ Hemothorax • Intra-abdominal bleeding • Pelvis or femur fracture • Spinal injury • Head injury • Hypothermia

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Altered mental status. • Significant mechanism, injury to possibly dangerous area	• Blunt trauma to the chest with significant force or kinetic energy • Penetrating injury • Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Apply wound seal over sucking chest wounds on all sides. Occasionally lift up a side if signs and symptoms of tension pneumothorax evolve.
- Stabilize flail segments utilizing bulky dressings.
- Stabilize impaled objects, do not remove if possible.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish a large bore IV or IO. If possible, establish 2 large bore IV lines.

- Provide continuous cardiac monitoring.
- Apply Nasal capnography if the patients O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- Perform a pleural decompression as needed for suspected tension pneumothorax (PTX). Anticipate recurrence of PTX and need for additional pleural decompression.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

DIVE INJURIES/BAROTRAUMA

RATIONALE

Barotrauma is caused by changes in atmospheric pressure. It is most commonly associated with the use of SCUBA while diving (Self-Contained Underwater Breathing Apparatus). SCUBA emergencies can occur at any depth. A patient who takes a breath of compressed air underwater at 15 feet or deeper may be a victim of barotrauma. Barotrauma can involve only the ears or involve arteries to the brain and spinal cord.

History	Signs and Symptoms	Differential
• Age • Medications • Past medical history • Allergies • Recent physical exertion • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Chest pain for several hours after diving • Respiratory distress • Neck fullness • Hypotension or shock • Altered mental status. • Syncope • Painful swallowing • Nausea • Diaphoresis • Conduct 12 Lead if any of the above are present.	• Acute Respiratory Distress Syndrome • Hypoxia • Pulmonary Emboli • Shock • Chest Trauma • Acute Coronary Syndrome • Air embolism • Decompression sickness • Barotrauma – ears/sinuses • Pneumothorax • Subcutaneous emphysema

TRANSPORT TRIAGE:

BLS	
• Normal VS; baseline mental status • Normal breathing	• Normal vital signs • Meets no trauma alert criteria
ALS	
• Abnormal breathing • Altered mental status. • Suspected neck injury • Diving or SCUBA accident	• Chest pain • Shortness of breath • Severe headache

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer 100% oxygen using NRB.
- Place the patient in a supine/left lateral Trendelenburg position, if possible.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO

- Provide continuous cardiac monitoring.
- Apply Nasal capnography if the patients O_2 sats are <92%.
- Perform pleural decompression as needed for suspected tension pneumothorax.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 64 Airway Management protocol BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required, refer to page 67.
- **Consider transport to hospital with hyperbaric chamber. Please refer to page 17 Decompression Sickness & Carbon Monoxide Poisoning or Special Considerations.**

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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FRACTURES

RATIONALE

Proper handling of open fractures reduces the risk of infection. Long bone fractures should be treated as major trauma. Be alert to the mechanisms of injury to assist recognition of fractures.

History	Signs and Symptoms	Differential
• Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications (anticoagulants)	• Evidence of trauma • Deformity, pain, swelling, bruising, or bleeding. • Absent distal pulses • Limited mobility or inability to move limb or put weight on the extremity.	• Sprain • Dislocation

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area	• Suspected spinal cord injury • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Irrigate open fractures thoroughly with saline then cover with dressing.
- Apply a traction splint to mid-shaft femur fractures.
- Apply a cold pack or ice to the site.

ALS CARE

- Call Trauma Alert if indicated.
- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO for major fractures.
- Provide continuous cardiac monitoring.
- Apply nasal capnography if O_2 sat is <92%.

PAIN CONTROL (SEVERE PAIN):

- FENTANYL:
  - 100 mcg IV/IO/IM (1mcg/kg), may repeat x2
  - 200 mcg IN if unable to establish an IV/IO, may repeat x2

- KETAMINE:
  - 50mg IV/IO over 1 minute; may repeat x1 as needed within 5 minutes. 100mg IM/IN, may repeat x1 as needed in 5 minute intervals.
- If inadequate pain control after maximum dosage of medication administered, contact medical control for additional pain medication.
- When requesting additional pain medication, be sure to provide GCS, vital signs, SpO_2 and O2 supplementation, if any.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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HEAD INJURIES / TRAUMATIC BRAIN INJURY (TBI)

RATIONALE

Severe head injury is a leading cause of death in trauma patients. Head injury is associated with 70% of severe trauma patients seen in Trauma Centers. Severe TBI should be suspected in all patients with AMS. Head injuries with LOC or GCS < 15 should be considered severe and require aggression management to prevent secondary brain injury from hypoxia and hypotension and possibly resulting in permanent disability and death. A single instance of hypotension (SBP<90mmHg) or hypoxia (SpO_2<90%) in patients with TBI may increase the mortality rate by 150%. An instance of both hypotension and hypoxia associated with TBI presents a 15x higher rate of permanent disability and death.

History	Signs and Symptoms	Signs of TBI with increased intracranial pressure/herniation
• Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications (anticoagulants)	• Evidence of trauma • Deformity, Pain, swelling, or bleeding. • Blood leaking for ears and/or nose • AMS • Unconscious • Respiratory distress or failure • Vomiting • Seizure	• Witnessed decline in GCS of 2 or more. • Change in pupil size/responsiveness. • Paralysis or weakness on one side • Posturing with stimulation

TRANSPORT TRIAGE

BLS	
• Trauma alert criteria • Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs (ex. Cushing's triad-hypertensive, irregular respiration, bradycardia) • Altered mental status	• Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Check capillary blood glucose; if blood glucose level is <60 mg/dL, follow (pg. 92) Hypoglycemia protocol.
- Immobilize the cervical spine if midline posterior spinous process tenderness or altered level of consciousness.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Provide continuous monitoring: cardiac, pulse oximetry and $EtCO_2$.
- Elevate the head 30° to avoid aspiration.
- Establish IV/IO access rapidly. Rapid NS fluid bolus as needed to keep SBP>120mmHg.
- If BP not responding to intravascular fluid bolus (IVFB) proceed to Push Dose Epinephrine.
- PUSH-DOSE PRESSOR EPINEPHRINE:
  - 1-2mL IV/IO as needed to keep SBP>120 mmHg if TBI and hemorrhagic shock.
  - For mixing instructions, refer to Drug Manual.
- TRANEXAMIC ACID (TXA) [Optional]:
  - Isolated TBI
  - If GCS 13 or less
  - 2 grams IV in 100mL NS over 10 minutes
- OXYGEN:
  - 15 LPM via NRB FM (regardless of SpO_2)
  - BVM as needed to keep SpO_2 100%; avoid hyperventilative RR < 10 BPM.
  - Evaluate the need for advanced airway and RSI if inserting an ETT.
  - Assure SpO_2 > 95% and SBP>90mmHg pre and post RSI unassisted ETT intubation.
  - Maintain $EtCO_2$ between 35-45mmHg.
    - Target 40-45mmHg for non-herniating patient
    - Target 35-40mmHg for herniating patient
  - Avoid Hyperventilation
  - Apply Nasal capnography if the patients O_2 sats are <95%.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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***TXA under evaluation for isolated severe TBI with suspected intracranial hemorrhage. May call medical control for orders.**

OPHTHALMIC INJURIES

RATIONALE

Eye injuries have a high potential for permanent impairment. Injuries to the eye may also cause a related injury to the central nervous system. Psychological support is essential, especially when the eyes are covered. Always consider cervical spine injuries with any eye injury.

History	Signs and Symptoms	Differential
• Age • Past medical history • Trauma or exposure to chemicals • Time of injury • Onset of symptoms • Previous eye surgery	• Decreased or blurred vision • Floaters/flashes/curtain coming down. • Onset moving from dark to bright. • Avulsion • Orbital edema or contusion • Deformed pupil • Burning/pain to eye(s) • Red eye/sclera • Nausea or vomiting • Pain with extraocular movement	• Multi-system trauma • Head trauma • Orbital cellulitis • Burn (e.g., chemical, thermal) • Corneal abrasion • Conjunctivitis • Parasite

TRANSPORT TRIAGE

BLS	
• Minor eye injuries (abrasion, welding, small foreign body, contact lens problem, allergy, infection)	• No other associated injuries/exposures
ALS	
• Severe eye injuries • Altered mental status	• Hazmat • Penetrating eye injury is a trauma alert

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- If the eye is chemically burned, thoroughly irrigate the affected eye(s) as soon as possible with NS.
- If the eye is penetrated, do NOT remove impaled object. Objects should be wrapped in bulky dressing to prevent movement.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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TRAUMATIC SHOCK

RATIONALE

Hypotension from traumatic blood loss requires rapid recognition, treatment, and transportation to the nearest trauma center with a goal of an hour from the time of injury to surgical intervention.

History	Signs and Symptoms	Differential
• Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding (amount?) • Past medical history • Medications (anticoagulants)	• Restlessness, weakness, dizziness, or confusion • Rapid breathing • Hypotension (late sign) • Weak, rapid pulse • Pale, cool, clammy skin signs • Delayed capillary refill.	• Shock (hypovolemic, cardiogenic, septic, neurogenic or anaphylaxis) • Tension pneumothorax • Medication effect or overdose • Vasovagal effect • Physiologic (pregnancy) • Myocardial infarction • Heart failure • Beta-blocker and other drug-related toxicity

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• Abnormal ABCs • Altered mental status. • Significant mechanism, injury to possibly dangerous area	• Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Control bleeding, if possible, through direct pressure, elevation, pressure points, and tourniquet (only as a last resort).
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish a large bore IV or IO. If possible, establish 2 large bore IV or IO lines. Do not delay transport to establish IV lines.
- Provide continuous cardiac monitoring.

FOR TRAUMATIC (HEMORRHAGIC) SHOCK – PERMISSIVE HYPOTENSION:

- TRANEXAMIC ACID (TXA):
  - Infuse 2 grams in 100mL NS over 10 minutes.
  - If traumatic cardiac arrest while providing care, 2 grams TXA IV/IO push.
- NORMAL SALINE:
  - 500mL bolus NS if SBP<80mmHg, with NS IV/IO
- Maintain SBP at 80-90mmHg.

FOR TRAUMATIC SHOCK WITH TRAUMATIC BRAIN INJURY (TBI):

- NORMAL SALINE:
  - IV fluid 500mL bolus then IV fluid up to 2 liters to keep the SBP>120mmHg.
- PUSH-DOSE PRESSOR EPINEPHRINE:
  - 1-2mL (10-20mcg) titrate to maintain SBP>120mmHg.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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LESS-THAN LETHAL WEAPONS

RATIONALE

As police agencies look for alternate methods of controlling and placing people into their custody, they have begun using "less-than lethal" weapons to do so. Patients that require less than lethal weapons to be subdued may be suffering from agitated delirium. EMS Providers are asked to respond to such situations. This protocol will deal with two (2) of the most common types of less-than lethal weapons that are currently in use by law enforcement personnel.

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Altered mental status • Significant mechanism, injury to possibly dangerous area	• Suspected spinal cord injury • Trauma alert criteria • Tased patient

PEPPER SPRAY & TEAR GAS

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)

TASER-RELATED INJURIES

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Consider oxygen administration if indicated.
- Check capillary blood glucose level if indicated.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO access, if indicated.
- Provide continuous cardiac monitoring.
- Do not try to remove the taser prongs from the patient's skin.

For Bean Bag Injuries, refer to Standard Trauma Care protocol (pg. 119).

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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CHAPTER 4: PEDIATRIC CARDIAC CARE

GENERAL INFORMATION

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport and throughout the patient care experience:

- BLS and ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous ECG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Blood Glucose (if indicated by protocol or the patient is experiencing Altered Mental Status)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- Administer oxygen with appropriate device.
- Patients with a SpO_2 sat of less than 92% will receive nasal capnography if available.
- If the patient is receiving ECG monitoring prior to arrival at the hospital it will be continued until patient care is transferred to the receiving Nursing Staff.
- If defibrillation is required, the anterior/posterior pad placement shall be used. Anterior placement should be just under the patients left breast and placed so that the LUCAS piston does not come into contact with it. The placement of the posterior pad should be simultaneous with the placement of the back plate of the LUCAS Device. Please refer to Chapter 9 (pg. 362).

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.
Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Please note, some patients (and peers) may interpret a relaxed, slow approach to them as a non-caring attitude.

STANDARD CARDIAC CARE PROTOCOLS/PROCEDURES (PEDIATRIC)

RATIONALE

Cardiac arrest in children is often secondary to a respiratory component. It is essential these patients receive rapid, decisive care in the prehospital setting. Primary treatment includes intubation and Epinephrine administration. The patient's environment may provide clues as to the underlying cause. The Pediatric Protocols are based on the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Use this age based guidebook for equipment sizing, energy settings and medication dosages and the length based tape to determine the patient's age if unknown. Prior to arrival, based on the chief complaint, determine what procedures and medications may be required to manage this medical problem. Review the applicable medical protocol and the Handtevy manual in route clarifying responsibilities of each EMT/Paramedic. It is acceptable to remain on scene until key treatment modalities have been accomplished for example, securing an airway, establishing IV/IO, administering medications, ensuring proper chest compressions and other time sensitive treatment.

TRANSPORT TRIAGE

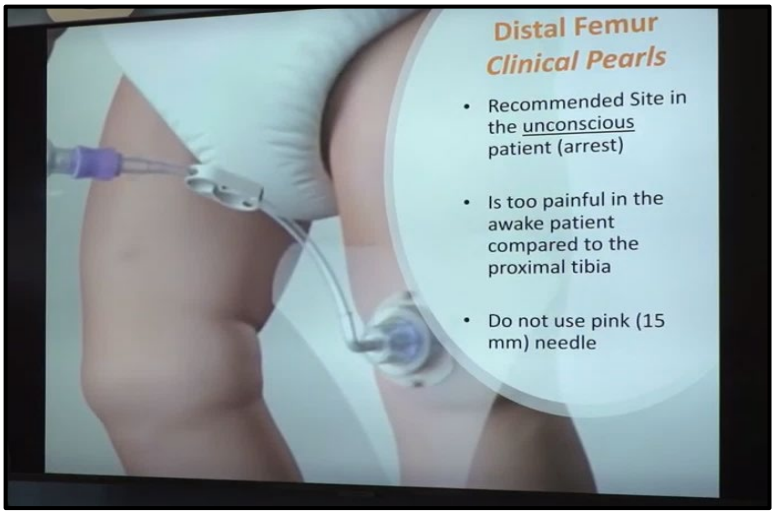
BLS	
• These patients are ALS	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating. • Altered mental status	• Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator

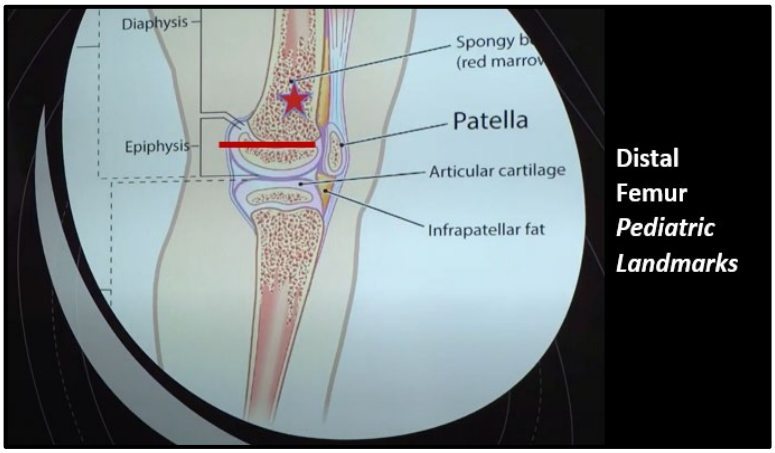
BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- If patient is pulseless and apneic:
  - Perform CPR with appropriate airway device.
  - AED as indicated.
    - Age > 8 may be treated with standard AED.
    - Age between 1-8 pediatric attenuated pads are recommended.
    - Age < 1 a manual defibrillator.
- Perform a secondary assessment.
- Check capillary blood glucose level.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Determine cardiac rhythm and follow treatments in the appropriate protocol.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol).***
- Establish vascular access by IV or IO (Femoral IO preferred site)





- 1cm above the patella then 1cm medial for infants and small children.
- 2cm above the patella at the midline for older children.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ASYSTOLE (PEDIATRIC)

RATIONALE

Asystole is no electrical activity in two non-contiguous leads. Asystole is most commonly caused by hypoxia. Ensuring a good focus on 100% CPR while analyzing changes in rhythms and managing the patient's airway have an impact on the patient's ultimate outcome.

History	Signs and Symptoms	Possible Reversible Causes

• Events leading to arrest.
• Estimated downtime.
• Past medical history
• Medications
• Suspected hypothermia
• Suspected overdose
  ○ Tricyclic
  ○ Digitalis
  ○ Beta blockers
  ○ Calcium channel blockers
• DNR or Living Will
	• Pulseless
	• Apneic or agonal respirations
	• No electrical activity on ECG
	• No heart tones on auscultation
	• No valvular movement on ultrasound
	• Signs of death
	  ○ Rigor
	  ○ Cool and cyanotic
		• Airway obstruction/respiratory disease
		• Hypovolemia (e.g., trauma, AAA or other)
		• Cardiac tamponade
		• Hypothermia
		• Drug overdose (e.g., tricyclic, digitalis, beta blockers, or calcium channel blockers)
		• Myocardial infarction
		• Hypoxia
		• Tension pneumothorax
		• Pulmonary embolus
		• Acidosis
		• Hyperkalemia

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• **Cardiac/respiratory arrest is ALS**

- **Always transport pediatric patients to the closest Emergency Department.**
- **DO NOT terminate resuscitation efforts unless sign of body decompensation.**

Refer to page 143 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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1. CPR 2 minutes
   Check Pulse

2. Defibrillate as per Handtevy Guidelines
   If non-shockable rhythm, continue Asystole Protocol

3. Cardiac Ultrasound (if available) to determine fine Ventricular Fibrillation (V-fib) vs Asystole.
   If V-fib then follow V-fib algorithm
   If no cardiac activity noted in US, proceed with Asystole protocol.

4. BVM or ET Tube or Supraglottic device (May use a supraglottic device or BVM.)
   Standard endotracheal intubation may be attempted x1 only.

5. *Resume CPR immediately.*
   Give Epinephrine
   - IV/IO: 0.01 mg/kg 1:10,000

6. *CPR for 2 minutes*

7. *Check Rhythm*
   Shockable rhythm?

8. If no pulse and asystole:
   - Repeat Epinephrine q5 minutes.
     - IV/IO: 0.01 mg/kg 1:10,000 (May repeat twice q3-5 minutes)

     OR
   - Epinephrine drip 0.02 mg/kg in 100mL NS, use macro drip (10gtts/mL/min) and set at 60 gtts/min over 16 minutes.

BRADYCARDIA (PEDIATRIC)

RATIONALE

Bradycardia is an organized cardiac rhythm that is calculated based on perfusing contractions (pulse) that is less than 60 per minute; sustained or intermittent. Bradycardia in the pediatric patient almost always reflects hypoxia, rather than a primary cardiac problem. It is a pre-arrest rhythm, and the prognosis is ominous if left untreated.

History	Signs and Symptoms	Differential

• Past medical history
• Heart transplant
• Medications
  ○ Beta blockers
  ○ Calcium channel blockers
  ○ Clonidine
  ○ Digoxin
• Pacemaker
	• Heart rate < 60 with associated hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
	• Age dependent hypotension
	• Chest pain
	• Respiratory distress
	• Hypotension or shock
	• Altered mental status.
	• Syncope
		• Airway obstruction/respiratory disease
		• Acute myocardial infarction
		• Pacemaker failure
		• Hypothermia
		• Sinus bradycardia
		• Head injury (elevated ICP) or stroke
		• Spinal cord lesion
		• Sick sinus syndrome
		• AV blocks (e.g., 1º, 2º or 3º)

TRANSPORT TRIAGE

BLS

- ALS transport only

ALS

- **Cardiac/respiratory arrest is ALS**
- Abnormal VS
- Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back)
- Nausea, sweating
- Altered mental status
- Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension)
- Patient on home cardiac monitor
- Recent cocaine use (within 1 week)
- Firing of implanted defibrillator

Refer to page 145 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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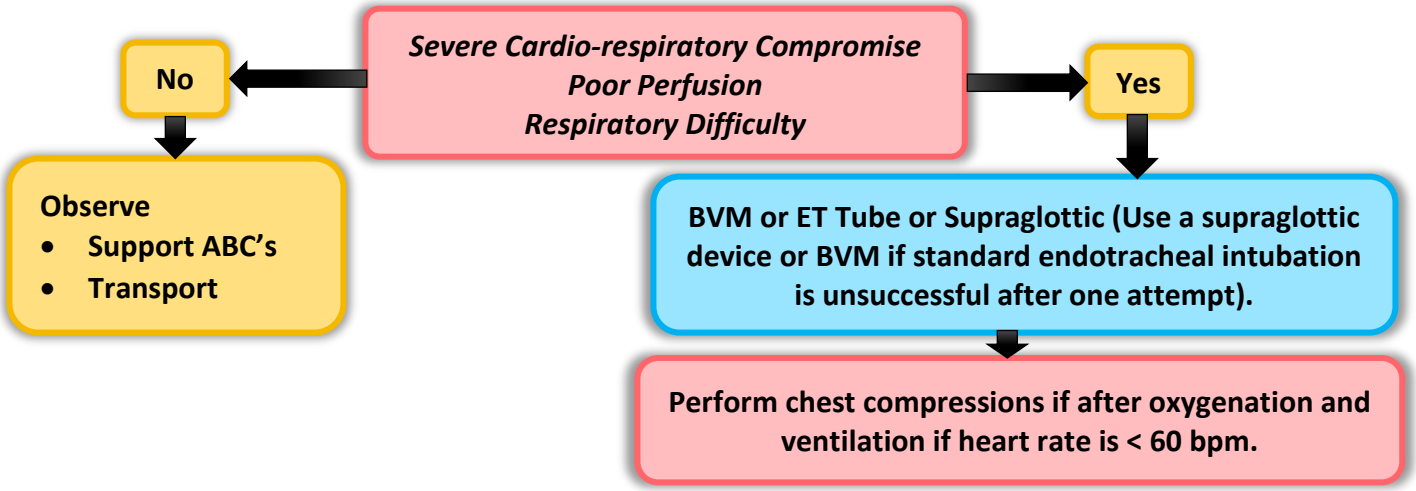


***If beta blocker overdose is suspected, consider Glucagon 50 mcg/kg, repeat in 10 minutes if BP does not respond.**

IF NO RESPONSE TO OXYGENATION, VENTILATION, AND CHEST COMPRESSIONS:

- PUSH-DOSE PRESSOR EPINEPHRINE:
  - Administer 1-2 mL/minute IV/IO, titrate to maintain age appropriate SBP
  - May repeat 2x prn, max total dose 300mcg (30mL)
  - Contraindication
    - Hypotension secondary to blood loss
  - Precaution:
    - DO NOT administer faster than 1mL/minute
    - Push-Dose Pressor Epinephrine has a rapid (1 minute) onset, short (5-10 minute) duration
    - Monitor heart rate and blood pressure throughout administration

IF BRADYCARDIC AND AGE APPROPRIATE HYPOTENSION PERSISTS AFTER INITIAL DOSE OF EPINEPHRINE:

- TRANSCUTANEOUS PACING:
  - Initial rate of 80 beats per minute and increase milliamps until capture is gained
  - Increase the rate as needed until the patient is hemodynamically stable

SEDATION FOR TRANSCUTANEOUS PACING:

- **DO NOT DELAY TRANSCUTANEOUS PACING TO ESTABLISH IV ACCESS**
- KETAMINE:
  - 1 mg/kg slow IV/IO push; 2 mg/kg IM/IN
- ETOMIDATE:
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 6mg
  - May repeat 1x prn

OR

IF UNABLE TO ESTABLISH VASCULAR ACCESS AND PATIENT BECOMES NORMOTENSIVE SECONDARY TO TRANSCUTANEOUS PACING:

- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5 mg. May repeat 1x prn. Max total dose 10mg.
  - Contraindication
    - Hypotension
  - Precaution
    - Monitor for respiratory depression.

Atropine 0.02 mg/kg may repeat once to a total dose 0.5mg.
May be considered and if approved by Online Medical Control.

PULSELESS ELECTRICAL ACTIVITY (PEDIATRIC)

RATIONALE

Pulseless Electrical Activity (PEA) is an organized electrical rhythm that healthcare professionals would anticipate the production of a pulse, but no pulse is easily palpable primarily at the carotid. PEA is primarily caused by H's and T's that are treatable in the field. Identifying the treatable cons; supporting the priority of rate, rhythm, and blood pressure in conjunction with good effective CPR/resuscitation efforts is key.

History	Signs and Symptoms	Differential

• Events leading to arrest.
• Estimated downtime.
• Past medical history
• Medications
• End stage renal disease
• Suspected hypothermia
• Suspected overdose
  ○ Tricyclic
  ○ Digitalis
  ○ Beta blockers
  ○ Calcium channel blockers
• DNR or Living Will
	• Pulseless
	• Apneic or agonal respirations
	• No electrical activity on ECG
	• No heart tones on auscultation
		• Airway obstruction/respiratory disease
		• Hypovolemia (e.g., trauma, AAA or other)
		• Cardiac tamponade
		• Hypothermia
		• Drug overdose (e.g., tricyclic, digitalis, beta blockers, or calcium channel blockers)
		• Myocardial infarction
		• Hypoxia
		• Tension pneumothorax
		• Pulmonary embolus
		• Acidosis
		• Hyperkalemia

TRANSPORT TRIAGE

BLS

- ALS transport only

ALS

- **Cardiac/respiratory arrest is ALS.**
- Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension)
- Patient on home cardiac monitor
- Recent cocaine use (within 1 week)
- Firing of implanted defibrillator

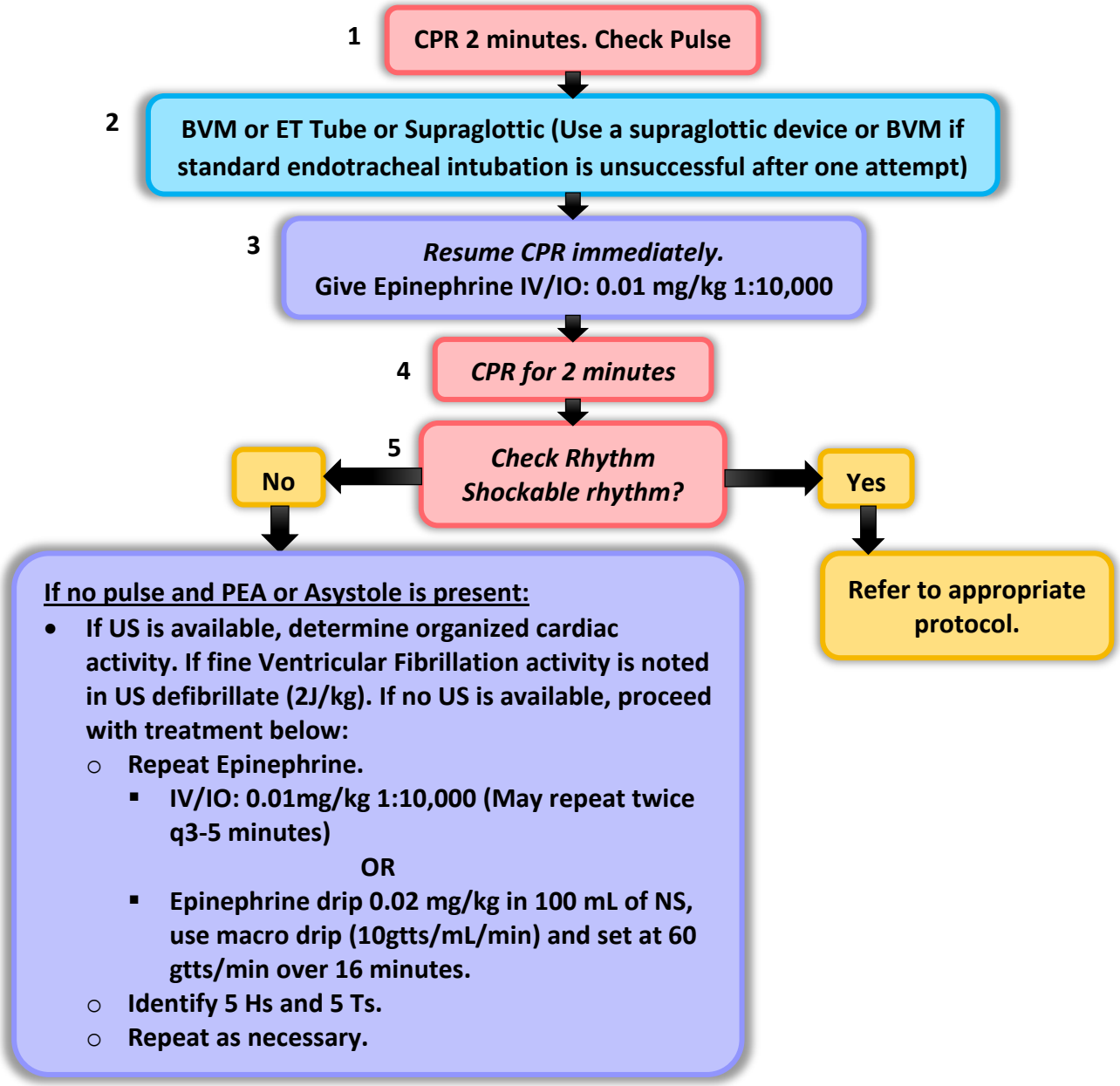
Refer to page 148 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139



***If beta blocker overdose is suspected, consider Glucagon 50 mcg/kg, repeat in 10 minutes if BP does not respond.**

SUPRAVENTRICULAR TACHYCARDIA [NON-ATRIAL FIBRILLATION] (PEDIATRIC)

RATIONALE

Supraventricular tachycardia in the pediatric patient is uncommon. Pediatric narrow complex tachycardias most commonly sinus tachycardia generally related to pain, fever, or shock and they usually originate in the sinus area. Treat the tachycardic pediatric patient aggressively if the tachycardia is other than a sinus origin or the patient is unstable.

History	Signs and Symptoms	Differential

• Age
• Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
• Past medical history (e.g., abrupt onset palpitations)
• Allergies
• Drugs (e.g., nicotine and illegal drugs)
• Recent physical exertion
• Onset
• Provocation
• Quality (e.g., pressure, constant, sharp, dull, etc.)
• Region/Radiation/Referred
• Severity (0 – 10 scale)
• Time (onset/duration/repetition)
	• Heart rate > 150 with narrow, regular complexes and may be associated with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock.
	• Chest pain
	• Respiratory distress
	• Altered mental status.
	• Syncope
	• Nausea
	• Diaphoresis
	• Potential presenting rhythm:
	  • Atrial/sinus tachycardia
	  • Atrial fibrillation/flutter
	  • Multifocal atrial tachycardia
	  • Ventricular tachycardia
	• Conduct 12 Lead after patient's symptoms have been addressed.
		• Heart disease (e.g., WPW or valvular)
		• Sick sinus syndrome
		• Myocardial infarction
		• Electrolyte imbalance
		• Exertion, pain, anxiety, or emotional stress
		• Fever
		• Hypoxia
		• Hypovolemia or anemia
		• Drug effect/overdose (see **History**)
		• Hypothyroidism
		• Pulmonary embolus
		• Following bypass surgery
		• Mitral valve disease
		• Hyperthyroidism
		• Diabetes
		• Heart failure
		• Ischemic heart disease
		• Chronic kidney disease
		• Left chamber enlargement.

TRANSPORT TRIAGE

BLS
• ALS transport only

ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating. • Altered mental status	• Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator

- ***SVT rates rule-of-thumb:***
  - Infant rate > 220 bpm
  - Child rate > 180 bpm

UNSTABLE

Oxygen/Airway Management (if necessary)
ECG Monitoring
IV/IO Access

↓

SEDATION

- **Versed:**
  - **IV/IO 0.1 mg/kg, max single dose 5mg. Max total dose 10mg.**
  - **IM/IN 0.2 mg/kg, max single dose of 5mg**

OR

- **Etomidate:**
  - **IV/IO 0.1 mg/kg, over 30 seconds, max single dose 6mg**

OR

If unavailable:

- **Ketamine: 50mg max dose**
  - **IV/IO 1 mg/kg**
  - **IM/IN 2 mg/kg**

↓

SYNCHRONIZED CARDIOVERSION

- **0.5 J/kg**
- **1 J/kg**
- **2 J/kg**
- **4 J/kg**

STABLE

Oxygen
ECG Monitoring
IV access

↓

Adenosine
0.1 mg/kg (max 6mg)
followed by a 5-10mL NS bolus

↓

May repeat if no effect with initial dose Adenosine
0.2 mg/kg (max 12mg)
Followed by a 20mL NS bolus

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

VENTRICULAR ECTOPY (PEDIATRIC)

RATIONALE:

Ventricular ectopy is regular or irregular occurrences of complex is described as wide and bizarre. Morphology of these complexes may or may not be uniform. Ventricular ectopy is usually asymptomatic and non-lethal to the patient. PVCs are rare and often non-cardiac related. Assessing the patient for being symptomatic, assessing for perfusing/non-perfusing beats, and ensuring rare instances such as R-on-T phenomena does not exist will help the treatment decision.

NOTE: PVCs in children are rare and often non-cardiac related. Contact Medical Control before the administration of medications.

History	Signs and Symptoms	Differential
• Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin) • Diet (e.g., caffeine and chocolate) • Drugs (e.g., nicotine and illegal drugs) • Past medical history • History of palpations/heart racing • Syncope/near syncope • Renal failure • Missed dialysis.	• Heart rate may be normocardic, tachycardic or bradycardic. • Systolic BP may be hyper or hypotensive. • Dizziness, chest pain, shortness of breath, altered mental status, or diaphoresis. • Acute Pulmonary Edema	• Heart disease • Sick sinus syndrome • Myocardial infarction • Electrolyte imbalance • Exertion, pain, or emotional stress • Fever • Hypoxia • Hypovolemia or anemia • Drug effect/overdose (see **History**) • Hypothyroidism • Pulmonary embolus

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating. • Altered mental status	• Electrocution • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator

AMIODARONE (CORDARONE):

- **5 mg/kg in 100mL NS given over 30 minutes.**

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

VENTRICULAR FIBRILLATION & PULSELESS VENTRICULAR TACHYCARDIA (PEDIATRIC)

RATIONALE

Ventricular fibrillation and pulseless ventricular tachycardia require immediate treatment. Attempt to also identify the cause of dysrhythmia and correct it. Chest compressions and rapid defibrillation are a priority. The effect of medication therapy and immediate ALS/BLS airway management should not delay high quality chest compressions and defibrillation.

History	Signs and Symptoms	Differential
• Events leading to arrest. • Estimated downtime. • Prior resuscitation attempts • Past medical history • Medications • Known terminal illness.	• Pulseless • Apneic	• Airway obstruction/respiratory disease • Medical vs. trauma • VF vs. pulseless VT • Asystole • PEA • Primary cardiac event vs. respiratory arrest or drug overdose

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating. • Altered mental status	• Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator

Refer to page 154 for treatment modality diagram.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

1 CPR Give 5 cycles/2 minutes of CPR.

2 Defibrillation:
- 2 J/kg
  OR
- AED: >1 year of age (pediatric pads with attenuator)
- Use the Handtevy Pediatric Resuscitation, if available, for 1-13 years of age

3 CPR Give 5 cycles/2 minutes of CPR.
BVM or ET Tube or Supraglottic (Use a supraglottic device or BVM if standard endotracheal intubation is unsuccessful after one attempt)

4 Epinephrine bolus 0.01 mg/kg 1:10,000

5 Rhythm Shockable?

Yes

6 Continue CPR while defibrillator is charging.
Defibrillation
- 4 J/kg

OR
- AED: > 1 year of age (pediatric pads with attenuator)

7 CPR Give 5 cycles/2 minutes of CPR.
Ephinephrine:
- IV/IO: 0.01 mg/kg 1:10,000 (May repeat twice q3-5 minutes)

OR
- Epinephrine drip 0.02 mg/kg in 100 cc NS, use macro drip (10gtts/mL/min) and set at 60 gtt/min over 16 minutes

8 Amiodarone:
- 5 mg/kg IV/IO in 30mL NS over 30 seconds. Single dose.

9 If shockable rhythm, go to step 6.

VENTRICULAR TACHYCARDIA [with pulse] (PEDIATRIC)

RATIONALE

Uncommon life-threatening condition but responds well to emergency cardiac treatment. Rapid intervention is required in the unstable patient. Unstable is defined as with: chest pain, dyspnea, decreased level of consciousness, hypotension.

UNSTABLE

History	Signs and Symptoms	Differential

• Medications (e.g., Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
• Diet
• Drugs (e.g., nicotine and illegal drugs)
• Past medical history
• History of palpations/heart racing
• Syncope/near syncope
	• Heart rate > 180 with narrow, regular complexes
	• Age dependent hypotension
	• Dizziness, chest pain, shortness of breath, altered mental status, or diaphoresis.
	• Acute Pulmonary Edema
	• Potential presenting rhythm:
	  ○ Atrial/sinus tachycardia
	  ○ Atrial fibrillation/flutter
	  ○ Multifocal atrial tachycardia
	  ○ Ventricular tachycardia
		• Heart disease (e.g., WPW or valvular)
		• Sick sinus syndrome
		• Myocardial infarction
		• Electrolyte imbalance
		• Exertion, pain, or emotional stress
		• Fever
		• Hypoxia
		• Hypovolemia or anemia
		• Drug effect/overdose (see **History**)
		• Hypothyroidism
		• Pulmonary embolus

STABLE

History	Signs and Symptoms	Differential

• Medications (e.g., Aminophylline, Adderall, diet pills, thyroid supplements, decongestants, and Digoxin)
• Diet (e.g., caffeine and chocolate)
• Drugs (e.g., nicotine and illegal drugs)
• Past medical history
• History of palpations/heart racing
• Syncope/near syncope
• Renal failure
• Missed dialysis.
	• Heart rate > 150
	• Systolic BP < 90
	• Dizziness, chest pain, shortness of breath, altered mental status or diaphoresis.
	  ○ Acute pulmonary edema
	  ○ Potential presenting rhythm:
	  ○ Atrial/sinus tachycardia
	  ○ Atrial fibrillation/flutter
	  ○ Multifocal atrial tachycardia
	  ○ Ventricular tachycardia
		• Heart disease (e.g., WPW or valvular)
		• Sick sinus syndrome
		• Myocardial infarction
		• Electrolyte imbalance
		• Exertion, pain, or emotional stress
		• Fever
		• Hypoxia
		• Hypovolemia or anemia
		• Drug effect/overdose (see **History**)
		• Hypothyroidism
		• Pulmonary embolus

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• **Cardiac/respiratory arrest is ALS.** • Abnormal VS • Chest tightness, pressure, constricting band, crushing discomfort (may radiate to arms, jaw, neck or back) • Nausea, sweating. • Altered mental status • Cardiac history, although alone, is not criteria in an asymptomatic pediatric patient (CAD, MI, hypertension) • Patient on home cardiac monitor • Recent cocaine use (within 1 week) • Firing of implanted defibrillator

UNSTABLE

SEDATION

Ketamine:
- **IV/IO 1 mg/kg. Max dose 50mg.**
- **IM/IN 2 mg/kg. Max dose 100mg.**

OR

Versed:
- **IV/IO 0.1 mg/kg, max single dose 5mg. Max total dose 10mg.**
- **IM/IN 0.2 mg/kg, max single dose of 5mg**

OR

Etomidate:
- **IV/IO 0.1 mg/kg, over 30 seconds. Max dose is 6mg.**

↓

IMMEDIATE SYNCHRONIZED CARDIOVERSION
Ventricular Rate > 150
- **0.5 J/kg – 1 J/kg**
- **2 J/kg**
- **4 J/kg**

↓

If cardioversion is unsuccessful, utilize pharmacological agents under the stable category along with cardioversion.

STABLE

Consider Adenosine if rhythm regular and QRS monomorphic.

↓

Amiodarone:
- **5 mg/kg in 100mL NS given over 30 minutes.**

↓

Consider Adenocard

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines):

a. 321-633-1737
b. 321-633-7140
c. 321-633-7139

CHAPTER 5: PEDIATRIC MEDICAL CARE

GENERAL INFORMATION

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport and throughout the patient care experience:

- BLS and ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous ECG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Blood Glucose (if indicated by protocol or the patient is experiencing Altered Mental Status)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- Administer oxygen with appropriate device.
- Patients with a SpO_2 sat of less than 92% will receive nasal capnography if available.
- If the patient is receiving ECG monitoring prior to arrival at the hospital it will be continued until patient care is transferred to the receiving Nursing Staff.
- If defibrillation is required, the anterior/posterior pad placement shall be used. Anterior placement should be just under the patients left breast and placed so that the LUCAS piston does not come into contact with it. The placement of the posterior pad should be simultaneous with the placement of the back plate of the LUCAS Device. Please refer to Chapter 9 (pg. 362).

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.
Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Please note, some patients (and peers) may interpret a relaxed, slow approach to them as a non-caring attitude

STANDARD MEDICAL CARE PROTOCOLS/PROCEDURES (PEDIATRIC)

RATIONALE

Pediatric emergencies make up a small percentage of our call volume. Children very seldom suffer a life-threatening medical emergency, but when it does occur, they generally deteriorate quickly. Calm action and speech will help decrease the child's and family's anxiety. The Pediatric Protocols are based off of the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Use the appropriate guide for equipment sizing, energy settings, and medication dosing. The guidebook is based off of the patient's age; if the age is unknown, use the Handtevy length-based measuring tape to determine the patient's age.

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Monitor oxygen saturation, if indicated.
- Check a glucose reading, if indicated.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- For post intubation management, refer to page 67.
- Administer medication therapy as needed.
- Consult medical control as needed for guidance.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ABDOMINAL PAIN/GI BLEED (PEDIATRIC)

RATIONALE

A differential diagnosis of abdominal pain can be complex. Prolonged evaluation in the field is not appropriate. Suspect a severe underlying problem. Prompt and gentle transport is required.

PEDIATRIC ABDOMINAL PAIN

History	Signs and Symptoms	Differential
• Age • Past medical/surgical history • Medications • Onset • Provocation • Quality (e.g., crampy, constant, sharp, dull, etc.) • Region/radiation/referred. • Severity (0 – 10 scale) • Time (duration/repetition) • Fever • Last meal eaten. • Last bowel movement/emesis	• Hypotension • Pain (location/migration) • Tenderness • Nausea • Vomiting • Diarrhea • Dysuria (painful or difficult urination) • Constipation **Associated symptoms: (Helpful to localize source)** Fever, headache, weakness, malaise, myalgia, cough, headache, mental status change, or rash.	• Pneumonia or pulmonary embolus • Liver (hepatitis) • Peptic ulcer disease/gastritis • Appendicitis • Bladder/prostate disorder • Pelvic (PID, ectopic pregnancy, or ovarian cyst) • Spleen enlargement • Bowel obstruction • Gastroenteritis (infectious) • Ovarian or testicular torsion

PEDIATRIC UPPER GI BLEEDING

History	Signs and Symptoms	Differential
• Congenital abnormalities • Varices • Medications (e.g., ibuprofen, ASA, steroids) • Stress • GERD • Ulcers • Vomiting • Liver disease • History of oral intake	• Coffee ground emesis • Hematemesis • Tachycardia • Hypotension • Black, tarry stool	• Varices • Gastritis • Bleeding ulcer • Epistaxis • Hemoptysis • Mallory Weiss tear • Pepto Bismol use. • Food allergy

PEDIATRIC LOWER GI BLEEDING

History	Signs and Symptoms	Differential
• Age • Past medical history • Food history • Medications • Number of episodes • Weight loss	• Hematochezia (bright red blood per rectum) • Hematemesis • Syncope	• Cancer • Vascular malformation • Infectious diarrhea • Fissure • Hemorrhoids • Food allergy • Intussusception • Meckel's diverticulum • Sexual abuse

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Diarrhea	• Constipation • Chronic issues without any acute changes
ALS	
• Female age 16 and under who has fainted or has systolic BP<90 (ectopic) • Altered mental status. • ***Vital Signs not normal for age and size***	• Fever • Dehydration • Evidence of bleeding in stool/urine/vomit

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book
        - 1 mg/kg slow IV/IO
        - 2 mg/kg IM/IN

      OR
    - VERSED (MIDAZOLAM):
        - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
        - 0.2 mg/kg IN/IM, max single dose of 5mg
        - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- Provide the patient in shock a fluid challenge of 20 mL/kg. Repeat as indicated.
- ZOFRAN (ONDANSETRON):
  - If actively vomiting, 0.15 mg/kg IV/IO/IM, max dose 4mg (or 4mg ODT if not actively vomiting). Max dose 8mg ODT.
- FENTANYL:
  - 1 mcg/kg IV/IO, over 2 minutes
  - 1.5 mcg/kg IN/IM
  - Max single dose 100mg
- Pediatrics not indicated under 14 years old. (If needed contact Online Medical Control)

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

AIRWAY MANAGEMENT (PEDIATRIC)

RATIONALE

Many pediatric emergencies are related to airway compromise. Maintenance of the airway takes an even greater importance than in the adult patient. Cardiac arrest in the pediatric patient is usually secondary to airway compromise. Avoid endotracheal intubation in the patient with croup or epiglottitis unless the patient has respiratory arrest. If endotracheal intubation is attempted, two attempts should be made, followed by King Airway or BVM. Maintain the infant or small child's airway with manual techniques such as chin lift or jaw thrust. The Airtraq Video Intubation Camera will be considered the preferred means to establish an advanced airway with an ET tube.

PEDIATRIC AIRWAY OBSTRUCTION/CHOKING

History	Signs and Symptoms	Differential
• Sudden onset of shortness of breath/coughing • Recent history of eating or food present • History of stroke or swallowing problems • Past medical history • Sudden loss of speech • Syncope	• Sudden onset of coughing, wheezing, or gagging • Stridor • Inability to talk. • Universal sign for choking. • Panic • Pointing to throat • Syncope • Cyanosis	• Foreign body aspiration • Food bolus aspiration • Epiglottitis • Syncope • Hypoxia • Asthma/COPD • CHF exacerbation • Anaphylaxis • Massive pulmonary embolus

TRANSPORT TRIAGE

BLS	
• Baseline normal ventilation and respiratory effort	• Normal VS; baseline mental status
ALS	
• Abnormal ventilation or respiratory effort • Patient on home apnea monitor	• Patient on home ventilator • ***Vital Signs not normal for age and size***

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Assess respiratory effort for rate and quality.
- Assess gag reflex.
- Open airway (use jaw thrust if suspected cervical injury).
- Place appropriate airway device (oral nasal).
- Monitor oxygen saturation.
- Administer oxygen by appropriate device.
- Suction airway, if indicated.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Evaluate the need for advanced airway with RSI, if indicated.
- Use a supraglottic device or BVM ventilation. Standard endotracheal intubation may be attempted x1.
- If intubated and post intubation sedation is required:
  - KETAMINE:
    - Handtevy Book
    - 1 mg/kg slow IV/IO
    - 2 mg/kg IM/IN

    OR
  - VERSED (MIDAZOLAM):
    - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
    - 0.2 mg/kg IN/IM, max single dose of 5mg
    - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- Confirm airway placement with capnography and 2 other documented methods.
- C-collar should be applied to infants and small children to stabilize ET tube.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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ALLERGIC REACTIONS (PEDIATRIC)

RATIONALE

This condition is more common than the more serious anaphylactic reaction. This patient responds well to prehospital treatment. Early recognition and treatment are important to prevent more severe problems.

History	Signs and Symptoms	Differential
• Onset and location • Food allergy/exposure • Medication allergy/exposure • New clothing, soap, or detergent • Past history of reactions • Past medical history • Medication history	• Itching or hives • Erythema	• Urticaria (rash only) • Anaphylaxis (systemic effect) • Shock (vascular effect) • Angioedema (drug induced) • Cellulitis • Contact dermatitis.

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • No difficulty breathing or swallowing	• Lungs clear to auscultation. • No rash, hives, itching or redness to the skin
ALS	
• Difficulty breathing or swallowing. • Condition worsening • Altered mental status. • ***Vital Signs not normal for age and size*** • Known history of anaphylaxis	• Rash, hives or itching may be present. • Facial, neck, tongue swelling • Stridor • Bronchospasm • Epi-pen injected. • Low blood pressure, Tachycardia

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous EKC monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book
        - 1 mg/kg slow IV/IO

- 2 mg/kg IM/IN

OR

- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- BENADRYL (DIPHENHYDRAMINE):
  - 0.5 mg/kg IV/IO or IM. Repeat the dose once in 5 minutes (max 50mg).
  - Refer to the appropriate Handtevy Guide.
- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 2mg/kg IV/IO/IM up to a maximum dose of 125mg
  - Refer to the appropriate Handtevy Guide
- Observe for the development of Anaphylaxis.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL SULFATE):
  - Add 3mL (premix)
  - Each vial contains 3mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat as indicated unless chest pain present or HR > 140 bpm. May administer nebulized drugs prior to vascular access.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ALTERED MENTAL STATUS (PEDIATRIC)

RATIONALE

It is *uncommon* to encounter pediatric patients with an altered mental status. It is important to attempt to determine the cause.

History	Signs and Symptoms	Differential
• Situational crisis • Psychiatric illness/medications • Injury to self or threats to others • Medical alert tag • Substance abuse/overdose • Diabetes	• Anxiety, agitation, or confusion • Affect change or hallucinations. • Delusional thoughts or bizarre behavior • Expression of suicidal/homicidal thoughts	• Altered mental status. • Alcohol intoxication • Toxin / substance abuse • Medication effect/overdose • Withdrawal symptoms • Psychiatric (e.g., Psychosis, Depression, Bipolar etc.) • Hypoglycemia

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • No other ALS priority symptoms • Violent, with normal VS, no evidence of medical cause	• Developmental disorders • Alcohol with GCS 13 or greater • History of TBI with normal VS
ALS	
• Altered mental status. • Blood sugar < 60mg/dL • Violent, with suspicion of overdose or other medical cause	• Suffocation • Suspicion of overdose • Suspicion of alcohol or drug withdrawal syndrome (DTs)

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Check capillary blood glucose level.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
  - KETAMINE:
    - Handtevy Book

- 1 mg/kg slow IV/IO
- 2 mg/kg IM/IN

OR

- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- NARCAN (NALOXONE):
  - 0.1 mg/kg IV/IO; if no IV access or 0.2 mg/kg IN as needed for respiratory depression. Repeat 1x as needed. Total maximum dose 4mg.
  - Refer to the appropriate Handtevy Guide.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ANAPHYLAXIS (PEDIATRIC)

RATIONALE

Anaphylaxis may be mistaken for cardiac arrest by the rescuer who does not witness its onset. It has a high mortality rate. It can become resistant to medical management, especially if treatment is delayed. The rescuer must distinguish anaphylaxis from the related but less severe allergic reaction.

History	Signs and Symptoms	Differential
• Onset and location • Insect sting or bite • Food allergy/exposure • Medication allergy/exposure • New clothing, soap, or detergent • Past history of reactions • Past medical history • Medication history	• Itching or hives • Coughing, wheezing or respiratory distress • Chest or throat restriction • Difficulty swallowing • Hypotension or shock • Edema • Nausea or vomiting • Feeling of impending doom	• Urticaria (rash only) • Anaphylaxis (systemic effect) • Shock (vascular effect) • Angioedema (drug induced) • Aspiration or airway obstruction • Asthma

TRANSPORT TRIAGE

BLS
• ALS transport only

ALS	
• Difficulty breathing/swallowing. • Condition worsening hypotensive shock. • Altered mental status. • ***Vital Signs not normal for age and size***	• Known history of anaphylaxis • Rash, hives or itching may be present. • Use of Epi-pen

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Administer pediatric Epi-Pen, if available.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Continuous cardiac monitoring.
- Apply nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:

- KETAMINE:
  - Handtevy Book
  - 1 mg/kg slow IV/IO
  - 2 mg/kg IM/IN

  OR
- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- Administer the hypotensive patient a fluid bolus of 20 mL/kg. Repeat as needed.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - 3mg by nebulizer mask for mild respiratory compromise

MODERATE RESPIRATORY COMPROMISE IN THE NORMOTENSIVE PATIENT:

- EPINEPHRINE (1:1,000):
  - 0.01 mg/kg of 1:1,000 (1 mg/mL) IM. May repeat to max total dose of 0.3mg (0.3mL).
- BENADRYL (DIPHENHYDRAMINE):
  - 0.5 mg/kg IV/IO or IM. Repeat the dose once in 5 minutes (max 50mg).
  - Refer to the appropriate Handtevy Guide.
- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 2mg/kg IV/IO/IM up to a maximum dose of 125mg
  - Refer to the appropriate Handtevy Guide.

SEVERE ANAPHYLAXIS:

- EPINEPHRINE (1:10,000):
  - 0.01mg/kg of 1:10,000 (0.1 mg/mL) IV/IO. Maximum dose 0.5mg (5mL).
  - Refer to the appropriate Handtevy Guide.
- BENADRYL (DIPHENHYDRAMINE):
  - 0.5 mg/kg IV/IO or IM. Repeat the dose once in 5 minutes (max 50mg).
  - Refer to the appropriate Handtevy Guide.
- SOLU-MEDROL (METHYLPREDNISOLONE):
  - 2mg/kg IV/IO/IM up to a maximum dose of 125mg
  - Refer to the appropriate Handtevy Guide.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ASTHMA/BRONCHITIS (PEDIATRIC)

RATIONALE

Asthma or Bronchitis emergencies can present with little distress at first onset but can deteriorate quickly. Watch them closely and treat the problem aggressively as needed. *Cyanosis is a late indicator of hypoxia in children.*

History	Signs and Symptoms	Differential
• Age • Medications • Past medical history (e.g., Asthma, Bronchitis, Croup) • Allergies • Onset • Provocation • Quality (e.g., pressure, constant, sharp, dull, etc.) • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate may be >100. • Restlessness • Respiratory distress • Altered mental status. • Unresponsive • Nausea • Diaphoresis	• Anaphylaxis • Aspiration • Croup • Bronchiectasis • Cystic Fibrosis • Obliterative Bronchiolitis • Diffuse PanBronchiolitis • Smoke Inhalation

TRANSPORT TRIAGE

BLS	
• Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status	• Symptoms completely relieved by patient taking their own medications
ALS	
• Abnormal ventilation or respiratory effort • Patient on home apnea monitor	• Wheezes, decreased breath sounds with Shortness of breath. • Chest tightness

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advances life support care (reference ALS Care page 21)
- Establish IV/IO.
- Continuous cardiac monitoring.

- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book
        - 1 mg/kg slow IV/IO
        - 2 mg/kg IM/IN

      OR
    - VERSED (MIDAZOLAM):
        - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
        - 0.2 mg/kg IN/IM, max single dose of 5mg
        - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
    - 3.0mg via nebulizer. This may be administered, as needed, before vascular access. May be repeated as needed.
- SOLU-MEDROL (METHYLPREDNISOLONE):
    - 2mg/kg IV/IO/IM up to a maximum dose of 125mg
    - Refer to the appropriate Handtevy Guide.

MODERATE RESPIRATORY COMPROMISE:

- EPINEPHRINE (1:1,000):
    - 0.01 mg/kg of 1:1,000 (1 mg/mL) IM. May repeat to max total dose of 0.3mg (0.3mL).

EXTREME RESPIRATORY COMPROMISE (STATUS ASTHMATICUS):

- EPINEPHRINE (1:10,000):
    - 0.01 mg/kg of 1:10,000 (0.1 mg/mL) IV/IO. Maximum dose 0.5mg (5mL).
    - Refer to the appropriate Handtevy Guide.
- MAGNESIUM SULFATE:
    - 50 mg/kg given IV/IO in 100 mL NS over 10 minutes (max 1 gram).

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

BATTERY INGESTION TRIAGE AND TREATMENT GUIDE

RATIONALE

Multiple reports of ingestion of button and disk batteries that power hearing aids, watches, and calculators by young children with disastrous outcomes are being reported over the past number of years. Saliva triggers an electrical current which causes a chemical reaction, hydroxide is formed, and an alkaline burn develops. If the battery is not removed within 2 to 3 hours, life-threatening burns in the esophagus can lead to perforation, vocal cord paralysis, and even erosion into the trachea, or major blood vessels.

History	Signs and Symptoms	Differential
• Medications • Past medical history • Allergies • Onset • Provocation • Exposure to lithium batteries in the house	• Heart rate may be >100. • Restlessness • Hematemesis or Hemoptysis • Abdominal pain • Chest pain • Cough • Stridor • Sore throat • Respiratory distress	• Epiglottitis • Foreign Body Aspiration • Peritonsillar Abscess • Hemangioma • Smoke Inhalation • Bacterial Tracheitis • Lithium battery ingestion

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• Difficulty breathing/swallowing. • Condition worsening hypotensive shock. • Altered mental status

Suspect the diagnosis:

Most battery ingestions are not witnessed. Suspect the battery ingestion if a coin or other foreign body is reported to have been swallowed or are available in the house. Button batteries for hearing aids are less likely to be lodged in the esophagus but are frequently lithium batteries as well and are more commonly swallowed by small children. Symptoms can include fever, drooling, difficulty swallowing, vomiting, abdominal pain, chest pain, blood in the stool or vomit, coughing, wheezing, and even airway obstruction. Batteries passing beyond the esophagus less frequently cause esophageal injury, passing through the digestive system uneventfully.

Treatment if a Lithium battery ingestion is suspected:

1. Transport the patient to the Emergency Department
2. Do not induce vomiting.
3. Administer honey immediately and in route to the emergency department if:

a. A lithium button or coin cell battery has been ingested (if you do not know what kind of cell battery was ingested, assume it is a lithium battery);
b. 12 months of age or older (honey is not safe under 12 months of age):
c. Honey is immediately available;
d. Not actively vomiting;
e. Able to swallow;
f. The suspected battery was swallowed within the prior 12 hours (risk of esophageal rupture becomes high by 12 hours and honey might induce vomiting precipitating rupture or contaminate the mediastinum if rupture is already present)

Treatment with honey:

1. Give 10mL honey=2 teaspoons by mouth every 10 minutes immediately and while in route to the ED (honey coats the lithium battery preventing further formation of lithium oxide).
2. If honey induces vomiting stop further doses of honey.

Treatment if a standard alkaline battery is ingested (i.e., AAA battery):

1. Use the same treatment protocol without giving honey (alkaline batteries are more likely to lodge in the esophagus and can also cause considerable corrosive esophageal damage.

Call the National Battery Hotline for assistance: 800-498-8666

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CARBON MONOXIDE INHALATION (PEDIATRIC)

RATIONALE

Carbon monoxide can pose a serious threat to the rescuer, as well as the patient. Use caution in assessing the CO patient. Always administer high flow O_2. Some normal diagnostic methods such as pulse oximetry may give normal readings. This exposure interferes with oxygen exchange on the cellular level. Utilize the rainbow sensor in place of pulse oximetry. Always consider it in any airway burn.

History	Signs and Symptoms	Differential
• Industrial or closed space fire • Facial burns • Previous CO poisoning • Propane powered equipment (e.g., power mower, tractor, gas powered equipment) • Gas home heaters, natural gas stoves, kerosene heaters • Gas clothes dryer or hot water heater • Multiple people or pets with similar symptoms	• AMS • Malaise/Fatigue • Flu-like symptoms • Weakness • Headache • Dizziness • Blurred vision • Ataxia • Seizure • Nausea/vomiting/cramping • Chest pain	• Diabetic emergency • Infection/sepsis • Myocardial infarction • Anaphylaxis • Renal failure • Head injury/trauma • Ingestion/toxic exposure

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Breathing normally	• No chemical exposure (Hazmat) • SPCO2 < 10% with no symptoms
ALS	
• Hazmat incident • Difficulty breathing • Altered mental status. • Abnormal VS • Hypoxia of unknown cause	• Smoke inhalation • Poisoning • Burns • SPCO2 > 10%

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer 100% oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Apply Nasal capnography if O_2 sats are <92%.
- Provide continuous cardiac monitoring.
- DUONEB NEBULIZER (IPRATROPIUM BROMIDE/ALBUTEROL):
  - If wheezing, administer 3.0mg via nebulizer. This may be repeated as needed.

- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
  - KETAMINE:
    - Handtevy Book
    - 1 mg/kg slow IV/IO
    - 2 mg/kg IM/IN

    OR
  - VERSED (MIDAZOLAM):
    - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
    - 0.2 mg/kg IN/IM, max single dose of 5mg
    - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- **Consider transport to hospital with hyperbaric chamber. Please refer to page 17 Decompression Sickness & Carbon Monoxide Poisoning or Special Considerations.**

SpCO %	Signs & Symptoms	Pre-Hospital Treatment
0-4	Possible minor headache	Observe
5-9	Headache	100% oxygen, reassess after 10 minutes on 100% oxygen
10-19	Dyspnea, headache	100% oxygen and transport to closest appropriate facility
20-29	Headache, nausea, dizziness	100% oxygen and transport to closest appropriate facility
30-39	Severe headache, vomiting, altered LOC	100% oxygen and transport to closest appropriate facility
40-49	Confusion, syncope, tachycardia	100% oxygen and transport to closest appropriate facility
50-59	Seizures, shock, apnea, coma	Secure airway and 100% oxygen and transport to closest appropriate facility
>59	Coma, death	Secure airway and 100% oxygen and transport to closest appropriate facility

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CROUP/EPIGLOTTITIS (PEDIATRIC)

RATIONALE

This is a potentially disastrous emergency. Avoid unnecessary treatment and handling of the patient unless severe respiratory compromise has occurred. **Rapid and gentle transport is indicated.**

CROUP

History	Signs and Symptoms	Differential
• Age Croup: 6 months-3 years • Medications • Past medical history • Allergies • Recent physical exertion • Onset • Provocation • Quality • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate may be >100. • Restlessness • Fever (Epiglottitis) • Respiratory distress • Altered mental status. • Syncope • Nausea • Diaphoresis • Conduct 12 Lead if any of the above are present.	• Epiglottitis • Foreign Body Aspiration • Peritonsillar Abscess • Hemangioma • Smoke Inhalation • Bacterial Tracheitis

EPIGLOTTITIS

History	Signs and Symptoms	Differential
• Age: 2-6 years of age, but may also occur in adults • Medications • Past medical history • Allergies • Recent physical exertion • Onset • Provocation • Quality • Region/Radiation/Referred • Severity (0 – 10 scale) • Time (onset/duration/repetition)	• Heart rate may be >100 • Restlessness • Fever (Epiglottitis) • Drooling • Respiratory distress • Altered mental status • Syncope • Nausea • Diaphoresis • Conduct 12 Lead if any of the above are present.	• Croup • Foreign Body Obstruction • Subglottic Stenosis • Tonsillitis • Angioedema • Bacterial Tracheitis

TRANSPORT TRIAGE:

BLS	
• Baseline normal ventilation and respiratory effort • Normal VS; baseline mental status	• Symptoms completely relieved by patient taking their own medications
ALS	
• Abnormal ventilation or respiratory effort • Patient on home apnea monitor	• Wheezes, decreased breath sounds with Shortness of breath. • Chest tightness

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device. Have parent hold the oxygen near the child.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Provide continuous cardiac monitoring only if in respiratory arrest.
- Administer a saline mist treatment (if available) for mild croup.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

DIABETIC EMERGENCIES [HYPERGLYCEMIA] (PEDIATRIC)

RATIONALE

The hyperglycemia patient may suffer from severe dehydration and hyperosmolar coma resulting in a decreased level of consciousness and life-threatening metabolic acidosis.

History	Signs and Symptoms	Differential
• Past medical history • Medications • Recent blood glucose check • Last meal • Compliance with diet/meds • Blood sugar log • Insulin pump	• Altered mental status • Combative or irritable • Diaphoresis • Seizure • Abdominal pain • Nausea or vomiting • Weakness, dehydration • Deep or rapid breathing	• Alcohol or drug use • Toxic ingestion • Trauma or head injury • Seizure • Stroke • Altered mental status

TRANSPORT TRIAGE

BLS	
• Normal VS • Conscious and alert (baseline)	• Breathing normally
ALS	
• Unconscious • Altered mental status	• Abnormal breathing (slow or rapid) • High blood sugar with other ALS priority symptoms

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
  - KETAMINE:
    - Handtevy Book
    - 1 mg/kg slow IV/IO
    - 2 mg/kg IM/IN

    OR
  - VERSED (MIDAZOLAM):

- 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
- 0.2 mg/kg IN/IM, max single dose of 5mg
- May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- NORMAL SALINE:
  - Administer NS 20 mL/kg IV/IO rapid infusion for dehydration, as needed.
  - Repeat the infusion for the shock patient.
  - Continue with an infusion of 20 mL/kg/hour.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

DIABETIC EMERGENCIES [HYPOGLYCEMIA] (PEDIATRIC)

RATIONALE

The hypoglycemic patient suddenly develops a hyper-adrenal state as the body attempts to raise glucose levels. The patient may very quickly suffer brain damage. The patient's mental condition deteriorates, and seizure activity or coma may develop. Some patients become agitated, develop psychotic behavior or CVA like symptoms such as hemiplegia, paresthesia, or cranial nerve palsies. Always suspect hypoglycemia in the mentally obtunded patient. An imbalance of insulin may precipitate hypoglycemia in the insulin dependent diabetic. Insulin abuse can also cause hypoglycemia.

History	Signs and Symptoms	Differential
• Past medical history • Medications • Recent blood glucose check • Last meal • Compliance with diet/meds • Blood sugar log • Insulin pump	• Altered mental status. • Combative or irritable • Diaphoresis • Seizure • Nausea or vomiting • Weakness	• Alcohol or drug use • Toxic ingestion • Trauma or head injury • Seizure • Stroke • Altered mental status. • Sepsis

TRANSPORT TRIAGE

BLS	
• Normal VS; conscious and alert (baseline) • Breathing normally	• Low blood sugar corrected with oral glucose on-scene
ALS	
• Unconscious • Altered mental status. • Glucose < 60 mg/dL	• Abnormal breathing (slow or rapid) • High blood sugar with other ALS priority symptoms

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Administer oral glucose gel or paste if the patient is conscious and able to maintain airway.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- DEXTROSE (D10):
  - Administer D10 IV/IO if glucose is < 60 mg/dL. Determine the amount by selecting the appropriate Handtevy guide for the patient's age.

GLUCOSE DOSING

- **Child D25 2mL/kg IVP**
  - **OR** if D25 is unavailable, then D10 in 250cc NS 4-5mL/kg
- **Neonate D10 2-4 mL/kg**
- **Glucagon 0.5-1 mg IM**

- GLUCAGON:
  - If unable to establish IV and glucose < 60 mg/dL, administer Glucagon 0.5mg IM (<20kg) **OR** administer Glucagon 1.0mg IM (>20kg), if available.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ENVIRONMENTAL COLD EMERGENCIES (PEDIATRIC)

RATIONALE

Cold related emergencies are possible even in Florida. These situations usually involve water immersion. The wide range of temperatures between day and night can cause problems for the unprepared. The use of alcohol and various drugs can also affect how a patient reacts to cold. Drowning patients should be managed for hypothermia.

History	Signs and Symptoms	Differential
• Age • Exposure to decreased temperatures but may occur in normal atmospheric temperatures. • Time and length of exposure • Drug or alcohol use • Infection or sepsis • Past medical history • Medications	• AMS • Cold or clammy skin • Shivering • Extremity pain or sensory abnormality • Bradycardia • Hypotension or shock	• Sepsis • Environmental exposure • Hypoglycemia • CNS dysfunction • Stroke • Head injury • Spinal cord injury

TRANSPORT TRIAGE

BLS	
• Normal VS and baseline mental status • Localized Frostbite	• No other symptoms
ALS	

• Cardiac history (CAD, MI, hypertension)
• Altered mental status
• Tympanic < 95 degrees F
	• Change in skin color;
	  ○ Frostbite: pale, grey, numb “bloodless” skin
	  ○ Hypothermia: pale, cyanosis with decreased mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Assess patient’s temperature.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:

- KETAMINE:
  - Handtevy Book
  - 1 mg/kg slow IV/IO
  - 2 mg/kg IM/IN

OR

- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

ENVIRONMENTAL HEAT EMERGENCIES (PEDIATRIC)

RATIONALE

Cooling the heat emergency patient helps protect the body and CNS from permanent damage. A good history of the event is essential. Some people, especially the elderly and pediatric patients, are more sensitive to heat than others. Assess the patient's environment in the primary survey.

History	Signs and Symptoms	Differential
• Exposure to increased temperatures, humidity, or extreme physical exertion • Time and length of exposure or last seen. • Fatigue or muscle cramping • Poor oral intake of fluids • Past medical history • Medications	• AMS • Hot, dry, and/or sweaty skin • Hypotension or shock • Seizures • Nausea	• Fever/Sepsis • Hyperthyroidism • Drug induced hyperthermia (NMS – Neuroleptic Malignant syndrome) • Heat cramps • Heat exhaustion • Heat stroke

TRANSPORT TRIAGE

BLS	
• Normal VS and baseline mental status	• No other symptoms
ALS	
• Cardiac history (CAD, MI, hypertension) • Altered mental status. • Tympanic > 100.4 degrees F	• Change in skin color; ○ Heat stroke: red, dry skin with decreased mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Sponge with cool water or cover with a wet sheet and fan the patient.
- Apply cold packs to lateral chest wall, groin, axilla, carotid arteries, temples and behind knees if rapid cooling is required.
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
  - KETAMINE:

- Handtevy Book
- 1 mg/kg slow IV/IO
- 2 mg/kg IM/IN

OR

- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- Administer fluid boluses of 20 mL/kg. Titrate as needed to maintain adequate blood pressure. Refer to the Handtevy Resuscitation Guide for the appropriate amount of fluid to be administered based on the patient's age.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

OVERDOSE [UNKNOWN ETIOLOGY] (PEDIATRIC)

RATIONALE

Children who take unprescribed medication may not take large quantities due to its unpleasant taste. Any pediatric patient who has a potential overdose should receive prompt Emergency Department evaluation. Suspect overdose in any patient who has a decreased level of consciousness. Consider the possibility that siblings or playmates have also taken medication and will not admit it.

History	Signs and Symptoms	Differential
• Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, and quantity. • Time of ingestion • Reason (suicidal, accidental, or criminal) • Available medications in home • Past medical history and medications	• Mental status changes • Hypo or hypertension • Decreased respiratory rate. • Tachycardia or dysrhythmias • Seizures • S.L.U.D.G.E.M. • Vision impairment • Pupillary changes	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Aspirin • Depressants • Stimulants • Anticholinergics • Cardiac medications • Solvents, alcohols, or cleaning agents • Insecticides (organophosphates)

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• Altered mental status. • Unable to speak clearly. • Abnormal breathing • Opiate, mood altering medication overdose. • Cocaine, amphetamines, other stimulants	• Alcohol • Violent (Rule out hypoxia, occult cerebral bleed, overdose, head trauma, etc.) • Age ≤ 3

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- If glucose level is <60 mg/dL, follow pg. 182 Hypoglycemia protocol.
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- NARCAN (NALOXONE):

- 0.1 mg/kg IV/IO; if no IV access or 0.2 mg/kg IN as needed for respiratory depression. Repeat 1x as needed. Total maximum dose 4mg.
- **Refer to the appropriate Handtevy Guide.**

- GLUCAGON:
  - If beta blocker overdose is suspected, consider Glucagon 50 mcg/kg, repeat in 10 minutes if SBP is not >90mmHg.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

POISONING (PEDIATRIC)

RATIONALE

The poisoning victim may present with an unrelated complaint and not be aware of the poisoning. The rescuer must suspect poisoning. Poisonings may include, but not limited to, pesticides, petroleum, and cleaning solvents. They may occur by ingestion, inhalation, or absorption.

History	Signs and Symptoms	Differential
• Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, and quantity. • Time of ingestion • Reason (suicidal, accidental, or criminal) • Available medications in home • Past medical history and medications	• Mental status changes • Hypo or hypertension • Decreased respiratory rate. • Tachycardia or dysrhythmias • Seizures • S.L.U.D.G.E.M. • Vision impairment • Pupillary changes	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Aspirin • Depressants • Stimulants • Anticholinergics • Cardiac medications • Solvents, alcohols, or cleaning agents • Insecticides (organophosphates)

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• Altered mental status. • Unable to speak clearly. • Abnormal breathing • Tricyclic or other anti-depression medication overdose	• Cocaine • Alcohol • Violent (Rule out hypoxia, occult cerebral bleed, overdose, head trauma, etc.)

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Suction, if indicated.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.

- If intubated and post intubation sedation is required:
  - KETAMINE:
    - Handtevy Book
    - 1 mg/kg slow IV/IO
    - 2 mg/kg IM/IN

    OR
  - VERSED (MIDAZOLAM):
    - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
    - 0.2 mg/kg IN/IM, max single dose of 5mg
    - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- ATROPINE:
  - For the organophosphate or carbamate poisoning victim, administer Atropine 0.05 mg/kg (0.1mg is the minimum dose) IV/ET/IO.
  - Repeat Atropine at 5 minutes intervals.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

SEIZURE DISORDER (PEDIATRIC)

RATIONALE

Most pediatric seizures are febrile and can be corrected by cooling the patient. Careful history taking and observation are important to determining the cause and appropriate emergency department treatment.

SEIZURE – ACTIVE

For seizure witnessed by EMS, whether treated or not.

History	Signs and Symptoms	Differential
• Reported or witnessed seizure. • Previous seizure history • Medical alert tag • Seizure medications • History of trauma • History of diabetes • History of pregnancy • Time of seizure onset • Document number of seizures • Alcohol use, abuse, or abrupt cessation • Fever	• Altered mental status. • Tonic/clonic movements • Incontinence • Seizure activity • Evidence of trauma • Unconscious • Incontinence • Tongue biting • Blank stare • Rhythmic facial movement	• Fever • Metabolic, hepatic, or renal failure • Tumor • Hypoxia • Electrolyte abnormality • Drugs or medication non-compliance • Overdose/toxic ingestion/exposure • Infection/meningitis • Stroke • Head/occult trauma

SEIZURE – POST

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

History	Signs and Symptoms	Differential
• Reported or witnessed seizure. • Previous seizure history • Medical alert tag • Seizure medications • History of trauma • History of diabetes • History of pregnancy • Time of seizure onset • Document number of seizures • Alcohol use, abuse, or abrupt cessation • Fever	• Altered mental status. • Sleepiness • Incontinence • Evidence of trauma • Unconscious • Incontinence • Bitten tongue/oral trauma.	• Fever • Metabolic, hepatic, or renal failure • Tumor • Hypoxia • Electrolyte abnormality • Drugs or medication non-compliance • Overdose/toxic ingestion/exposure • Infection/meningitis • Stroke • Head/occult trauma

TRANSPORT TRIAGE

BLS	
• ALS transport only	
ALS	
• Pregnancy • Head trauma • Diabetic • Fever	• Continuous or multiple seizures • Abnormal breathing • No seizure history • Age ≤ 5

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- If the patient was not protected from injury during the activity, immobilize the patient's spine.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If post intubation is required, see page 67.
- VERSED (MIDAZOLAM):
  - If an IV/IO is established and actively seizing, administer 0.1 mg/kg IV/IO, refer to Handtevy guide.
  - If no IV/IO is established and actively seizing, administer 0.2 mg/kg IN/IM, refer to Handtevy guide.
  - May repeat either route 1x prn, in 5 minutes if seizure reoccurs or does not subside.
- KETAMINE:
  - For status seizures refractory to benzodiazepines, 1 mg/kg IV/IO over 1-2 minutes; max single dose 100mg.
  - 2 mg/kg IM/IN

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

VOMITING (PEDIATRIC)

RATIONALE

By disrupting the stimulus to vomit, and reducing nausea, we can make the patient more comfortable during transport. As well, we can reduce the chance of aspiration due to excessive vomiting and increase the effectiveness of pain management medications administered pre-hospital.

History	Signs and Symptoms	Differential
• Age • Time of last meal • Last emesis/bowel movement/number of wet diapers • Improvement or worsening with food or activity. • Duration of problem • Contact with other sick person. • Past medical history • Past surgical history • Medications • Allergies • Travel history • Bloody emesis/diarrhea	• Abdominal pain • Character of pain (i.e., constant, intermittent, dull, sharp, etc.) • Distension • Constipation • Diarrhea • Anorexia • Radiation **Associated symptoms (helpful to localize source):** Fever, headache, blurred vision, weakness, malaise, myalgia, cough, dysuria, mental status changes, and rash.	• CNS (increased pressure, headache, stroke, CNS lesions, trauma, or hemorrhage, vestibular) • GI or renal disorders • Diabetic ketoacidosis • Infections (pneumonia, influenza) • Electrolyte abnormalities • Food or toxin induced. • Medication or substance exposure

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status	• Nausea
ALS	
• Abnormal VS • Suspected food poisoning • Females with abdominal pain age 16 or less	• Abnormal breathing • Cardiac history (CAD, MI, hypertension) • Altered mental status

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV
- Provide continuous cardiac monitoring.
- ZOFRAN (ONDANSETRON):
  - If actively vomiting, 0.15 mg/kg IV/IO/IM, max dose 4mg (or 4mg ODT if not actively vomiting). Max dose 8mg ODT.
- DROPERIDOL (INAPSINE):
  - **Pediatrics not indicated under 14 years old. (If needed contact Online Medical Control)**

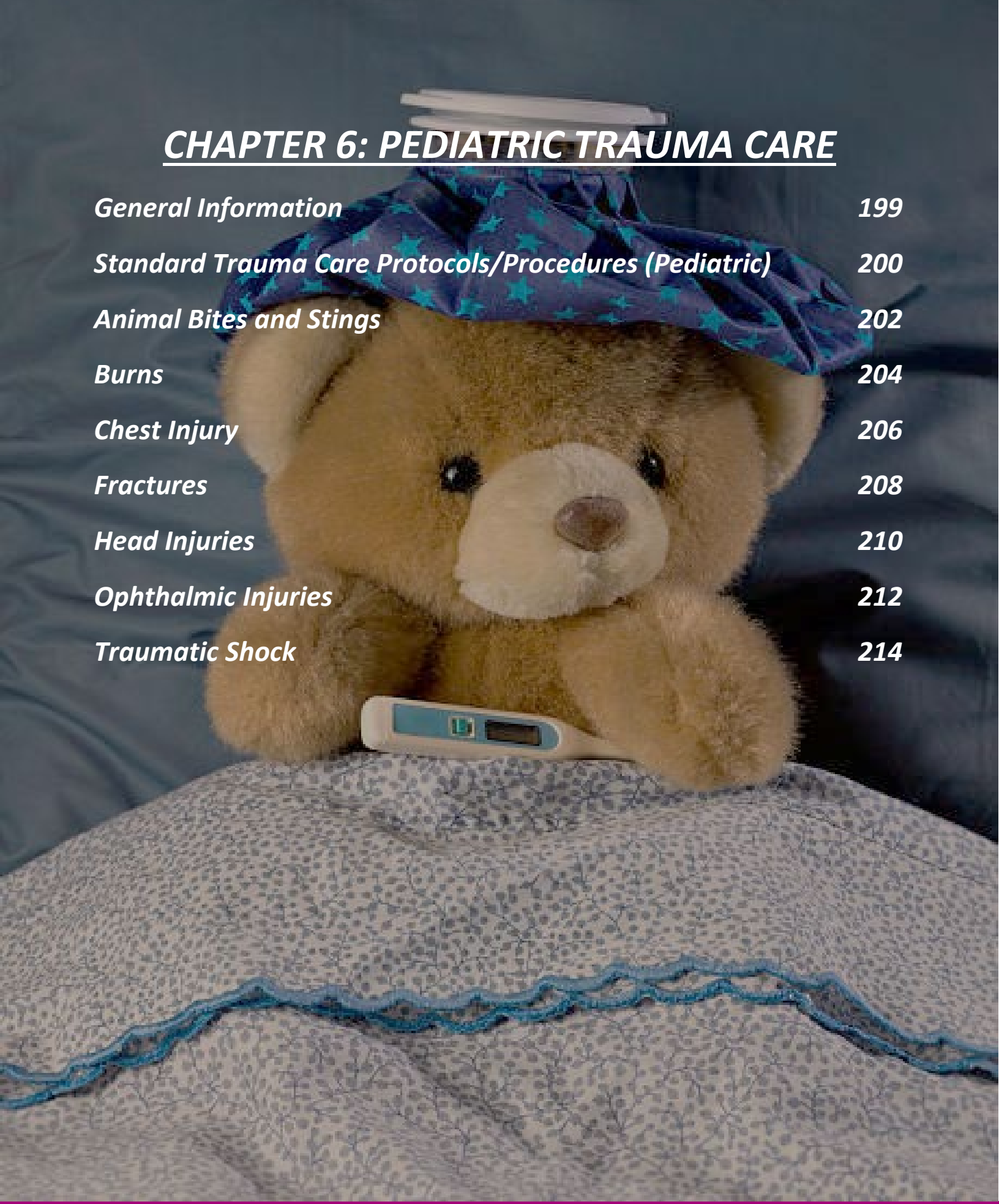
EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CHAPTER 6: PEDIATRIC TRAUMA CARE



GENERAL INFORMATION

Basic Life Support (BLS) – Interventions in the BLS Standard of Care Protocol color coded in **BLUE** indicate interventions/treatment modalities that may be performed by an EMT. There are some interventions/treatment modalities that will be at the direction and supervision of a Solo Paramedic for example, IV access, application of 12 Lead ECG, etc. However, the EMT may function independently as it pertains to BLS interventions and treatment modalities as approved in protocol.

Advanced Life Support (ALS) – Interventions in the ALS Standard of Care Protocol color coded in **RED** indicate interventions/treatment modalities that are to be performed by an advanced provider (Solo Paramedic); however, the interventions may be performed by a Non-Solo Paramedic at the direction and supervision of a Solo Paramedic.

All patients will be approached with a minimum of an airway bag, drug box and cardiac monitor. Once patient contact is made patients will receive at a minimum the following prior to transport and throughout the patient care experience:

- BLS and ALS assessment
- A complete set of vital signs
- Initial cardiac rhythm (if indicated by protocol) and continuous ECG monitoring.
- 12 lead EKG (if indicated by protocol)
- IV or IO access (if indicated by protocol)
- Blood Glucose (if indicated by protocol or the patient is experiencing Altered Mental Status)
- Advanced airway placement and airway stabilization (if indicated by protocol)
- Administer oxygen with appropriate device.
- Patients with a SpO_2 sat of less than 92% will receive nasal capnography if available.
- If the patient is receiving ECG monitoring prior to arrival at the hospital it will be continued until patient care is transferred to the receiving Nursing Staff.
- If defibrillation is required, the anterior/posterior pad placement shall be used. Anterior placement should be just under the patients left breast and placed so that the LUCAS piston does not come into contact with it. The placement of the posterior pad should be simultaneous with the placement of the back plate of the LUCAS Device. Please refer to Chapter 9 (pg. 362).

The Pit Crew algorithm will be utilized to accomplish the initial patient care guidelines so that they are completed in a timely and efficient manner regardless of manpower on scene.
Good patient care includes exercising social skills (a good bedside manner). Personnel are expected to exercise tact with patients, to focus their attention on the patient, and to walk quickly (but not run) when responding to incidents. Please note, some patients (and peers) may interpret a relaxed, slow approach to them as a non-caring attitude.

STANDARD TRAUMA CARE PROCEDURES (PEDIATRIC)

RATIONALE

Traumatic injuries require prompt care and transportation. Always suspect cervical injury. Note the mechanism of injury and any other condition that may affect patient care. Any chest or abdominal injuries, and all head injuries that result in a change or loss of consciousness, should receive an emergency department evaluation. *Remember the Golden Hour.* Ideally, scene time should remain under 10 minutes. The Pediatric Protocols are based on the Handtevy Pediatric Resuscitation System, as approved by the department medical director. Use the appropriate guide for equipment sizing, energy settings, and medication dosing. The guidebook is based on the patient's age; if it the age is unknown, use the Handtevy length-based measuring tape to determine the patient's age.

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Altered mental status. • Suspected spinal cord injury	• Significant mechanism, injury to possibly dangerous area • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Confirm airway placement with capnography and 2 other documented methods.
- Initiate 2 large bore IV lines of NS, if indicated, and time available.
- Provide continuous cardiac monitoring if indicated.

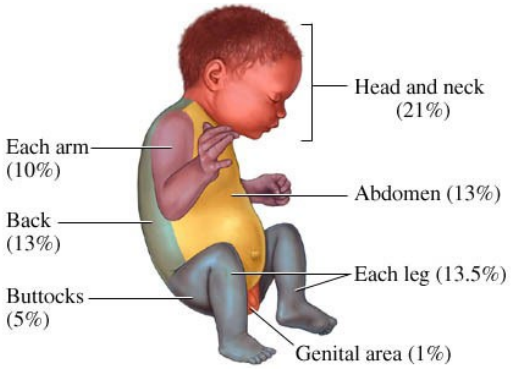
EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

GLASCOW COMA SCALE					
EYE OPENING		VERBAL RESPONSE		MOTOR RESPONSE	
4	Spontaneous	5	Oriented	6	Obeys
3	To Voice	4	Confused	5	Localize
2	To Pain	3	Inappro. Words	4	Withdraw
1	None	2	Unintelligible	3	Flexion
		1	None	2	Extend
				1	None



PEDIATRIC TRAUMA TRIAGE CRITERIA
(pediatric = 16 years of age or younger)

ANY 1 IN THIS CATEGORY (RED)

- **Airway:** The patient requires intubation or the patient's breathing is assisted with manual jaw thrust, single or multiple suctioning, or through the use of other adjuncts to assist ventilator efforts.
- **Consciousness:** The patient presents with an altered mental status that includes drowsiness, lethargy, the inability to follow commands, unresponsiveness to voice, totally unresponsive, or there is the presence of paralysis; or the suspicion of a spinal cord injury or loss of sensation.
- **Circulation:** The patient has a faint or non-palpable radial or femoral pulse, a systolic blood pressure of < 50 mmHg, or sustained tachycardia > 160 beats per minute.
- **Fracture:** There is evidence of an open long bone fracture or there are two or more fracture sites or dislocations (except for suspected isolated wrist or ankle fractures/dislocations). **NOTE: Known or suspected fractures of the radius and ulna on the same forearm are considered one fracture site. Known or suspected fractures of the tibia and fibula on the same leg are considered one fracture site.**
- **Skin:**
  - The patient has a major soft tissue disruption, including major degloving injury, major flap avulsions, 2nd or 3rd degree burns to 10 percent or more of the total body surface area,
  - There is an amputation proximal to a wrist or ankle.
  - There is any penetrating injury to the head, neck, or torso (excluding superficial wounds where the depth of the wound can be determined).

ANY 2 IN THIS CATEGORY (BLUE)

- **Consciousness:** The patient exhibits symptoms of amnesia, or there was a loss of consciousness.
- **Circulation:** The carotid or femoral pulse is palpable, but the radial or pedal pulses are not palpable or the systolic blood pressure is < 90 mmHg.
- **Fracture:**
  - The patient reveals signs or symptoms of a single closed long bone fracture. Long bone fractures do not include isolated wrist or ankle fractures.
  - **NOTE: Known or suspected fractures of the radius and ulna on the same forearm are considered one long bone fracture site. Known or suspected fractures of the tibia and fibula on the same leg are considered one long bone fracture site.**
- **Size:** The pediatric trauma patient has a weight < 11 kilograms or the body length is equivalent to this weight on a pediatric length and weight emergency tape.

LOCAL CRITERIA – ANY 1, CONSIDER TRAUMA TRANSPORT (PARAMEDIC JUDGEMENT)

- Musculoskeletal trauma on blood thinners with high risk of bleeding or with history of bleeding disorder

* The EMT or paramedic can issue a "Trauma Alert" if, in his judgment, the trauma patient's condition warrants it. This will be documented, as required in section 64-2, F.A.C.

ANIMAL BITES and STINGS (PEDIATRIC)

RATIONALE

Treatment of this injury will depend on the type of animal. Other factors may include site of bite, number of bites, possible envenomation, patient sensitivity, and time of bite. Allergic reaction is an important consideration to be evaluated. Refer to the anaphylaxis protocol as needed. Bites from bats, skunks, and raccoons should be reported to Brevard County Sheriff's Animal Services at 321-633-2024. Gather as much information on the animal as possible.

History	Signs and Symptoms	Differential
• Type of bite or sting • Description or photo of creature for identification, if safe to do so. • Time, location, size of bite or sting • Previous reaction to bite or sting. • Domestic vs. wild • Tetanus and Rabies risk • Immunocompromised patient	• Rash, skin break, or wound. • Pain, soft tissue swelling, or redness. • Blood oozing from the bite wound. • Evidence of infection • Shortness of breath or wheezing • Allergic reaction, hives, or itching. • Hypotension or shock	• Animal bite • Human bite • Snake bite (poisonous) • Spider bite (poisonous) • Insect sting/bite (bee, wasp, ant, or tick) • Infection risk • Rabies risk • Tetanus risk

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Superficial or minor bites	• Spider or insect bites with no other symptoms
ALS	
• Peripheral bites with serious hemorrhage • Severe central bites (see trauma alert criteria) • Large carnivores, zoo, or exotic animals	• Snake bite • Altered mental status. • Abnormal VS

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Irrigate and cleanse wound.
- Assess degree of bite/sting marks, outline edematous, erythematous, and ecchymotic areas with a pen, noting the time.
- Administer oxygen by appropriate device.
- Immobilize and elevate any extremities bitten by a snake.
- Keep patient supine and calm.
- Remove stingers if present, taking care to avoid compressing the site.

- Identify the animal, if possible.
- For marine sting, use vinegar to flush site.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO in an unaffected extremity, if indicated.
- Provide continuous cardiac monitoring if indicated.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book
        - 1 mg/kg slow IV/IO
        - 2 mg/kg IM/IN

      OR
    - VERSED (MIDAZOLAM):
        - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
        - 0.2 mg/kg IN/IM, max single dose of 5mg
        - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

URTICARIA/ALLERGIC REACTION

- SOLU-MEDROL (METHYLPREDNISOLONE):
    - 2mg/kg IV/IO/IM up to a maximum dose of 125mg
    - Refer to the appropriate Handtevy Guide.
- BENADRYL (DIPHENHYDRAMINE):
    - 0.5 mg/kg IV/IO or IM. Repeat the dose once in 5 minutes (max 50mg).
    - Refer to the appropriate Handtevy Guide.

SEVERE ANAPHYLAXIS

- EPINEPHRINE (1:10,000):
    - 0.01mg/kg of 1:10,000 (0.1mg/mL) IV/IO. Maximum dose 0.5mg (5mL).

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

BURNS (PEDIATRIC)

RATIONALE

Major (or inhalation) burns require aggressive care. Prolonged treatment in the field is not justified.

History	Signs and Symptoms	Differential
• Type of exposure (heat, gas or chemical) • Inhalation injury • Time of injury • Other trauma • Past medical history • Medications	• Burns, pain, or swelling. • Dizziness • Loss of consciousness • Hypotension/shock • Airway compromise or distress could be presented as hoarseness or wheezing.	• Superficial – red and painful (do not include in TBSA) • Partial thickness – blistering • Full thickness – painless with charred or leathery skin • Chemical injury • Thermal injury • Radiation injury • Blast injury.

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Small burns < 10%	• Sunburn or minor burns
ALS	
• Large burns (> 10% is a Trauma Alert) • Explosions; chemical burns (Hazmat) • Difficulty breathing • Altered mental status. • Burns on face involving nose or mouth – Consider transport directly to Burn Center	• Burns to the palms, soles of the feet and genitals – Consider transport directly to Burn Center • Circumferential burns – Consider transport directly to Burn Center

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Suction airway as needed.
- Administer oxygen by appropriate device.
- Cover with burn sheets and irrigate the skin with copious sterile fluids unless BSA > 10%.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO in an unaffected extremity, if indicated.
- Burns exceeding 10% (2nd or 3rd degree) BSA, begin fluid resuscitation:
  - < 5 years at 150mL per hour
  - 5-15 years at 250mL per hour for the first two hours.
  - If transport time is longer than two hours, use the Parkland Formula = 4 x %BSA x Wt. (Kg). Give half over first 8 hours and the remainder over the next 8 hours.
- Provide continuous cardiac monitoring.

- Use nasal cannula $EtCO_2$ monitoring for patient's given medications that can cause respiratory depression or exhibits any respiratory compromise. If O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book
        - 1 mg/kg slow IV/IO
        - 2 mg/kg IM/IN

      OR
    - VERSED (MIDAZOLAM):
        - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
        - 0.2 mg/kg IN/IM, max single dose of 5mg
        - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- FENTANYL:
    - Administer 1 mcg/kg IV/IO with max dose 100mcg.
    - If no IV access, 2 mcg/kg IN with max dose 200 mcg.
    - The dose of Fentanyl must be calculated, it is not listed in the Handtevy Guide (refer to [pg. 241] the Drug Manual of protocol).

PAIN REFRACTORY TO FENTANYL:

- KETAMINE:
    - 0.5 mg/kg IV/IO over 1 minute, max single dose 50mg. 1mg/kg IM/IN, may repeat x1 as needed in 5 minutes

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CHEST INJURY (PEDIATRIC)

RATIONALE

Thoracic trauma can be deceptive. Any thoracic trauma with associated dyspnea should be considered serious. Chest injury patients may deteriorate rapidly. Frequent assessments are advised.

History	Signs and Symptoms	Differential
• Time of injury • Mechanism (blunt vs. penetrating) • Damage to structure or vehicle • Location of patient in structure or vehicle • Restraints or protective equipment use. • Past medical history • Medications	• Evidence of trauma • Pain, swelling, deformity, lesions, or bleeding • AMS • Unconscious • Respiratory distress or failure • Hypotension or shock • Arrest	• Chest: ○ Tension pneumothorax ○ Flail chest ○ Pericardial tamponade ○ Open chest wound. ○ Hemothorax • Intra-abdominal bleeding • Pelvis or femur fracture • Spinal injury • Head injury • Hypothermia

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Altered mental status. • Significant mechanism, injury to possibly dangerous area	• Blunt trauma to the chest with significant force or kinetic energy • Penetrating injury • Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Seal sucking chest wounds on three sides.
- Stabilize flail segments utilizing bulky dressings.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.

- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book
        - 1 mg/kg slow IV/IO
        - 2 mg/kg IM/IN

      OR
    - VERSED (MIDAZOLAM):
        - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
        - 0.2 mg/kg IN/IM, max single dose of 5mg
        - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- Perform a pleural decompression as needed for tension pneumothorax.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

FRACTURES (PEDIATRIC)

RATIONALE

Treat isolated, small bone fractures as simple injuries. Long bone fractures or multiple small bone fractures should be treated as major trauma. Evaluate the mechanisms of injury to guide assessment of possible child abuse.

History	Signs and Symptoms	Differential
• Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications (anticoagulants)	• Evidence of trauma • Deformity, pain, swelling, bruising, or bleeding. • Absent distal pulses • Limited mobility or inability to move limb or put weight on the extremity.	• Sprain • Dislocation

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs • Altered mental status. • Significant mechanism, injury to possibly dangerous area	• Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Apply a cold pack or ice to the site.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO access, if indicated.
- FENTANYL:
  - Administer 1mcg/kg IV/IO with max dose 100mcg.
  - If no IV access, 2 mcg/kg IN with maximum dose 200mcg.
  - The dose of Fentanyl must be calculated, it is not listed in the Handtevy Guide (refer to [pg. 241] the Drug Manual of protocol).

PAIN REFRACTORY TO FENTANYL:

- KETAMINE:
  - 0.5 mg/kg IV/IO over 1 minute, max single dose 50mg. 1mg/kg IM/IN, may repeat x1 as needed in 5 minutes
- Provide continuous cardiac monitoring.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

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ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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HEAD INJURIES (PEDIATRIC)

RATIONALE

Significant head injuries may be difficult to assess. It is best to treat for a head injury if at all suspected. Evaluate the patient for a possible trauma alert based on related injuries. If patient is hypotensive, look for injuries elsewhere.

History	Signs and Symptoms	Differential
• Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications (anticoagulants)	• Evidence of trauma • Deformity, Pain, swelling, or bleeding. • Blood leaking for ears and/or nose • AMS • Unconscious • Respiratory distress or failure • Vomiting • Seizure	• Skull fracture • Spinal injury • Abuse

TRANSPORT TRIAGE

BLS	
• Normal VS; baseline mental status • Injury to non-dangerous area	• Minor abrasions; lacerations to any area with no ALS priority symptoms or criteria
ALS	
• Abnormal ABCs (ex. Cushing's triad) • Altered mental status. • Significant mechanism, injury to possibly dangerous area	• Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.
- Elevate the head of the backboard 15-30 degrees if normotensive.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Apply nasal capnography if O_2 sats are <92%.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.

- If intubated and post intubation sedation is required:
  - KETAMINE:
    - Handtevy Book
    - 1 mg/kg slow IV/IO
    - 2 mg/kg IM/IN

    OR
  - VERSED (MIDAZOLAM):
    - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
    - 0.2 mg/kg IN/IM, max single dose of 5mg
    - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- TRANEXAMIC ACID (TXA):
  - 2 grams in 100mL NS/LR infused over 10 minutes (10gtts/mL/min drip set) for age 13 or older.
- Maintain $EtCO_2$ between 35-45mmHg.
  - Target 40-45mmHg for non-herniating patient
  - Target 35-40mmHg for herniating patient

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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OPHTHALMIC INJURIES (PEDIATRIC)

RATIONALE

Eye injuries must be treated very seriously due to the potential for permanent impairment and the proximity to the central nervous system. Psychological support is essential especially when the eyes are to be covered. Always consider cervical spine injury related to an eye injury.

History	Signs and Symptoms	Differential
• Age • Past medical history • Trauma or exposure to chemicals • Time of injury • Onset of symptoms • Previous eye surgery	• Decreased or blurred vision • Floaters/flashes/curtain coming down. • Onset moving from dark to bright. • Avulsion • Orbital edema or contusion • Deformed pupil • Burning/pain to eye(s) • Red eye/sclera • Nausea or vomiting • Pain with extraocular movement	• Multi-system trauma • Head trauma • Orbital cellulitis • Burn (e.g., chemical, thermal) • Corneal abrasion • Conjunctivitis • Parasite

TRANSPORT TRIAGE

BLS	
• Minor eye injuries (abrasion, welding, small foreign body, contact lens problem, allergy, infection)	• No associated injuries/exposures
ALS	
• Severe eye injuries • Altered mental status	• Hazmat • Penetrating eye injury is a trauma alert

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Quickly assess gross visual acuity.
- If the eye is chemically burned, thoroughly irrigate the affected eye(s) as soon as possible with NS.
- If the eye is penetrated, **DO NOT** remove impaled object.
- Protect injury by applying eye shield over both eyes, avoiding pressure on the eye itself.
- Cover other eye to reduce eye movement in the unaffected eye.

- Keep patient from bending or straining.
- Cervical spine immobilization if posterior c-spine tenderness/swelling/discoloration
- If eye or orbit receives blunt trauma and blood is noted in anterior chamber (hyphemia), transport with head elevated at least 60 degrees if patient has no cervical spine injuries.
- Dim interior lights during transport.
- Evaluate the need for advanced airway and RSI if indicated (see airway management protocol. BVM ventilation is acceptable).
- Confirm airway placement with capnography and 2 other documented methods.
- NORMAL SALINE:
    - Initiate 2 large bore IV lines of NS, if indicated, and time available.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

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TRAUMATIC SHOCK (PEDIATRIC)

RATIONALE

The patient's "Golden Hour" begins at the time of injury. This concept should guide rapid recognition, treatment, and transportation to a trauma center.

History	Signs and Symptoms	Differential
• Blood loss (amount?) • Fluid loss (vomiting, diarrhea, or fever) • Infection (e.g., UTI, cellulitis, etc.) • Cardiac ischemia (MI or CHF) • Medications • Allergic reaction • History of poor oral intake	• Restlessness or confusion • Weakness or dizziness • Weak, rapid pulse • Pale, cool, clammy skin signs • Delayed capillary refill. • Hypotension • Coffee-ground emesis • Tarry stools	• Shock (see pearls for types) • Cardiac dysrhythmias • Pulmonary embolus • Tension pneumothorax • Medication effect or overdose • Vasovagal effect

TRANSPORT TRIAGE

BLS
• ALS transport only
ALS
• Abnormal ABCs • Altered mental status. • Significant mechanism, injury to possibly dangerous area • Suspected spinal cord injury. • Trauma alert criteria

BLS CARE

- Initiate basic life support care (reference BLS Care page 19)
- Administer oxygen by appropriate device.

ALS CARE

- Initiate advanced life support care (reference ALS Care page 21)
- Establish IV/IO.
- Provide continuous cardiac monitoring.
- Evaluate the need for advanced airway and RSI if indicated ***(see pg. 164 Airway Management protocol. BVM ventilation is acceptable).*** Confirm correct ETT placement with capnography and 2 other methods.
- If intubated and post intubation sedation is required:
    - KETAMINE:
        - Handtevy Book

- 1 mg/kg slow IV/IO
- 2 mg/kg IM/IN

OR

- VERSED (MIDAZOLAM):
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg

- TRANEXAMIC ACID (TXA):
  - 2 grams in 100mL NS/LR infused over 10 minutes (10gtts/mL drip set) for age 13 or older.
- If the patient is hypotensive, administer a fluid bolus of NS 20 mL/kg.

EMERGENCY DEPARTMENT PHYSICIAN ONLINE MEDICAL CONTROL

Crews are to contact Online Medical Control for guidance/orders related to patient care.

ACCESSING BREVARD COUNTY FIRE RESCUE MEDICAL DIRECTOR

Crews may use any of the following numbers to contact the BCFR Communication Center (recorded lines) a. 321-633-1737 b. 321-633-7140 c. 321-633-7139

CHAPTER 7: DRUG MANUAL

This manual contains basic pharmacological information on the medications listed throughout this Protocol Manual. The dosages listed in this section are the recommendations of the manufacturers or the textbooks from which the information was gathered. When administering a medication, follow the recommended dose schedule as specified in the Protocol under which you are currently treating.

ADENOSINE
(ADENOCARD)

THERAPEUTIC EFFECTS:

- Converts PSVT to a NSR by slowing conduction through the A-V node.

INDICATIONS:

- Paroxysmal Supraventricular Tachycardia

CONTRAINDICATIONS:

- 2nd type II and 3rd Degree Heart Blocks
- Sick Sinus Syndrome
- Known hypersensitivity to adenosine.
- WPW or accessory pathway cardiac condition conduction abnormalities

ADVERSE REACTIONS:

- Facial Flushing
- Nausea

ADMINISTRATION & DOSAGE:

ADULT

- 12mg very rapid IVP or IO, followed without delay by a very rapid 20mL saline bolus.
- A second dose of 12mg very rapid IVP or IO, followed without delay by a very rapid 20mL saline bolus may be given.
- Maximum total dose is 24mg.

PEDIATRIC

- 0.1 mg/kg (max 6mg) very rapid IVP or IO, followed without delay by a very rapid 5-10mL saline bolus.
- Second dose of 0.2 mg/kg (max 12mg) very rapid IVP or IO, followed without delay by a very rapid 20mL saline bolus.
- Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

NOTE: *Adenosine should be given in the port closest to the IV site. The syringe with the saline bolus should already be in the next most distal port.*

AMIODARONE
(CORDARONE)

THERAPEUTIC EFFECTS:

- Suppresses ventricular dysrhythmia.

INDICATIONS:

- Recurrent or persistent ventricular fibrillation
- Recurrent or persistent hemodynamically unstable ventricular tachycardia
- Atrial Fibrillation/flutter with heart rate > 150 bpm

CONTRAINDICATIONS:

- Known hypersensitivity to amiodarone.
- Marked sinus bradycardia.
- 2nd or 3rd Degree AV block unless functional pacemaker is available.
- Cardiogenic shock

PRECAUTIONS:

- **Rapid rate of infusion may lead to AV block, profound hypotension, and bradycardia.**
- Do not use in PVC IV tubing.
- Drug is motion sensitive and may foam if agitated.

ADVERSE REACTIONS:

- Hypotension
- Arrhythmias
- Electrolyte disturbances

ADMINISTRATION & DOSAGE:

ADULT

- **VF/PULSELESS VT**
  - 300mg in 30mL NS IV push or IO over 30 seconds. IV push rates under 30 seconds may lead to irreversible brady-asystole.
  - A repeat dose of 150mg bolus over 30 seconds may be given for recurrent VF/Pulseless VT.
- **VT (STABLE)**
  - 150mg in 100mL NS over 10 minutes using 10 gtt set.

- **PREMATURE VENTRICULAR BEATS**
  - PVCs > 6 bpm or multifocal PVC 150mg of 100mL NS over 10 minutes using 10 gtt set.
- **AF/FLUTTER**
  - 150mg in 100mL NS over 10 minutes using 10 gtt set.

PEDIATRIC

- **VF/PULSELESS VT**
  - 5mg/kg in 30mL NS IV push or IO over 30 seconds. Single dose only.
- **VT (STABLE)**
  - 5mg/kg in 100mL NS given over 30 minutes.
  - Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

ASPIRIN

THERAPEUTIC EFFECTS:

- Inhibits platelet aggregation and thereby reduces thrombus formation.

INDICATIONS:

- Acute chest pain related myocardial ischemia.

CONTRAINDICATIONS:

- Hypersensitivity to Aspirin
- Hemophilia
- Current GI Bleeding
- Multi-system Trauma
- Pregnancy
- Pt has taken Aspirin within 4 hours or is currently taking any anticoagulants.

NOTE: *If the patient is currently taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG shows ischemic changes such as S-T elevation/depression or inverted T-waves, 324 mg of chewable ASA should be administered. If the patient is taking Coumadin or any other anticoagulant therapy and the 12-Lead ECG does not show ischemic changes such as S-T elevation/depression or inverted T-waves, ASA should be withheld.*

ADVERSE REACTIONS:

- Dyspepsia
- Rash
- Anaphylaxis

ADMINISTRATION & DOSAGE:

ADULT

- 81mg x4 chewable tablets

ATROPINE

THERAPEUTIC EFFECTS:

- Atropine sulfate is a parasympatholytic drug that enhances both sinus node automaticity and atrioventricular (AV) conduction via direct vagolytic action.

INDICATIONS:

- Symptomatic bradycardia
- Organophosphate exposure, Nerve Agent exposure

CONTRAINDICATIONS:

- Atrial fibrillation
- Atrial flutter
- Glaucoma
- Use with caution in the presence of myocardial ischemia / infarction.

ADVERSE REACTIONS:

- Ventricular irritability, tachycardia, hypertension, hypotension, angina
- Atrial or ventricular fibrillation, Paradoxical bradycardia

ADMINISTRATION & DOSAGE:

ADULT

- **PULSE PRODUCING SYMPTOMATIC BRADYCARDIA**
  - Atropine is given 1 mg IV/IO every 3-5 minutes. Maximum dosage is 3mg.
- **ORGANOPHOSPHATE OR NERVE AGENT EXPOSURE**
  - **> 10 years old** 2mg via Auto Injector pen (green) x1 for mild symptoms, x2 pens for moderate symptoms, x3 pens for severe symptoms.

PEDIATRIC

- **BRADYCARDIA (May be considered for Bradycardia and if approved by Online Medical Control)**
  - 0.02 mg/kg IV/IO. May repeat x1 up to a maximum total dose of 0.5mg.
- **ORGANOPHOSPHATE OR NERVE AGENT EXPOSURE**
  - **4-10 years old** 1mg via Auto Injector pen (dark red) x1 for mild symptoms, x2 pens for moderate symptoms, x3 pens for severe symptoms.
  - **6 months to 4 years old** 0.5mg via Auto Injector pen (blue) x1 for mild symptoms, x2 pens for moderate symptoms, x3 pens for severe symptoms.
  - Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

NOTE: *Never administer < 0.1mg of Atropine for any pediatric patient. Neonates and most children under 1 month of age would receive < 0.1mg of Atropine and therefore should not receive Atropine.*

CALCIUM CHLORIDE

THERAPEUTIC EFFECTS:

- Increases myocardial contractile function.

INDICATIONS:

- Should only be used during resuscitation in the treatment of acute hyperkalemia (dialysis patients), hypocalcemia, or calcium channel blocker toxicity.

CONTRAINDICATIONS:

- If the heart is beating, rapid administration of calcium can produce slowing of the cardiac rate.
- Calcium must be used cautiously in the digitalized patient because it increases ventricular irritability and may precipitate digitalis toxicity.
- In the presence of sodium bicarbonate, calcium salts will precipitate as carbonates. As a result, these drugs cannot be administered together.
- Calcium may produce vasospasm in coronary and cerebral arteries.

ADVERSE REACTIONS:

- May increase or decrease systemic vascular resistance.
- The high level of calcium in the blood inducted by the administration of calcium salts may induce reperfusion injury and may adversely affect the neurologic outcome of the patient.

ADMINISTRATION & DOSAGE:

- A 10mL pre-filled syringe or ampule of 10% solution of calcium chloride contains 1g Calcium Chloride (100mg = 1mL).

ADULT

- 1g IV/IO slow (over 2 minutes)

PEDIATRIC

- 0.2mL/kg = 20mg/kg
- Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.

CALCIUM GLUCONATE

CLASS:

- Cation

ACTIONS:

- Supplies calcium to tissues, and the calcium binds with fluoride to make calcium fluoride.

INDICATIONS:

- Mild to moderate skin burns resulting from exposure to hydrofluoric acid.
- Hydrofluoric Acid exposure with QT prolongation, tetany, or cardiac arrest

CONTRAINDICATIONS:

- Hypercalcemia
- Ventricular fibrillation
- Digitalized patients

CAUTION:

- Mild necrosis and abscess formation may occur with topical administration.
- Rapid IV administration may cause vasodilatation, decreased BP, cardiac arrhythmias, syncope, and cardiac arrest.
- Use caution when administering to a pregnant woman.

DRUG INTERACTIONS:

- Do not administer to digitalized patients.

ADMINISTRATION & DOSAGE:

TOPICAL

- Mix 1g 10% calcium gluconate with 5 oz. water soluble lubricant (KY or Surgilube) and apply over painful areas.
- Cover with sterile dressings.

INTRAVENOUS

ADULT

- 1g over 5 minutes (10% solution)

PEDIATRIC

- 0.5g over 5 minutes (10% solution). Refer to the appropriate Handtevy guide for the volume of medication to be administered.

SUPPLIED:

- 1g in 10mL. Each gram includes 93mg (4.65 mEq) calcium.

ROUTES OF ADMINISTRATION:

- Topically, IV

CYANOKIT

RATIONALE:

Cyanide poisoning may result from inhalation, ingestion, or dermal exposure to various cyanide-containing compounds, including smoke from closed-space fires. Sources of cyanide poisoning include hydrogen cyanide and its salts, cyanogenic plants, aliphatic nitriles, and prolonged exposure to sodium nitroprusside. The presence and extent of cyanide poisoning are often initially unknown. There is no widely available, rapid, confirmatory cyanide blood test. Treatment decisions must be made on the basis of clinical history and signs and symptoms of cyanide intoxication. If clinical suspicion of cyanide poisoning is high, Cyanokit should be administered without delay.

ASSESSMENT CHECKLIST:

- Evidence of trauma/burns- if so proceed to trauma protocol, use spinal immobilization as indicated
- Soot in nose/mouth/oropharynx
- Airway/breathing
- Circulation- BP/Perfusion
- LOC (Level of Consciousness) – GCS, pupil size/reactivity

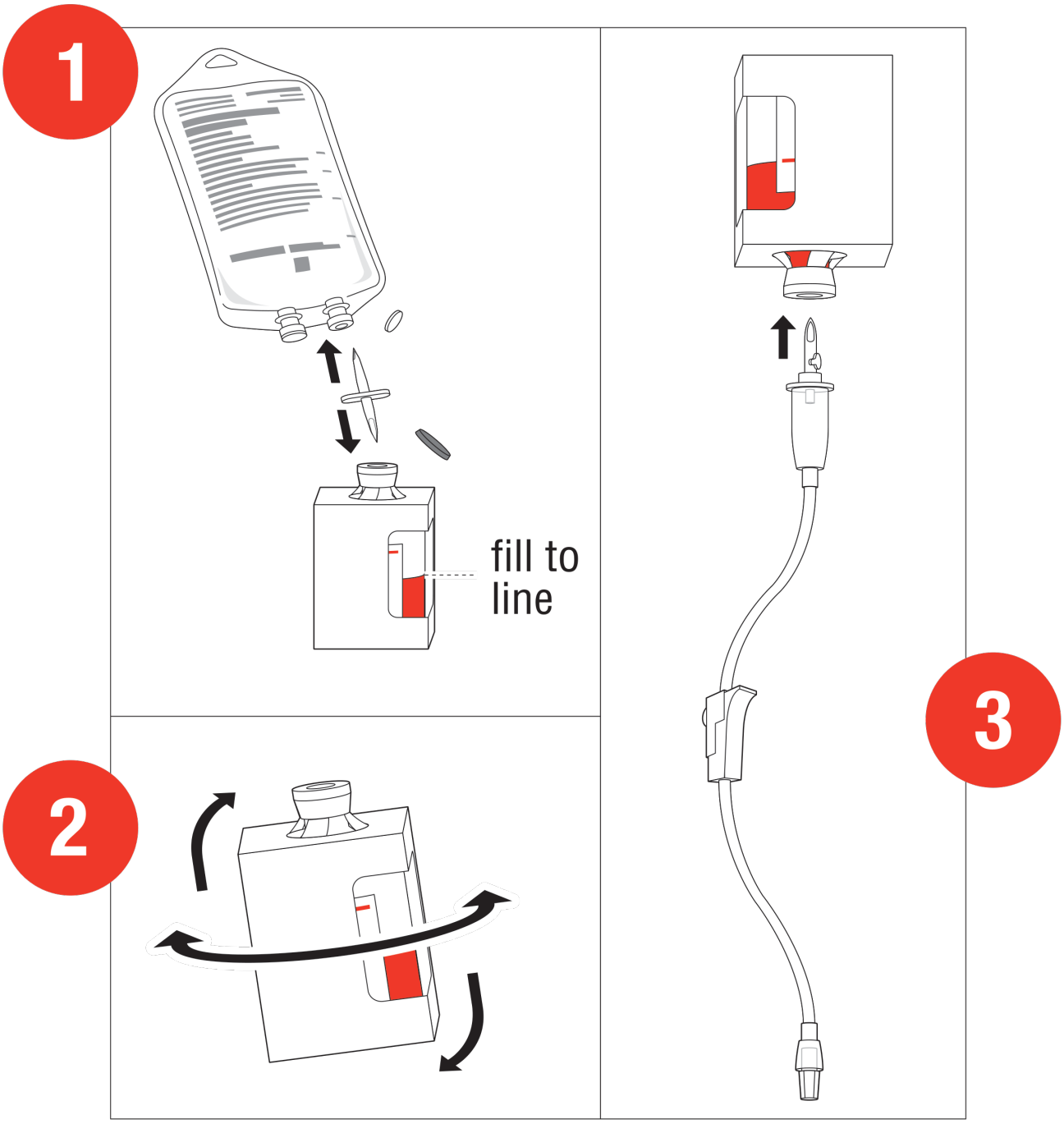
RECOMMENDED DOSING FOR CYANOKIT:

- The starting dose of CYANOKIT for adults is 5 g (contained in a single vial), administered by IV infusion over 15 minutes (approximately 15 mL/min)*
- Depending upon the severity of the poisoning and the clinical response, a second dose of 5 g may be administered by IV infusion up to a total dose of 10 g
- The rate of infusion for a potential second dose may range from 15 minutes (for patients in extremis) to 2 hours, as clinically indicated.

1. **Starting dose: 5 g**
2. **Reconstitute:** Place the vial in an upright position. Add **200 mL** of 0.9% Sodium Chloride injection to the vial using the transfer spike. **Fill to the line.**

   0.9% Sodium Chloride injection is the recommended diluent (diluent not included in the kit). Lactated Ringers injection and 5% Dextrose injection have also been found to be compatible with hydroxocobalamin and may be used if 0.9% Sodium Chloride is not readily available.

3. **Mix:** The vial should be repeatedly inverted or rocked, not shaken, for at least **60 seconds** prior to infusion.
   a. CYANOKIT solutions should be visually inspected for particulate matter and color prior to administration.
   b. Discard solution if particulate matter is present or solution is not dark red.
4. **Infuse Vial:** Use vented intravenous tubing, hang and infuse over **15 minutes**.


1
fill to
line
2
3

DEXTROSE

THERAPEUTIC EFFECTS:

- Will restore circulating blood sugar level to normal in states of hypoglycemia. Acts transiently as an osmotic diuretic.

INDICATIONS:

- To treat coma caused by hypoglycemia.
- To treat symptomatic hypoglycemia or if glucose < 60mg/dL on glucometer.

CONTRAINDICATIONS:

- Intracranial hemorrhage

ADVERSE REACTIONS:

- May precipitate severe neurologic symptoms in alcoholics.
- Will cause tissue necrosis if it infiltrates; therefore, it should only be given through a good, rapidly flowing IV line.

HOW SUPPLIED:

- Pre-filled syringes and vials containing 50mL of 50% Dextrose = 25G of Dextrose (D50W).
- For pediatrics, Dextrose is supplied in D10 following the directions below.

ADMINISTRATION & DOSAGE:

ADULT

- 50mL of 50% Dextrose (25G) IVP. May repeat once if necessary.
- Can be administered through IOs (Adults Only)
- In the event that 50% Dextrose is unavailable, the administration of D10 in the 250mL of NS may be administered using a large bore IV catheter and a maximum infusion set (10gtts/mL or 15gtts/mL). The entire 250mL (25G) must be infused as quickly as possible.

PEDIATRIC

- Child D25 2mL/kg IVP
  - **OR** if D25 is unavailable, then D10 in 250cc NS 4-5mL/kg
- Neonate D10 2-4 mL/kg
- Determine the appropriate amount by selecting the appropriate Handtevy guide for the patient's age.

DILTIAZEM
(CARDIZEM)

THERAPEUTIC EFFECTS:

- Slows heart rate in tachyarrhythmia by depression of the A-V node conduction.

INDICATIONS:

- Symptomatic A-Fib or A-Flutter with a rapid ventricular rate (≥ 150)

CONTRAINDICATIONS:

- Known hypersensitivity.
- Administration of IV beta-blockers within 30 minutes
- Systolic blood pressure < 90mmHg
- WPW or accessory pathway cardiac conduction abnormalities
- Heart block and sick sinus syndrome
- Ventricular tachycardia

ADVERSE REACTIONS:

- Hypotension
- Heart blocks

ADMINISTRATION & DOSAGE:

- 0.25 mg/kg slow IV/IO push over 2 minutes up to maximum dose of 25mg

MONITORING:

- $EtCO_2$ monitoring with nasal cannula.
- Pulse oximetry monitoring

DIPHENHYDRAMINE
(BENADRYL)

THERAPEUTIC EFFECTS:

- Blocks histamine effects in allergic reactions.
- Sedative
- Inhibits motion sickness (antiemetic).

INDICATIONS:

- As an adjunct to epinephrine in the treatment of anaphylactic shock and severe allergic reactions.
- To treat extrapyramidal reactions caused by some antipsychotic medications.

CONTRAINDICATIONS:

- Narrow angle (acute) glaucoma
- Prostate enlargement
- Ulcer disease with symptoms of obstruction

ADVERSE REACTIONS:

- Drowsiness, confusion
- Blurring of vision
- Dry mouth
- Wheezing; thickening of bronchial secretions

HOW SUPPLIED:

- In vials of 1mL containing 50mg/mL

ADMINISTRATION & DOSAGE:

- For most purposes, diphenhydramine can be given by intramuscular injection.

ADULT

- 0.5mg/kg IV/IO/IM, maximum dose 50mg

PEDIATRIC

- Administer Benadryl 0.5 mg/kg IV/IO or IM. Repeat the dose once in 5 minutes (max 50mg).
- Refer to the appropriate Handtevy guide for the volume of medication to be administered.

DROPERIDOL
(INAPSINE)

THERAPEUTIC EFFECTS:

- Anxiolytic antipsychotic and antiemetic
- Blocks dopamine (D2) and alpha-adrenergic receptors
- Produces sedation decreasing apprehension and a state of mental detachment.

INDICATIONS:

- Nausea and vomiting refractory to Ondansetron (Zofran)
- Severe anxiety
- Severe agitation
- Migraine headache

CONTRAINDICATIONS:

- Hypotension – systolic BP < 90
- Respiratory depression
- Hypersensitivity to Droperidol (Inapsine)
- Known prolonged QT interval.

PRECAUTIONS:

- Monitor patients carefully for arrhythmias (Torsades De Pointes) for doses.

ADVERSE REACTIONS:

- Cardiac arrhythmia
- Syncope/hypotension
- Akathisia (restlessness) and dystonic reactions which can be treated with Diphenhydramine (Benadryl)

ADMINISTRATION & DOSAGE:

ADULT

- **MIGRAINE**
  - 2.5mg IM/IV. Repeat in 5 minutes as needed to a total dose of 5mg.
- **SEVERE ANXIETY**
  - 2.5mg IM/IV. May repeat x1 in 5 minutes.
- **DANGER TO SELF OR OTHERS**
  - 10mg IM/IV **ONLY if Ketamine is not available.** May repeat 5mg in 10 minutes if uncontrolled combative agitated delirium persists.
- **SEVERE AGITATION/PSYCHOSIS/ALCOHOL**
  - 5mg IM/IV. May repeat 5mg in 5 minutes as needed to a total max dose of 10mg.
- **NAUSEA/VOMITING REFRACTORY TO ONDANSETRON (ZOFRAN)**
  - 2.5mg IM/IV. Repeat in 5 minutes as needed to a total dose of 5mg.

Pediatrics not indicated under 14 years old. (If needed contact Online Medical Control)

NOTE:

- *Onset of action of intramuscular and intravenous doses is from 3-10 minutes. Peak effect may not be apparent for up to 30 minutes.*
- *Patients receiving greater than 2.5mg should be placed on a cardiac monitor.*

DUODOTE AUTO-INJECTOR (PRALIDOXIME CHLORIDE/ATROPINE)

CLASS:

- Cholinesterase reactivator

MECHANISM OF ACTION:

- Pralidoxime reactivates cholinesterase (mainly outside the CNS) inactivated by phosphorylation due to toxicity by an organophosphate or related compound. Destruction of accumulated acetylcholine can then proceed, allowing neuromuscular junctions to function normally. It also slows the "aging" of phosphorylated cholinesterase to a non-reactive form and detoxifies certain organophosphates by direct chemical reaction. The drug's most critical effect is relieving respiratory muscle paralysis.

INDICATIONS:

- Antidote in poisoning due to organophosphate pesticides and chemicals with anticholinesterase activity.

CONTRAINDICATIONS:

- Known hypersensitivity.

DRUG INTERACTIONS:

- When atropine and pralidoxime are used together, the signs of atropinization may occur earlier than expected.
- Barbiturates are potentiated.
- It is not recommended in the treatment of carbamate poisonings.

SUPPLIED:

- Each auto-injector delivers 2.1mg of Atropine and 600mg of Pralidoxime Chloride

ROUTES OF ADMINISTRATION:

- IM

DUONEB (IPRATROPIUM BROMIDE/ALBUTEROL)

THERAPEUTIC EFFECTS:

DuoNeb (ipratropium bromide and albuterol sulfate) is expected to maximize the response to treatment in patients with chronic obstructive pulmonary disease (COPD) by reducing bronchospasms through two distinctly different mechanisms: sympathomimetic (albuterol) and anticholinergic/parasympatholytic (ipratropium bromide). Simultaneous administration of both an anticholinergic and a β2-sympathomimetic is designed to produce greater bronchodilation effects than when either drug is utilized alone at its recommended dosage.

INDICATIONS:

- Bronchospasms in patients with reversible obstructive airway disease, including asthma and COPD.

CONTRAINDICATIONS:

- Use cautiously in patients with cardiovascular disorders, including coronary insufficiency and hypertension.
- Use caution in patients with hyperthyroidism or diabetes mellitus.
- Warn patient about the possibility of paradoxical bronchospasm. If this occurs, the drug should be discontinued immediately.
- Known hypersensitivity to medication, soybeans, or peanuts.

ADVERSE REACTIONS:

- **CNS:** Tremor, nervousness, dizziness, insomnia, headache
- **CV:** Tachycardia, palpitations, hypertension
- **EENT:** Drying and irritation of nose and throat (with inhaled form)
- **GI:** Heartburn, nausea, vomiting.
- **Other:** Muscle cramping
- Drying of mucous membranes
- Decreased GI motility.
- Exacerbation of narrow angle glaucoma

PRECAUTIONS:

- Propranolol and other beta-blockers block the bronchodilating effect of albuterol. Monitor patient carefully.

ADMINISTRATION & DOSAGE:


ADULT & PEDIATRIC

- **NEBULIZED**
  - Add 3mL (premix) of DuoNeb to the Nebulizer. Each vial contains 3.0mg of Albuterol Sulfate and 0.5mg of Ipratropium Bromide. May repeat as necessary.

NOTE: *DouNeb is a premixed medication of Albuterol and Ipatropium Bromide (Atrovent).*

EPINEPHRINE – PUSH-DOSE PRESSOR

THERAPEUTIC EFFECTS:

"Push dose pressors" or push pressors refer to vasopressors, a group of catecholamine medications primarily used to vasoconstrict blood vessels and normally used to manage hypotension in patients when fluids or blood have either failed or are inappropriate. They include drugs such as Norepinephrine, Dopamine, Vasopressin and Epinephrine. These drugs are infused intravenously in a bolus to emergently manage hypotension. Anesthesiologist have been using boluses of vasopressors to manage hypotension in the surgical patients under anesthesia for decades.

INDICATIONS:

- Transient hypotension associated with RSI agents during ETT intubation.
- Rapid treatment for septic shock
- ROSC with hypotension post cardiac arrest
- Emergent management of hypotension from anaphylaxis

CONTRAINDICATIONS:

- Allergy to sulfites (i.e. Bactrim or Septra)

PRECAUTIONS:

- History of coronary artery disease, angina, or palpitations
- Purchasing pre-mixed push pressor syringes or pre-mixing prior to responding to calls avoids hurried mixing concentration errors.
- In patients who are receiving a digitalis, epinephrine can induce or exacerbate ventricular ectopy.
- Can cause hypertension if given to rapidly and frequently.

ADVERSE REACTIONS:

- Minor allergic reactions (urticaria)

PREPARING BOLUS DOSE EPINEPHRINE:

- Using Epinephrine 1:10,000, draw 1 mL (0.1mg/mL) of Epinephrine into a 10mL syringe.
    - Draw up 9mL of NS into the 10 mL syringe for a concentration of 10mcg/mL **OR**
- Using Epinephrine 1:1,000 in 1mg / 1 mL vial
    - Draw up 0.1 mL in a 1 mL syringe (requires a filter needle) for a concentration of 10 mcg/mL.
    - Add into a 10 mL NS syringe.
- Mix well and **label the syringe.**
- Best to have pre-mixed and labeled syringes prior to responding to a call.

Pre mixed Push Dose Epinephrine can be prepared in advance.

ADMINISTRATION & DOSAGE:

- 10-20 mcg = 1-2 mL titrate to maintain a SBP>90mmHg
- For TBI, titrate to maintain SBP>120mmHg
- **Onset of action** – 1 minute
- **Duration of action** – 5-10 minutes
- Small IV fluid bolus should be infused prior to push pressors to see enhanced effect of push pressors and to determine if it's still needed.

EPINEPHRINE

THERAPEUTIC EFFECTS:

- Increased systemic vascular resistance.
- Increased myocardial contraction.
- Increased arterial blood pressure.
- Increased myocardial oxygen requirements.
- Increased heart rate
- Increased automaticity
- Increased coronary and cerebral blood flow.
- Decrease bronchospasm.

INDICATIONS:

- Cardiopulmonary arrest
- Hypotensive crisis
    - Anaphylactic shock/Allergic reaction
    - Septic shock
    - Cardiogenic shock (bradycardia or myocardial ischemia)
    - Neurogenic shock
    - Post cardiac arrest ROSC.
    - Pre and during RSI medication
- Respiratory failure
    - Asthma/status asthmaticus with severe bronchospasm

CONTRAINDICATIONS:

- Allergy to sulfites (i.e., Bactrim or Septra)
- Minor allergic reactions (urticaria)
- In patients with coronary artery disease, angina, or palpitations

PRECAUTIONS:

- In patients who are receiving digitalis, Epinephrine can induce or exacerbate ventricular ectopy. Can produce hypertension in patients who are not receiving CPR.

ADMINISTRATION & DOSAGE:

ADULT

- **HYPOTENSION**
    - Push-Dose Epinephrine 1-2mL (10-20mcg) titrate to maintain an SBP>90mmHg in medical patients.
- **CARDIOPULMONARY ARREST with ROSC/HYPOTENSION**
    - Push Dose Epinephrine 1-2mL titrate to maintain SBP>90mmHg.

OR

- Resume cardiac Epinephrine drip.
- Use caution in cases involving a STEMI.

- **HYPOTENSIVE PATIENTS WITH TRAUMATIC BRAIN INJURY**
  - 1-2mL (10-20mcg) titrate to maintain SBP>120mmHg for TBI.
- **TRAUMATIC HEMMORHAGIC SHOCK**
  - 1-2mL (10-20mcg) titrate to maintain SBP of 80-90mmHg.
- **CARDIOPULMONARY ARREST (VFib/Pulseless VT/Asystole/PEA)**
  - 1mg (1:10,000) q3-5 minutes; maximum 3mg.

    OR
  - 1:10,000 1mg bolus dose IV/IO. Then cardiac Epinephrine drip of 2mg in 100mL NS. Infuse at 60 gtts/min, using a 10 gtts macro drip, set over 16 minutes.
- **CARDIOGENIC SHOCK/SEPTIC SHOCK/NEUROGENIC SHOCK**
  - Infuse 2-10 mcg/min IV/IO from Epinephrine drip for hypotension not corrected by fluid challenge.

    OR
  - 1-2mL Push Dose Epinephrine titrate to maintain SBP>90mmHg.
- **ANAPHYLACTIC SHOCK**
  - **Severe Respiratory Compromise**
    - 1:1,000 0.3mL IM
  - **Extreme Respiratory Compromise**
    - Push Dose Epinephrine 1-2mL titrate to maintain SBP>90mmHg.
- **ASTHMA/COPD/STATUS ASTHMATICUS**
  - Consider 1:1,000 0.1-0.3mg IM.
    - Consider Push Dose Epinephrine 1-2mL titrate to maintain SBP>90mmHg.
- **SYMPTOMATIC BRADYCARDIA**
  - Epinephrine drip – 1mg Epinephrine diluted in 250mL of NS and infuse at a rate of 2-10 mcg/min (titrated to keep SBP>90mmHg).

    OR
  - Push Dose Epinephrine 1-2mL titrate to maintain SBP>90mmHg.

PEDIATRIC

- **CARDIAC ARREST**
  - Epinephrine bolus dose in the pulseless patient is 0.01 mg/kg 1:10,000 IV/IO. Repeat x2 as needed.

OR

- Epinephrine 0.01 mg/kg 1:10,000 IV/IO bolus followed by Epinephrine drip 0.02 mg/kg in 100mL NS (60 gtt/min) over 16 minutes.

- **ANAPHYLAXIS**
  - **Moderate Respiratory Compromise in the Normotensive Patient**
    - Administer Epinephrine 0.01 mg/kg of 1:1,000 (1 mg/mL) IM. May repeat to max total dose of 0.3mg (0.3mL).
  - **Severe Anaphylaxis**
    - Administer Epinephrine 0.01 mg/kg of 1:10,000 (0.1 mg/mL) IV/IO. Maximum dose 0.5mg (5mL).
  - See Handtevy Pediatric Medication Guide.
- **ASTHMA/SEVERE BRONCHOSPASM**
  - **Moderate Respiratory Compromise**
    - Administer Epinephrine 0.01 mg/kg of 1:1,000 (1 mg/mL) IM. May repeat to max total dose of 0.3mg (0.3mL).
  - **Extreme Respiratory Compromise (Status Asthmaticus)**
    - Administer Epinephrine 0.01mg/kg of 1:10,000 (0.1 mg/mL) IV/IO. Maximum dose 0.5mg (5mL).
  - See Handtevy Pediatric Medication Guide.
- **BRADYCARDIA (Symptomatic)**
  - 0.01mg (1:10,000) IV/IO. May repeat every 2-5 minutes.

NOTE:

- Epinephrine or other related sympathomimetic drugs should not be mixed in the same infusion bag or bottle with alkaline solutions, such as sodium bicarbonate.
- Making Epi 1:10,000 due to shortages:
  1. Take a 10mL pre-filled syringe of Saline and expel 1mL of Saline from it.
  2. Attach an 18Ga filtered needle to the syringe.
  3. Take a 1mL Ampule of Epi 1:1,000 and open it.
  4. Withdraw the contents of the Ampule into the syringe. Gently mix.
- Used as a push vasopressor.

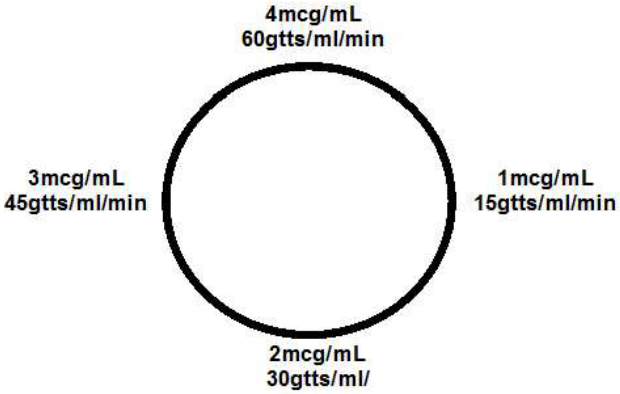
DRIP PROCEDURE:
(Concentration is 4mcg/1mL)

Dose is 2-10 mcg/min titrated to maintain a SBP>90mmHg Street Rule:

1. Insert 1mg of Epinephrine (1:1,000) into a 250mL NS bag.
2. This will yield a concentration of 4 mcg/mL.
3. You are to begin the infusion at **2 mcg/min** = 30 gtts/min

4. **You may titrate to effect to achieve a BP > 90mmHg.**

CLOCK METHOD:



ETOMIDATE

THERAPEUTIC EFFECTS:

- Etomidate is a hypnotic drug without analgesic activity. Intravenous injection of Etomidate produces hypnosis characterized by a rapid onset of action, usually within one minute. Durationof hypnosis is dose dependent but relatively brief.

INDICATIONS:

- May be used as a sedative for cardioversion.
- It is especially helpful as a sedative for RSI intubation in the hemodynamically unstable patient in that it has minimal cardiovascular effects.

CONTRAINDICATIONS:

- Known hypersensitivity.

PRECAUTIONS:

- Do not administer unless the solution is clear, and the container is undamaged.
- Etomidate should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Use is not recommended in obstetrics.

ADVERSE REACTIONS:

- The most frequent adverse reaction is skeletal muscle movements. Most movements are bilateral. Hyperventilation, hypoventilation, and apnea of short duration (50 to 90 seconds) with spontaneous recovery can occur. Hypertension, hypotension, tachycardia, bradycardia, and other arrhythmias have occasionally been observed.

OVERDOSAGE:

- Overdose may occur from too rapid or repeated injections. A drop in blood pressure may follow too rapid injection.

ADMINISTRATION & DOSAGE:

ADULT

- RSI 20mg IV/IO **(For very large adults, up to a maximum dose of 40mg IV/IO).**
- SEDATION PRIOR TO CARDIOVERSION 10 mg IV.

PEDIATRIC

- RSI Handtevy guide dosage should be followed. For pediatric patients approaching adult size, 0.3mg/kg IV/IO should be administered with a maximum dose of 20mg.
- SEDATION PRIOR TO CARDIOVERSION 0.1mg/kg IV/IO, over 30 seconds. Maximum dose is 6mg.

Refer to the appropriate Handtevy guide for the volume of medication to be administered.

MONITORING:

- $EtCO_2$ monitoring with nasal cannula.
- Pulse oximetry monitoring

FENTANYL

THERAPEUTIC EFFECTS:

- A potent anesthetic and analgesic often used for pain management in operating rooms and for analgesia, deep sedation in intensive care units, emergency departments, and in EMS.
- Fentanyl has a very rapid onset of action, resulting in near-immediate sedation and analgesia.

INDICATIONS:

- For sedation prior to intubation if Etomidate and Versed are not available.
- For deep sedation to facilitate intubation if Succinylcholine and Etomidate are not available.
- For severe pain resulting from significant musculoskeletal injuries and burns.

CONTRAINDICATIONS:

- Known hypersensitivity.

ADVERSE REACTIONS:

- Narcosis/deep sedation with higher doses. This is desirable, however, for sedation prior to intubation.
- Hypotension – much less common than with other opioid medications such as Morphine.
- Rigid Chest Wall
- Nausea/vomiting
- Confusion
- Respiratory depression with higher doses.

ADMINISTRATION & DOSAGE:

ADULT

- **CHEST PAIN/AMI**
  - Administer 50mcg IV/IO of Fentanyl for chest discomfort, as needed every 5 minutes up to a total of 100mcg if SBP>90mmHg.
- **ABDOMINAL PAIN**
  - 100mcg IV/IO/IM/IN; if SBP>90mmHg.
- **FOR PAIN MANAGEMENT (FRACTURES, BURNS)**
  - 100mcg IV/IO/IM (1mcg/kg), may repeat x2
  - 200mcg IN if unable to establish an IV/IO, may repeat x2
- **MEDICATION SEQUENCE FOR INDUCTION OF ANESTHESIA FOR INTUBATION AND POST INTUBATION MANAGEMENT**
  - Reference page 66-67

PEDIATRIC

- **MEDICATION SEQUENCE FOR INDUCTION OF ANESTHESIA FOR INTUBATION AND POST INTUBATION MANAGEMENT**
  - Reference page 66-67
- **ABDOMINAL PAIN**
  - 1 mcg/kg IV/IO, over 2 minutes
  - 1.5 mcg/kg IN/IM
  - Max single dose 100mg
- **FOR PAIN MANAGEMENT (FRACTURES, BURNS)**
  - 1 mcg/kg IV/IO with max dose 100 mcg.
  - 2 mcg/kg IN if unable to establish IV/IO with max dose 200 mcg.

MONITORING:

- $EtCO_2$ monitoring with nasal cannula.
- Pulse oximetry monitoring

GLUCAGON

THERAPEUTIC EFFECTS:

- Raises blood glucose levels by promoting catalytic depolymerization of hepatic glycogen to glucose.

INDICATIONS:

- Coma from insulin-shock when an IV cannot be initiated in order to give dextrose.
- Beta blocker overdose

CONTRAINDICATIONS:

- Unstable diabetics usually do not respond to Glucagon. Give Dextrose IV instead.
- It is vital to arouse the patient from coma as quickly as possible and to give additional carbohydrates orally to prevent secondary Hypoglycemic reactions.
- For IV drip infusion, Glucagon is compatible with Dextrose solution, but forms a precipitate in Chloride solutions.
- Has a positive inotropic and chronotropic reaction on the heart. May be used to treat overdose of beta-adrenergic blockers.

ADMINISTRATION & DOSAGE:

ADULT

- **HYPOGLYCEMIA**
  - 1mg IM, 1 hour after coma develops; may repeat within 25 minutes, if necessary. When patient responds, give additional carbohydrates as soon as possible.
- **BETA BLOCKER OVERDOSE WITH HYPOTENSION (< 90 SYSTOLIC) AND/OR SEVERE BRADYCARDIA**
  - 10mg IV/IO, repeat in 10 minutes if BP does not respond.

PEDIATRIC

- **HYPOGLYCEMIA**
  - 0.5mg IM for patients < 20kg
  - 1mg IM for patients > 20kg
- **BETA BLOCKER OVERDOSE WITH HYPOTENSION (< 90 SYSTOLIC) AND/OR SEVERE BRADYCARDIA**
  - 50 mcg/kg, repeat in 10 minutes if BP does not respond.

Refer to the appropriate Handtevy guide for the volume of medication to be administered.

KETAMINE

(KETAMINE HYDROCHLORIDE, KETALAR)

THERAPEUTIC EFFECTS:

- Ketamine is a rapid-acting, general anesthetic producing an anesthetic state characterized by profound analgesia, normal pharyngeal laryngeal reflexes, normal or slightly enhanced skeletal muscle tone, and cardiovascular and respiratory stimulation.

INDICATIONS:

- Excited delirium severely agitated patient that poses an immediate threat to himself/herself or others and usual chemical or physical restraints may not be effective or safely used.
- Analgesia – severe pain between 7-10 refractory to Fentanyl or Morphine, or with concerns about hypotension or prior opioid addiction.
- Refractory seizures
- Sedation for intubation/cardioversion (preferred over Etomidate)

CONTRAINDICATIONS:

- Combative patients with agitated delirium will be tachycardic, hypertensive, frequently dehydrated, and even febrile. However, it should be noted that Ketamine is **relatively contraindicated** in patients with any condition in which a significant elevation of blood pressure would be hazardous such as:
    - Severe cardiovascular disease
    - Heart failure
    - Severe or poorly controlled hypertension
    - Recent myocardial infarction
    - History of stroke
    - Cerebral trauma
    - Intracerebral mass or hemorrhage
- The benefit of administering Ketamine to the combative patient with agitated delirium generally outweighs the risks.
- Known hypersensitivity to the drug.

ADVERSE REACTIONS:

- Psychological manifestations varying in severity between pleasant, dream-like states, vivid imagery, hallucinations, and nightmares or illusions.
- Diplopia
- Nystagmus
- Blood pressure and pulse rate elevations.
- Local pain
- Exanthema at the injection site

PRECAUTIONS:

- Use with caution in the chronic alcoholic and the acutely alcohol-intoxicated patient.
- The intravenous dose should be administered over a period of 60 seconds.
- Although respiratory depression is uncommon, however it is seen in patients with prior ingestion of other sedative drugs. Resuscitative equipment should be readily available for use.

ADMINISTRATION & DOSAGE:

- Supplied in 10mL vials in a concentration of 50mg/mL.

ADULT

- **AGITATED DELIRIUM**
  - 4mg/kg IM/IN. Maximum single dose is 400mg or 4mL. 2 mg/kg IV as a redose in 10 minutes if not adequately sedated to a total max dose of 600mg. **DO NOT** attempt to place an IV in a severely combative patient. 4mg/kg IN half dose in each nostril. May repeat one time if uncontrollable agitation persists.
  - **Onset:** 30 seconds
  - **Duration:** 5-10 minutes
- **SEDATION/RSI INDUCTION/CARDIOVERSION/PACING**
  - 1mg/kg IV/IO. Maximum dose 200mg IV/IO; may repeat x1 within 5 minutes as needed. 2 mg/kg IM/IN
  - **Onset:** 30 seconds
  - **Duration:** 5-10 minutes
- **ANALGESIA SEVERE PAIN (BURNS/FRACTURES) OR IF NOT RESPONDING TO FENTANYL, HYPOTENSIVE, OR PRIOR OPIOID ADDICTION**
  - 50mg IV/IO over 1 minute; may repeat x1 as needed within 5 minutes. 100mg IM/IN, may repeat x1 as needed in 5 minute intervals.
  - **Onset:** 1-2 minutes
  - **Duration:** 15 minutes
- **REFRACTORY SEIZURES TO BENZODIAZEPINES (VERSED)**
  - 1 mg/kg IV/IO over 1-2 minutes; may repeat x1 in 10 minutes as needed. Max single dose 100mg. Maximum total dose 200mg.
  - 2 mg/kg IM/IN
  - **Onset:** 30 seconds
  - **Duration:** 15 minutes

PEDIATRIC

- **SEDATION/RSI INDUCTION/CARDIOVERSION/PACING**
  - 1mg/kg slow IV/IO push; 2 mg/kg IM/IN
  - **Onset:** 30 seconds
  - **Duration:** 5-10 minutes
- **ANALGESIA SEVERE PAIN (BURNS/FRACTURES) OR IF NOT RESPONDING TO FENTANYL, HYPOTENSIVE, OR PRIOR OPIOD ADDICTION**
  - 0.5 mg/kg IV/IO over 1 minute, max single dose 50mg. 1mg/kg IM/IN, may repeat x1 as needed in 5 minutes.
  - **Onset:** 1-2 minutes
  - **Duration:** 15 minutes
- **REFRACTORY SEIZURES TO BENZODIAZEPINES (VERSED)**
  - 1 mg/kg IV/IO over 1-2 minutes; max single dose 100mg
  - 2 mg/kg IM/IN
  - **Onset:** 30 seconds
  - **Duration:** 15 minutes

MONITORING:

- $EtCO_2$ monitoring with nasal cannula.
- Pulse oximetry monitoring

MAGNESIUM SULFATE

THERAPEUTIC EFFECTS:

- Magnesium, the second most plentiful cation of the intracellular fluids, has been linked to three important effects on heart cells.
    - First - magnesium increases the stability of cardiac cells.
    - Second - magnesium is directly related to the metabolism of potassium ions in the cardiac cells.
    - Third - magnesium can act as a functional calcium channel blocking agent. Magnesium is also a skeletal muscle and CNS depressant.

INDICATIONS:

- Unstable or pulseless ventricular tachycardia with Torsades de Pointes refractory to defibrillation.
- Eclampsia and pre-eclampsia-seizure immediately pre-partum or post-partum in patient not having seizure history.
- Severe respiratory distress with bronchospasm (Status Asthmaticus)

CONTRAINDICATIONS:

- Should not be administered parenterally in patients with heart block.

PRECAUTIONS:

- Magnesium may cause respiratory depression through its CNS depressant effects.
- Magnesium can cause fetal harm when administered to pregnant women except in the cases of a toxic mother.
- Use caution if administering with other CNS depressant medications due to the additive effects they may have with magnesium.
- Use caution in patients with renal impairment as magnesium is excreted primarily with the kidneys.

HOW SUPPLIED:

- Magnesium Sulfate 50% 1g/2mL

ADMINISTRATION & DOSAGE:

ADULT

- **TORSADES DE POINTES**
  - Magnesium 2 grams IV/IO in 100mL NS over 10 minutes using macro drip set (10gtts/mL). 2 vials = 2 grams
- **ECLAMPTIC SEIZURES**
  - 2 grams IV/IO in 100mL NS over 10 minutes using macro drip set (10 gtts/mL) **(rapid infusion can lead to cardiac arrest)**
- **SEVERE RESPIRATORY DISTRESS *(Refractory to Bronchodilators and Epinephrine)***
  - 2 grams IV/IO in 100mL NS over 10 minutes using macro drip set (10 gtts/mL) for asthma not responding to other treatment.

PEDIATRIC

- **SEVERE RESPIRATORY DISTRESS *(Status Asthmaticus)***
  - 50 mg/kg given IV/IO in 100mL NS over 10 minutes (max 1 gram).

METHYLENE BLUE

CLASS:

- Antidote

ACTIONS:

- This compound has an oxidation/reduction action and a tissue staining property. It has twoopposite actions on hemoglobin:
  - Low concentrations will reduce methemoglobin to hemoglobin.
  - High concentrations oxidize iron in the ferrous state (Fe2+) to ferric iron (Fe3+) that results in the formation of methemoglobin. Only iron in the ferrous state can bind withoxygen. ***SOT will be using the low concentration***.

INDICATIONS:

- Chemically induced methemoglobinemia

CONTRAINDICATIONS:

- History of glucose-6-phosphate dehydrogenase (G6PD) deficiency

DRUG INTERACTIONS:

- Be cautious when using in the treatment of antidote induced methemoglobinemia in cyanidepoisoning. Too much methylene blue may cause cyanide to be re-released into the system.
- Rapid administration may produce increased methemoglobinemia.
- Observe for elevated B/P, nausea, and disorientation.

ADMINISTRATION & DOSAGE:

ADULT

- 1-2 mg/kg IV/IO over 5-10 minutes.
- Repeat hourly as needed.

PEDIATRIC

- 1-2 mg/kg IV/IO over 5-10 minutes.
- Repeat hourly as needed.

SUPPLIED:

- 100mg in 10mL vials (10 mg/mL)

ROUTES OF ADMINISTRATION:

- IV/IO

MIDAZOLAM
(VERSED)

THERAPEUTIC EFFECTS:

- Versed is a water-soluble, short acting, benzodiazepine central nervous system depressant. The CNS effects are dependent on the dose administered, the route of administration, and the presence or absence of other premedication. Onset time of sedation effects after IM administration is 15 minutes, with peak sedation occurring 30-60 minutes following injection. Sedation after IV injection is achieved within 3 to 5 minutes. 40-82% of patients have no recollection of procedures during sedation, depending on route of administration and other medications given.

INDICATIONS:

- An agent for conscious sedation during RSI either alone or with a narcotic. Also used for seizure control.
- IV for induction of general anesthesia, before administration of other anesthetic agents.
- With the use of narcotic pre-medication, induction of anesthesia can be attained within a relatively narrow dose range and in a short time period.
- When used IV, Versed is associated with a high incidence of partial or complete impairment of recollection for the next several hours.

CONTRAINDICATIONS:

- Patients with known hypersensitivity and acute narrow angle glaucoma should not receive Versed.
- May be used in open angle glaucoma if receiving appropriate therapy.

PRECAUTIONS:

- Continuously monitor patient's respiratory status and have resuscitative equipment immediately available.
- When used for conscious sedation, Versed should not be administered by rapid or single bolus IV.
- Serious cardiopulmonary adverse events have occurred; including hypotension, respiratory depression, apnea, respiratory arrest, and / or cardiac arrest, sometimes resulting in death.
- Concomitant use of barbiturate, alcohol or other CNS depressants may increase risk of hypoventilation or apnea and may contribute to profound and/or prolonged drug effect.
- Patients with COPD are unusually sensitive to the respiratory depressant effects of Versed.
- Patients with chronic renal failure and patients with congestive heart failure eliminate Midazolam more slowly. Therefore, a reduced initial dosage is recommended.
- There is a potential hazard to the fetus when used in the pregnant patient.

ADMINISTRATION & DOSAGE:

ADULT

- **SEDATION**
  - 5mg IV/IO. May repeat 1x prn. Max total dose 10mg.
  - 10mg IM/IN
- **SYMPATHOMIMETIC OVERDOSE**
  - 2mg IV, 4mg IM/IN; may repeat x1 in 10 minutes
- **SEIZURES**
  - 2mg IV/IO. May repeat 1x prn, in 5 minutes if seizure reoccurs or does not subside. Max total dose 10mg
  - 4mg IN/IM. Consider if actively seizing.
- **CPAP SEDATION**
  - If CPAP, Versed 1mg IV/IO for anxiety with CPAP. May repeat x1 after 5 minutes.

PEDIATRIC

- **SEDATION**
  - 0.1 mg/kg IV/IO, over 30 seconds, max single dose 5mg. May repeat 1x prn. Max total dose 10mg.
  - 0.2 mg/kg IN/IM, max single dose of 5mg
  - May repeat either route 1x prn, in 5 minutes. Max total dose 10mg
- **SEIZURES**
  - 0.1 mg/kg IV/IO, refer to Handtevy
  - 0.2 mg/kg IN/IM, refer to Handtevy
  - May repeat either route 1x prn, in 5 minutes if seizure reoccurs or does not subside
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.**

DRUG PREPARATION:

- Expel 2mL of a pre-filled 10cc syringe of NS, then take 1 vial of Versed (10mg/2mL) and add it to the remaining 8mL NS pre-filled syringe. This will then yield a concentration of 1 mg/mL.

MONITORING:

- $EtCO_2$ monitoring with nasal cannula.
- Pulse oximetry monitoring

NALOXONE
(NARCAN)

THERAPEUTIC EFFECTS:

- Narcan is the specific antidote for narcotic agents. Reverses the actions of all opiate based drugs, including Fentanyl, Heroin, Morphine, Methadone, Sulbaxone, Codeine, Hydrocodone, oxycodone, oxycoten, Opana, MS Contin, Lomotil, Demerol, Dilaudid, Paregoric and Percodan. Naloxone is effective in counteracting the effects of overdose from any of these agents. Naloxone will reverse stupor, coma, respiratory depression, etc., WHEN THESE ARE DUE OPIATE OVERDOSE. It is not effective in reversing coma from other causes.

INDICATIONS:

- Used for the treatment of opiate overdose. Coma or altered level of consciousness with respiratory depression suspected to be due to opiate overdose or of an unknown cause.

CONTRAINDICATIONS:

- None

ADVERSE REACTIONS:

- Administration to people who are physically dependent on opiate based medication may cause an acute withdrawal syndrome including hyper alert agitation, vomiting, and tachy arrhythmias. For this reason, Naloxone should be given very slowly, using improvement of respiratory status as an end point.
- In general, the duration of action of Naloxone is shorter than that of the narcosis it is used to counteract. Thus, the patient who has been successfully aroused with Naloxone may fall back into stupor or coma as the Naloxone wears off. These patients must therefore be watched closely and in an emergency department. They are not allowed to refuse transport.

HOW SUPPLIED:

- In concentrations of 0.4 mg/mL and 1 mg/mL

ADMINISTRATION & DOSAGE:

ADULT

- Adequate oxygenation and ventilation is priority.
- If unresponsive and/or respirations are compromised, administer Narcan IV/IO/IN in increments of 0.5mg every 30 seconds until respiratory effort and LOC improves. Maximum dose is 2mg.
- Some agents such as Fentanyl, synthetic Fentanyl, Methadone, Sulboxane, Darvocetmay require higher doses of Narcan to reverse narcotic effects (up to 4mg).

- Administer this solution very slowly IV/IO while monitoring the rate and depth of the patient's respirations. As soon as there is improvement in the respirations and responsiveness, stop giving the drug.
- It is preferable that the patient NOT wake up fully in the field, as these patients may be violent when brought abruptly out of coma. USE RESPIRATIONS AS A GUIDE.
- **AMS** for moderately obtunded patients with minimal respiratory depression, a trial of Narcan 0.2mg IV/IO may be adequate to improve LOC and diagnostics for narcosis.
- Repeat as needed.

PEDIATRIC

- Administer Narcan 0.1mg/kg IV/IO; if no IV access or 0.2mg/kg IN as needed for respiratory depression. Repeat 1x as needed. Total maximum dose 4mg.
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.**

NITROGLYCERIN
(NITROSTAT)

THERAPEUTIC EFFECTS:

- Relaxes smooth muscle and the effects on the cardiovascular system are chiefly due to relaxation of vascular smooth muscle (hence vasodilation). Nitroglycerin provides relief of pain in angina, probably by dilating coronary arteries and thereby increasing blood flow through them as well as by decreasing myocardial oxygen demand. Through its vasodilating action on peripheral vessels, Nitroglycerin promotes pooling of the blood in the systemic circulation and decreases the resistance against which the heart has to pump (the after load). These effects maybe useful in treating congestive heart failure.

INDICATIONS:

- To relieve the pain of Angina
- To treat selected cases of pulmonary edema due to left heart failure with diastolic blood pressure > 90mmHg.
- To help reduce blood pressure in hypertensive crisis.

CONTRAINDICATIONS:

- Increased intracranial pressure.
- Glaucoma
- Hypotension
- Male or female use of Viagra (within 24 hours) and Viagra like medications (within 48 hours).

ADVERSE REACTIONS:

- Transient, throbbing headache (if headache does not occur, suspect that the nitroglycerin is outdated and no longer potent).
- Hypotension
- Dizziness, weakness

HOW SUPPLIED:

- Many forms, including ointment, tablets, sustained release capsules. For use in the field, sublingual tablets of 0.4mg strength are preferred.

ADMINISTRATION & DOSAGE:

- Given sublingual (under the tongue).
- The patient should be semi sitting or recumbent.
- Administer 0.4mg (one metered dose or tablet) sublingual every 3-5 minutes up to x3 for chest pain with SBP>90mmHg and IV NS 250 mL/bolus is initiated.
- See Chest Pain (pg. 41) and AMI (pg. 29) protocols for specific uses.

NOREPINEPHRINE
(LEVOPHED)

THERAPEUTIC EFFECTS:

- Stimulates alpha receptors in the peripheral vasculature, producing vasoconstriction-related increase in systemic blood pressure.
- Concurrent beta receptor stimulation may produce increases in heart rate and mild bronchodilation, though norepinephrine is a weaker beta stimulator than dopamine.

INDICATIONS:

- Post cardiac arrest (Cardiogenic Shock)
- Fever (Septic Shock)
- Dialysis-Related Issues
- For all listed situations, indication is hypotension (adult = systolic < 90mmHg) due to cardiogenic, septic, or neurogenic shock either refractory to intravascular fluid boluses or in which intravascular fluid bolusing is contraindicated (e.g., pulmonary edema).

CONTRAINDICATIONS:

- Hypertension

ADVERSE REACTIONS:

- Few, though at higher doses, symptoms may include:
    - Headache
    - Palpitations
    - Tachycardia
    - Chest Pain
    - Eventual Hypertension
    - Bradycardia can result reflexively from an increase in blood pressure.

PRECAUTIONS:

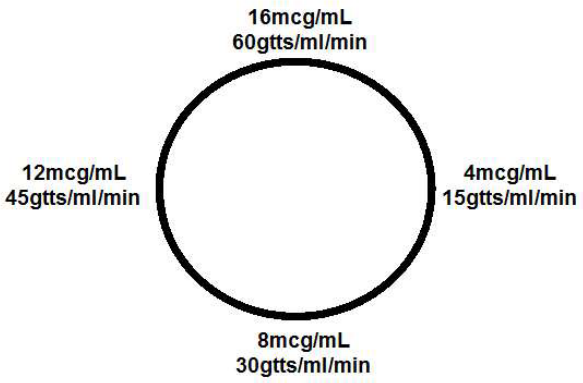
- In the setting of tachydysrhythmia-induced cardiogenic shock, treat per A-Fib/A-Flutter/RVR, SVT and VT protocols. Ensure that aggressive fluid resuscitation is accomplished (unless contraindicated) prior to norepinephrine use.
- Norepinephrine should be given into a large vein. The vein of choice for EMS is the antecubital vein, as this will decrease the risk of overlying skin necrosis. Do not administer norepinephrine through anIV in the hand or foot. Administration through IO in the proximal tibia or proximal humerus is permitted.
- If local extravasation occurs, notify the receiving physician.
- Safety in pregnancy not firmly established, though when clinically indicated - the benefits outweigh risks.
- Safety in pediatrics not firmly established and medical control is to be consulted prior to pediatric usage.

ADMINISTRATION & DOSAGE:

ADULT

- Is available for IV/IO use.
- 4mg from a 4mg/4mL ampule should be mixed in 250mL of NS. This yields a concentration of 16mcg/mL. The initial rate of infusion is 4-16 mcg/min. This rate may be increased until blood pressure improves. The lowest infusion rate that results in satisfaction hemodynamic performance should be used to minimize side effects.
- **ROSC AFTER CARDIAC ARREST**
  - 4-16mcg/min keep SBP > 90mmHg
- **CARDIOGENIC SHOCK**
  - 4-16mcg/min for hypotension not corrected by fluid challenge
- **HYPOTENSION (SHOCK) REFRACTORY TO FLUIDS OR FLUIDS CONTRAINDICATED**
  - Start at 4mcg/minute - see dosage chart – titrated to a systolic B/P ≥ 90mmHg. Maximum infusion rate is 16mcg/min.
  - Norepinephrine infusion adult dosage chart rates reflects using a microdrip (60 gtts/mL) set:

Norepinephrine Drip – (Concentration is 4mg/4mL)



PEDIATRIC

- **> 5 years old**
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered. Only with physician's orders.**

HOW TO MAKE THE DRIP:

Take 1mg (or 1mL) of Norepinephrine and add it to a 100mL IV bag of NS.

DOSE:

- 2mcg/min= 15gtt/min or 3gtt every 15 seconds (actual 2.5gtt) 4mcg/min= 30gtt/min or 6gtt every 15 seconds (actual 5gtt) 8mcg/min= 45gtt/min or 11gtt every 15 seconds (actual 11.25) 12mcg/min= 60gtt/min or 15gtt every 15 seconds

OXYGEN

THERAPEUTIC EFFECTS:

- Elevates arterial oxygen tension and increases arterial oxygen content, thereby improving tissue oxygenation.

INDICATIONS:

- Acute chest pain that may be due to cardiac ischemia
- Suspected hypoxemia of any cause
- Cardiopulmonary arrest

ADVERSE REACTIONS:

- Oxygen toxicity may occur after prolonged ventilatory support with a high oxygen concentration; however, even 100% oxygen is not hazardous to the patient's lungs during the brief time required for clinical resuscitation. **IT SHOULD NEVER BE WITHHELD OR DILUTED DURING RESUSCITATION** because of the mistaken belief that it will be harmful.

ADMINISTRATION & DOSAGE:

- Can be delivered by mask or nasal cannula for patients with adequate spontaneous breathing.
- For patients who are not breathing spontaneously or whose ventilation is inadequate, oxygen can be delivered by positive - pressure ventilation devices (e.g., BVM, demand valve).
- Oxygen can be adequately delivered by volume regulated ventilators even during resuscitation of intubated patients.

PRECAUTIONS:

- For patients with chronic pulmonary disease (e.g., pulmonary emphysema), it may be necessary to assist ventilation during the administration of oxygen if reversal of hypoxemia reduces respiratory drive in a patient with a chronically high $PaCO_2$.

PONTOCAINE
(TETRACAINE HYDROCHLORIDE)

CLASS:

- Local anesthetic

ACTIONS:

- Tetracaine is an ophthalmic solution that anesthetizes the eyes. The onset of anesthesia usually begins within 20 seconds and lasts as long as 15 minutes.

INDICATIONS:

- Tetracaine is intended for use in the patient who is unable to cooperate with the provider in adequately flushing the eye(s) due to discomfort or pain.
- If flushing can be accomplished easily, Tetracaine may not be needed.
- Effective in the management of patients who have had chemical exposures to the eyes.

CONTRAINDICATIONS:

- Hypersensitivity to Tetracaine/ester-type anesthetics.
- Severe hypersensitivity to sulfite.
- Allergy to any topical anesthetic.
- Traumatic injury to the eye such as impaled objects or suspected rupture.

CAUTION:

- Do not use the solution if it contains crystals, or if it is cloudy or discolored.
- Tetracaine eye drops are for topical ophthalmic use only—not for injection.
- The patient should be advised not to touch or rub the eye(s) until the effect of the anesthesia has worn off.

ADMINISTRATION & DOSAGE:

ADULT

- 2 drops in the affected eye.

PEDIATRIC

- 1 drop in the affected eye.

SUPPLIED:

- 250 mg two compartment single dose vial;
- The vial contains a compartment with powder and another with 2 ml bacteriostatic water.

ROUTES OF ADMINISTRATION:

- Topical

ROCEPHIN

THERAPEUTIC EFFECTS:

- Rocephin is a broad-spectrum antibiotic that can be administered rapidly IV or IM. It is a third-generation cephalosporin so is effective in the treatment of most standard gram positive and gram-negative bacteria. Its use in the pre-hospital setting is for rapid treatment of septic shock which can have as high as a 40% mortality rate in the elderly. Delays in the administration of appropriate antibiotics for overwhelming infections can be correlated with higher mortality rate within 12 to 24 hours.

INDICATIONS:

- Perceived sepsis or septic shock

CONTRAINDICATIONS:

- Severe allergies to drugs like – cephalosporins. Rarely cross reacts with penicillin, however.

ADMINISTRATION & DOSAGE:

ADULT

- 1 g IV/IO/IM over 1-2 minutes if SBP < 90 mmHg and temperature > 100.4 or < 96.8. Rocephin must be reconstituted with 10 mL of NS, prior to administration.
- *Preferred site for IM is the gluteus maximus. The dose shall be divided into 2 syringes, each containing 500 mg.

PEDIATRIC

- Rocephin not yet approved for pediatrics.

ROCURONIUM (ZEMURON)

THERAPEUTIC EFFECTS:

Rocuronium bromide is a nondepolarizing 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:

Provide airway muscle paralysis to facilitate endotracheal intubation in elective as well as emergent conditions.

CONTRAINDICATIONS:

- The absolute contraindication to using rocuronium would be a documented allergic reaction to the drug.
- Rocuronium should not be used in patients with renal or hepatic dysfunction as it will prolong its effects by delaying elimination.

ADVERSE REACTIONS:

- Allergic Reaction
- Residual Neuromuscular weakness
- Myopathy and polyneuropathy

ADMINISTRATION & DOSAGE:

ADULT

- 50mg IV/IO, may repeat once, max dose 100mg

PEDIATRIC

- 1 mg/kg IV/IO, may repeat once, max dose 50mg

SODIUM BICARBONATE

THERAPEUTIC EFFECTS:

- Sodium Bicarbonate reacts with hydrogen ions to form water and carbon dioxide to buffer metabolic acidosis. Administration of Sodium Bicarbonate does not facilitate ventricular defibrillation or survival in cardiac arrest.

INDICATIONS:

- Should be used ONLY after application of more definitive and substantiated interventions, such as prompt defibrillation, effective chest compression, endotracheal intubation and hyperventilation with 100% oxygen, and the use of first and second line cardiac medications. These interventions will usually take approximately 10 min., thereafter, Sodium Bicarbonate therapy can be considered in specific clinical circumstances, such as documented preexisting metabolic acidosis with or without hyperkalemia. Sodium Bicarbonate is also indicated in tricyclic antidepressant overdoses under physician orders.
- Symptomatic Chlorine Gas inhalation

CONTRAINDICATIONS:

- Congestive heart failure
- Known respiratory or metabolic alkalosis.
- Liver cirrhosis
- Renal impairment

ADVERSE REACTIONS:

- Acid rebound
- Hypercalcemia
- Metabolic alkalosis
- Renal dysfunction

ADMINISTRATION & DOSAGE

ADULT

- **DIALYSIS (HYPERKALEMIA)** Should be administered to all arrested dialysis patients (1mEq/kg).
- **TRICYCLIC OVERDOSE** 1mEq/kg
- **CHLORINE GAS** Mix 3mL of 8.4% Sodium Bicarbonate with 2mL NS. Give by nebulizer at 6 lpm for chlorine gas inhalation.
- **EXCITED DELIRIUM (UNCOOPERATIVE AND VIOLENT)** Add 50 mEq sodium bicarbonate into a 1000mL NS bolus if $EtCO_2$ is <25.

PEDIATRIC

- 1mEq/kg. Refer to the appropriate Handtevy guide for the volume of medication to be administered.
- **PREEMIE - 6 MONTH** Dilute the 8.4% Bicarb 1:1 with NS to make 4.2% Bicarb. Then give 1mEq/kg.

SODIUM NITRITE

CLASS:

- Antidote

ACTIONS:

- Reacts with hemoglobin to form methemoglobin (oxidizes ferrous Fe ++ iron in normal hemoglobin to ferric FE +++ iron, or methemoglobin). The latter removes cyanide ions from various tissues and couples with them to become cyanmethemoglobin, which has relatively lowtoxicity. *Chemical Reaction: NaNo2 + Hemoglobin = Methemoglobin + Methemoglobin = Cyanmethemoglobin* * Sodium Nitrite may induce a dangerous methemoglobin level and may also cause hypotension.

INDICATIONS:

- Cyanide Poisoning
- Hydrogen Sulfide Poisoning

CONTRAINDICATIONS:

- Absence of symptoms
- History of glucose-6-phosphodehydrogenase (G6PD) deficiency

DRUG INTERACTION:

- Must be followed by Sodium Thiosulfate in cyanide poisoning to obtain maximum effect Methylene Blue may reverse excessive methemoglobinemia, but it should be used cautiously asit may release CN back into the system.

ADMINISTRATION & DOSAGE:

ADULT

- 300mg over 2.5-5 minutes, repeat at ½ of initial dose in 20 minutes if symptoms persist.

PEDIATRIC

- 0.2 mL/kg, not to exceed 300mg, repeat at ½ of initial dose in 20 minutes if symptoms persist.
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.**

SUPPLIED:

- 300mg in 10mL vial

ROUTES OF ADMINISTRATION:

- IV, IO

SODIUM THIOSULFATE

CLASS:

- Antidote

ACTIONS:

- The function of Sodium Thiosulfate is to convert cyanmethemoglobin to thiocyanate, by the enzyme rhodanese. The thiocyanate is excreted by the kidneys. *Chemical reaction: Na2S2O3 + cyanmethemoglobin + O2 = HSCN*

INDICATIONS:

- Cyanide poisoning

CONTRAINDICATIONS:

- Absence of indications
- History of glucose-6-phosphodehydrogenase (G6PD) deficiency

DRUG INTERACTIONS:

- Is to be given immediately after Sodium Nitrite in CN poisoning;
- Is not used in Hydrogen Sulfide poisoning;
- Methylene Blue may reverse excessive methemoglobinemia, but it should be used cautiously asit may release CN back into the system.

ADMINISTRATION & DOSAGE:

ADULT

- Give 12.5 gm over 2.5-5 minutes, repeat at ½ initial dose in 20 minutes if symptoms persist.

PEDIATRIC

- Give 1.65mL/kg, not to exceed 12.5gm, repeat at ½ initial dose in 20 minutes. if symptoms persist.
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered to pediatrics.**

SUPPLIED:

- 12.5gm in 50 mL vial

ROUTES OF ADMINISTRATION:

- IV, IO

SOLU-MEDROL
(METHYLPREDNISOLONE)

THERAPEUTIC EFFECTS:

- Decreases the body's inflammatory response as well as suppresses the body's immune system.

INDICATIONS:

- Used in the treatment of severe asthma, or COPD exacerbation.

CONTRAINDICATIONS:

- Known hypersensitivity to steroid medications.

ADVERSE REACTIONS:

- Depression, euphoria, headaches, restlessness, CHF, hypertension, nausea, vomiting.

ADMINISTRATION & DOSAGE:

ADULT

- A single dose of 125mg slow IVP/IO/IM.
- Solu-Medrol for EMS use will be stored in the "powder" form and mixed on site when ready to use. It will most likely be stored and mixed in an action type vial.

PEDIATRIC

- 2mg/kg IV/IO/IM up to a maximum dose of 125mg
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered.**

SUCCINYLCHOLINE
(ANECTINE)

THERAPEUTIC EFFECTS:

- Anectine is an ultra short-acting depolarizing-type, skeletal muscle relaxant for IV administration. Succinylcholine combines with the cholinergic receptors of the motor end plate to produce depolarization, which may be observed as fasciculation.
- Subsequent neuromuscular transmission is inhibited so long as adequate concentration of succinylcholine remains at the receptor site. Onset of flaccid paralysis is rapid (< 1 minute after IV administration), and with single administration, lasts approximately 4-6 minutes. The paralysis following administration of succinylcholine is selective, initially involving consecutively the levator muscles of the face, muscles of the glottis and finally the intercostals, the diaphragm, and all other skeletal muscles.

INDICATIONS:

- Anectine is indicated to facilitate endotracheal intubation and to provide skeletal muscle relaxation during mechanical ventilation.

CONTRAINDICATIONS:

- Conditions that may cause hyperkalemia:
  - Burns greater than 24 hours old.
  - Spinal cord injury greater than 24 hours old
  - Known neuromuscular disease (Guillain-Barré Syndrome, myasthenia gravis, amyotrophic lateral sclerosis, muscular dystrophy)
  - Chronic renal failure on hemodialysis/presence of hemodialysis access
- History of malignant hyperthermia

PRECAUTIONS:

- Glaucoma
- Pseudocholinesterase deficiency
- Increase gastric pressure, which could result in regurgitation possible aspiration.

ADVERSE REACTIONS:

- Cardiac arrest, malignant hyperthermia, arrhythmias, bradycardia, tachycardia, hypertension, hypotension, hyperkalemia, prolonged respiratory depression, or apnea, increased intra ocular pressure, muscle fasciculation, rhabdomyolysis with possible myoglobinuria acute renal failure, excessive salivation, and rash.

ADMINISTRATION & DOSAGE:

ADULT

- 1.5mg/kg IV/IO

PEDIATRIC

- 2mg/kg IV/IO **Refer to the appropriate Handtevy guide for the volume of medication to be administered for pediatrics.**

NOTE: *Maximum Dosage of 200mg. DO NOT GIVE REPEAT DOSES OF ANECTINE*

TRANEXAMIC ACID (TXA)

CLASS:

- Antifibrinolytic Agents

THERAPEUTIC EFFECTS:

- Blocks the action of plasminogen, which dissolves blood clots.

INDICATIONS:

- Severe traumatic hemorrhagic shock with sustained SBP <90, HR > 110
- Obvious signs of sustained traumatic hemorrhagic shock following 1L NS
- Trauma arrest if loss of pulses AFTER patient contact with PEA > 30 complexes/min $EtCO_2$ > 10mmHg
- Isolated TBI with GCS 13 or less

CONTRAINDICATIONS:

- Severe traumatic brain with traumatic brain injury with GCS = 3 and fixed and dilated pupils
- Known hypersensitivity.
- < 13 years
- History of known thromboembolic disease i.e., DVT, PE

PRECAUTIONS:

- Must be started within 3 hours from time of injury.
- Best results if started within 1st hour of time of injury.

ADVERSE REACTIONS:

- Seizure, visual changes, renal impairment, hypotension (with rapid infusion)

ADMINISTRATION & DOSAGE:

- **Route:** IV or IO
- **Dosage:** 2 grams
- **Administration:** 2 grams in 100mL NS/LR infused over 10 minutes (10gtts/mL drip set) for age 13 or older
- Trauma Arrest **2 grams IV Push**

NOTE:

- Infusing TXA should not delay hemorrhage control.
- Amputations above the wrist and above the ankle.
- TXA continued infusion.
- Initial crystalloid bolus with TXA unless SBP < 90
- TXA for GIB with high blood loss

ZOFRAN
(ONDANSETRON)

THERAPEUTIC EFFECTS:

- A selective agonist of a specific type of serotonin receptor located in the CNS at the area postrema (chemoreceptor trigger zone) and in the peripheral nervous system.

INDICATIONS:

- Prevention of nausea/vomiting

CONTRAINDICATIONS:

- Hypersensitivity to Zofran
- Pregnancy 1st trimester

ADVERSE REACTIONS:

- Severe adverse reactions include syncope and visual disturbance.

ADMINISTRATION & DOSAGE:

ADULT

- 4mg IV/IO/IM. May repeat once in 5 minutes, if needed.
- 4mg ODT (Orally disintegrating tablet). May repeat once in 5 minutes, if needed.

PEDIATRIC

- 0.15mg/kg IV/IO/IM. Max dose 4mg
- 4mg ODT (Orally disintegrating tablet) for age 4 and above. Max dose 8 mg ODT
- **Refer to the appropriate Handtevy guide for the volume of medication to be administered.**