Emergency Medical Services
Clinical Practice Guidelines (CPGs)

Effective: May 1, 2024

DALLAS FIRE-RESCUE VARIANT

UTSW/Parkland BioTel EMS Medical Direction Team

DFR Chief Medical Officer & Medical Director – S. Marshal Isaacs, MD
BioTel System Medical Director – Andrew N. Hogan, MD, NRP

Clinical Practice Guidelines, Policies and All Other Content Approved By:

05/01/2024

S. Marshal Isaacs, MD, FACEP, FAEMS **Date**

05/01/2024

Andrew N. Hogan, MD, NRP, FACEP, FAEMS **Date**

These Clinical Practice Guidelines (CPGs) and supplemental materials are intended to guide EMS patient care in the UTSW/Parkland BioTel EMS System. Due to the time-sensitive nature of updates, the electronic version of these CPGs (which is maintained on the BioTel website) is the approved version for clinical use. It is the sole responsibility of each BioTel agency to ensure that any hard copy of the CPGs provided to EMS personnel reflects the most recent version.

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DALLAS FIRE-RESCUE MEDICAL DIRECTOR INTRODUCTION & PHILOSOPHY OF PATIENT CARE

"Excellence" (In Care) is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives - choice, not chance, determines your destiny." -Aristotle

Dallas Fire-Rescue members engage in the CLINICAL PRACTICE of emergency medicine outside of the hospital. DFR members are well-educated and trained EMS professionals who work under my delegated medical authority, ("Delegated Practice") utilizing these BioTel CLINICAL PRACTICE GUIDELINES (CPGs) to assist them in providing the highest quality care to our patients. We know there is no single guideline, protocol, or algorithm that can cover every patient presentation or scenario, and there is no guideline that can or should be utilized without applying sound judgment and the principle of "beneficence", which is always acting in the patients' best interests.

DFR members must understand that these CPGs are not merely suggestions. It is my expectation that these CPGs shall be adhered to, unless EMS Providers deviate from them for reasons of sound clinical judgment, or at the direction of BioTel or one of your DFR Medical Directors. Such deviation from the CPG's must always be in the best interest of that patient and should be clearly documented in the medical record (ePCR).

Start Where You Stand
EMS personnel used to be taught that the best hope of saving the life of a critically ill or injured patient was to get them to the hospital emergency department as quickly as possible. Today, we know that well-trained EMS personnel can make the difference in whether a patient survives by beginning the assessment of a critically ill or injured patient right where they find them, assuming it is safe to do so. This allows for the identification of immediate life threats and allows paramedics to intervene to prevent further deterioration and even avert cardiac arrest. Start where you stand is also true for patients already in cardiac arrest, whose greatest chance of survival lies not in rapid movement to the Rescue or to the hospital, but in EMS personnel expertly performing a focused and controlled resuscitation in the field at the point of contact. "Start Where You Stand" is defined as not moving the patient to the Rescue before you have assessed them and begun life-saving interventions, unless it is dangerous to remain, or impossible to care for your patient where you find them.

Start with the Ask
Paramedics are also reminded to "Start with the Ask." This means that when you contact BioTel or speak with a DFR Medical Director, a clear and concise introduction, stating your name, unit number, and reason for contact (The Ask), sets the stage for effective collaboration. Once you have set the stage with your introduction, THEN proceed with your structured rapid report for your patient. This allows BioTel or your DFR Medical Directors to immediately understand the reason for the call.

The "Easy Button": Call BioTel
When a challenging case or question arises, EMS providers should contact BioTel for assistance. BioTel staff will have the answer, or they will rapidly consult with your on-call DFR Medical Director. EMS providers are reminded that once BioTel has been consulted, any orders or recommendations made by BioTel staff, or a Medical Control Physician MUST be followed. If EMS personnel disagree with and do not intend to follow the order/direction given by BioTel, it is my expectation that EMS personnel immediately request to speak with a DFR Medical Director.

The "Mom Test"
Whenever you find yourself unsure about the best course of action to take in order to optimally care for your patient, consider the "Mom Test." To apply the "Mom Test," simply ask yourself, "What would I want

DALLAS FIRE-RESCUE MEDICAL DIRECTOR INTRODUCTION & PHILOSOPHY OF PATIENT CARE, cont.

an EMS provider to do for MY mother if this is how she presented?" The answer will almost always be obvious. Always care for your patient as if he/she were someone you love. If you are unsure what the best course of action is, CONTACT BioTel for consultation with the On-Call DFR Medical Director.

DFR members shall be guided by the following principles.

1. ALWAYS act in what you believe to be the best interests of your patient.
2. *Primum non nocere*, which is Latin for "First, do no harm."
3. When in doubt, provide treatment and advocate for transport.

Emergency Medical SERVICE:
As we all know, the "S" in "EMS" refers to "SERVICE." We exist first and foremost to be of SERVICE to others. We must never lose sight of this primary mission. It is my expectation and that of the entire EMS leadership and Command Staff for Dallas Fire-Rescue that we always act in the best interests of our patients. This sometimes means we advocate for our patients, even when they are not capable of advocating for themselves. We are the "safety net" for our healthcare system, ensuring that those who have nowhere else to turn to for help or those who have fallen through the cracks in the system receive appropriate and compassionate care.

We know that not every call we respond to will be for what EMS and 911 were developed for: a patient with a life-threatening emergency. I would ask you to remember that it is a privilege to serve. This means that regardless of the acuity of the call, we ALWAYS conduct ourselves professionally and with compassion when interacting with our patients and the public. We treat EVERY patient with dignity and respect, regardless of their complaint or their life circumstances.

I consider being your Medical Director to be the greatest honor and privilege of my life. I am grateful for the opportunity to serve you and our patients, and I am immensely proud of all that you do, each and every day, in service of our patients and the City of Dallas.

In humble gratitude,

S. Marshal Isaacs, MD, FACEP, FAEMS
Chief Medical Officer
Dallas Fire-Rescue Department
City of Dallas

INTRODUCTION TO THE CLINICAL PRACTICE GUIDELINES

In the State of Texas, EMS personnel are permitted to operate only under the medical direction of a licensed physician. This physician is responsible for all prehospital care provided by the EMS personnel under their supervision. Dallas Fire-Rescue EMS personnel operate under the direction and authority of the DFR Chief Medical Officer and Medical Director, **Marshal Issacs, MD**, in coordination with the BioTel System Medical Director, **Andrew N. Hogan, MD**.

These Clinical Practice Guidelines (CPGs) describe the care and interventions that BioTel EMS personnel are expected to provide in various emergency situations. Whenever possible, the content is based on the best available scientific evidence. BioTel EMS personnel MUST be familiar with all content in this document.

The CPGs are intended for use by on-duty EMS personnel working in an official capacity as a member of a BioTel EMS agency. The CPGs are primarily intended for use within the typical service area of each BioTel EMS agency (including mutual aid areas) but may be used while on duty during official agency activities anywhere within the State of Texas or during official disaster deployments.

These guidelines are NOT suggestions. However, no guideline can anticipate or describe every possible patient presentation or scenario. BioTel EMS personnel must use critical thinking and sound judgment when interpreting these guidelines for every unique patient encounter. EMS personnel shall only deviate from these guidelines in extraordinary situations where clinical judgment suggests that doing so is in the best interest of the patient.

These guidelines are written at the Paramedic level. EMS personnel certified at the EMT-Basic level are responsible for knowing the limits of their training and scope of practice. The SCOPE OF PRACTICE section outlines the interventions that BioTel EMS personnel of various levels are permitted to perform.

EMS personnel are expected to treat every patient with respect and professionalism regardless of their complaint or life circumstances. Whenever you are faced with a difficult patient encounter, consider how you would expect EMS personnel to treat your own loved one in a similar situation.

When EMS personnel encounter a situation or a clinical question that is not covered by the guidance in the CPGs, they should contact the **BioTel Communications Center** for online medical control. The Communications Center is staffed by specially trained paramedics and nurses with EMS experience and knowledge of the CPGs. Additionally, **medical control physicians are available 24/7/365** to provide guidance outside the scope of the CPGs. In various sections of the CPGs, contact with online medical control is encouraged or mandatory. The BioTel Communications Center is an ‘easy button.’ Do not hesitate to call for assistance!

The BioTel Communications Center and medical control physicians can be reached anytime at:

214-590-8848

ACKNOWLEDGEMENT OF CONTRIBUTORS

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- Matt Baker, Paramedic – Cedar Hill FD
- Jacob Barkham, EMT-P – DeSoto FD
- Ashley Birmingham, MD – UT Southwestern
- Reece Brockman, MD – UT Southwestern, BioTel
- Jeff Carter, EMT-P – Irving FD
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- Marshal Isaacs, MD – UT Southwestern, Dallas Fire-Rescue
- Jamie Jones, RN - BioTel
- Keith Jones, EMT-P – Cedar Hill FD
- Daniel Kennedy, EMT-P – DeSoto FD
- Erin Lincoln, MD – UT Southwestern
- Jack London, EMT-P – Mesquite FD
- Shelley Lovato, RN, EMT-P – Mesquite FD
- Geoff Lowe, MD – UT Southwestern
- Al Lulla, MD – UT Southwestern, Dallas Fire-Rescue
- Wrey McCoy, EMT-P - BioTel
- Lu Ann McKee, RN, EMT-P - BioTel
- Samuel Mandell, MD, MPH – UT Southwestern
- Faroukh Mehkri, DO – UT Southwestern, Dallas Fire-Rescue
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- Lori Pandya, MD – UT Southwestern
- Christine Park, MD, MPH - UT Southwestern
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- Tiffany Pleasant, MD – UT Southwestern
- Billy Poole, EMT-P – BioTel
- Lane Powell, EMT-P – Mesquite FD
- Kara Quaney, PharmD – Children's Health Dallas
- Erik Richmond, EMT-P – Mesquite FD
- Gil Salazar, MD – UT Southwestern, BioTel
- Brittney Salinas, EMT-P – Dallas Fire-Rescue
- Patricia Santiago-Muñoz, MD - UT Southwestern
- Kyle Schmucker, MD – UT Southwestern
- Manoj Sewal, EMT-P – DeSoto FD
- Bob Simonson, DO – UT Southwestern, BioTel, Methodist Dallas
- Sheila Sotherlund, EMT-P – Irving FD
- Kimberly Spoonts, MD - UT Southwestern
- Ryan Stalling, EMT-P – Irving FD
- Chris Thompson, EMT-P – BioTel, Dallas Fire-Rescue
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SCOPE OF PRACTICE

The following charts delineate the skills and interventions that a BioTel EMS professional is permitted to perform according to their highest level of training, certification, and credentialing (i.e., EMT-B or Paramedic). The BioTel System does not currently credential individuals at the Advanced EMT (AEMT) level of certification. EMS personnel within the BioTel System are responsible for understanding the limits of their own scope of practice.

Airway Skills	**EMT-B**	**Paramedic (EMT-P)**
Pulse oximetry monitoring and interpretation		
ETCO2 monitoring and waveform capnography interpretation		
Oxygen administration by nasal cannula or mask		
Non-invasive positive pressure ventilation (NIPPV) use (a.k.a., CPAP)		
Rescue breathing (mouth-to-mouth/mask/barrier/stoma)		
Bag-valve-mask (BVM) ventilation		
Nasal or oral airway (NPA/OPA) insertion		
Supraglottic airway (SGA) insertion	*	
Endotracheal intubation		
Suctioning of oral cavity & upper airway		
Suctioning of intubated patient airway		
Suctioning of tracheostomy stoma		
Replacement of dislodged or new tracheostomy tube		
Heimlich, back blows, or chest compressions for airway obstruction		
Laryngoscopy and Magill forceps use for airway obstruction		
Needle cricothyrotomy		
Needle decompression of chest (needle thoracostomy)		

* These procedures may be performed by a trained EMT-B under the supervision of a Paramedic.
** These procedures may ONLY be performed by Paramedics specifically signed off by the medical director.

Cardiovascular Skills and Interventions	**EMT-B**	**Paramedic (EMT-P)**
12-lead ECG acquisition and transmission		
12-lead ECG interpretation		
CPR / chest compressions		
Use of mechanical CPR device		
Manual cardioversion and defibrillation		
Automated external defibrillator use		
Transcutaneous pacing		

SCOPE OF PRACTICE, cont.

Trauma Skills and Interventions	EMT-B	Paramedic (EMT-P)
Tourniquet use for extremity bleeding		
Wound packing for bleeding		
Hemostatic gauze for bleeding		
Spinal motion restriction (manual or using appropriate devices)		
Extremity splinting		

Vascular Access and Medication Administration Skills	EMT-B	Paramedic (EMT-P)
Intraosseous access		
Intravenous access (including external jugular vein)		
Access of indwelling catheters and implanted central IV ports		
Initiation or maintenance of IV/IO fluids or medications		
IV pump setup and use		**
Blood product administration		**
Auto-injector administration		
Oral, mucosal, or sublingual medication administration		
Nebulized or inhaled medication administration		
Intravenous, intramuscular, intraosseous, intranasal administration		

** These procedures may ONLY be performed by Paramedics specifically signed off by the medical director.

Miscellaneous Skills	EMT-B	Paramedic (EMT-P)
Mechanical patient restraint		
Pharmaceutical patient restraint (administration of calming medications)		
Assisted emergency childbirth		
Blood pressure measurement (automated or manual)		
Blood glucose measurement		
Eye irrigation		
TASER barb removal		
Patient transport		
Specimen collection via nasal swab		
Venous blood sampling		**

** These procedures may ONLY be performed by Paramedics specifically signed off by the medical director.

SCOPE OF PRACTICE, cont.

Selected Routes of Specific Medication Administration	EMT-B	Paramedic (EMT-P)
Albuterol (with or without ipratropium) - nebulizer or inhaler		
Acetaminophen - oral		
Aspirin - oral		
Duodote (atropine/pralidoxime) - auto-injector		
Epinephrine - auto-injector		
Glucose - oral gel		
Naloxone - intranasal or auto-injector		
All other medications and routes of medication administration		

Treatment Guidelines And Procedures

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UNIVERSAL CARE (ADULT)

Inclusion Criteria: All persons ≥14 y/o assessed by EMS personnel meeting the DEFINITION OF A PATIENT
Exclusion Criteria: For individuals <14 y/o, see UNIVERSAL CARE (PEDIATRIC) CPG

Person ≥14 y/o[1] meeting inclusion criteria

- Ensure safe scene and body substance isolation (BSI) procedures before assessment
- Determine patient's chief complaint and/or mechanism of injury
- Call for additional resources for complex or multiple patients, as indicated

- Assess ABCs (Airway, Breathing, Circulation) and manage immediate life threats:
  - AIRWAY: refer to AIRWAY MANAGEMENT and AIRWAY OBSTRUCTION CPGs, as indicated
  - BREATHING: refer to RESPIRATORY DISTRESS CPG, as indicated
  - CIRCULATION: refer to HEMORRHAGE / BLEEDING, SHOCK / HYPOTENSION, CARDIAC ARREST, and TRAUMA CPGs, as indicated
- If a patient has a valid OOH-DNR, do not perform any prohibited actions (as outlined in the POLICY)

- Assess mental status (using GCS or AVPU scales[3]) and general neurological function
  - If abnormal mental status, refer to ALTERED MENTAL STATUS CPG
  - If stroke suspected based on assessment, refer to STROKE / TIA CPG

- **If general impression of a deteriorating/ crashing MEDICAL patient, DO NOT INITATE MOVEMENT OF THE PATIENT**, refer to DETERIORATING/CRASHING MEDICAL PATIENT CPG

- Obtain baseline vital signs for all patients, including:
  - Pulse/heart rate (HR), blood pressure (BP), respiratory rate (RR), oxygen saturation (SpO2), temperature
- Perform point-of-care glucose analysis as indicated by patient presentation
  - If abnormal, refer to DIABETIC EMERGENCY CPG
- Obtain a detailed history of present illness from the patient
- Perform a focused physical examination of the patient

- Initiate 3-lead ECG, SpO2, and ETCO2 monitoring for all patients with abnormal vital signs AND/OR acute illness AND/OR altered mental status AND/OR an advanced airway in place
- Obtain a 12-lead ECG for all patients with history of cardiovascular disease, diabetes, or drug use AND/OR cardiac symptoms, respiratory symptoms, or symptoms of generalized weakness
- Establish IV/IO access,[2] as indicated
- Reference situationally appropriate CPGs based on clinical presentation, signs, and symptoms

- Transport to the closest appropriate ED (including specialty centers) per the DESTINATION POLICY
  - Monitor and reassess the patient frequently during transport
  - Obtain at least 1 set of repeat vital signs (at least 5 min apart) in all patients prior to ED handoff
- Document all interventions and changes in clinical status (including vital signs) during patient care

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UNIVERSAL CARE (ADULT), cont.

Special Considerations:

1. Consent from a parent or authorized adult is required to evaluate or treat patients younger than 18 y/o.
   - Refer to the CONSENT POLICY for a list of authorized individuals and exceptions to this requirement.
   - For CRITICALLY ILL patients, consent is implied and does NOT need to be obtained from a guardian.
2. Vascular access:
   - Antecubital vein IV access is preferred for adults, especially in cardiac arrest
   - Two IV attempts are recommended before considering alternative routes of access
   - Intraosseous (IO) access may be using in critical patients, BUT it is not the first-line option (per the INTRAOSSEOUS ACCESS PROCEDURE)
   - External jugular (EJ) IV access may be used in critical patients >14 years old IF other sites are unavailable or attempts fail (per the EXTERNAL JUGULAR IV ACCESS PROCEDURE).
3. Mental status assessment tools:

Glasgow Coma Scale (GCS)

EYE OPENING (4)	VERBAL RESPONSE (5)
Spontaneous – 4 To Speech – 3 To Touch – 2 None - 1	Oriented & Appropriate – 5 Confused Speech – 4 Inappropriate Word – 3 Sounds or Moans – 2 None - 1
MOTOR RESPONSE (6)	
Follows commands – 6 Localizes to touch – 5 Withdraws from touch – 4 Abnormal flexion – 3 Abnormal extension – 2 None - 1	Total (3 to 15)

AVPU Scale

RESPONDS TO:
A – Awake V – Verbal stimulus P – Painful stimulus (trapezius squeeze, nailbed pressure, skin fold pinch) U - Unresponsive

4. DO NOT ambulate/walk patients to the stretcher or Rescue who meet inclusion criteria for deteriorating/ crashing medical CPG, are dizzy/unsteady, have respiratory distress, or have chest pain unless alternatives (e.g., stair chair, movement tarp) are impossible. If no alternative is available, document in the ePCR the situation/scene conditions necessitating ambulation.
5. Isotonic Fluids (a.k.a., "IV Fluids"):
   - Throughout these guidelines, resuscitation fluids administered by the IV (or IO) route will be referred to by the generic term "Isotonic Fluid."
   - Both **Normal saline** (a.k.a. 0.9% Saline, 0.9% NS) and **Lactated Ringer's** (LR) are both acceptable isotonic fluids in the BioTel System.
   - BioTel member agencies using **Lactated Ringer's** must be aware that LR is INCOMPATIBLE and should not be given in the same IV line with several other medications. Refer to the **Lactated Ringer's** formulary page for additional information on these incompatibilities.
   - When patients receive isotonic fluid for resuscitation, they should be reassessed for improvement or signs of volume overload (or congestive heart failure) between boluses, and before re-dosing.
6. Medication administration:
   - Reduced medication doses may apply to geriatric patients or those with kidney or liver disease
   - Intranasal (IN) administration may only be used for the following medications in the BioTel system:
     - § Naloxone
     - § Fentanyl
     - § Midazolam
     - § Glucagon (**OPTIONAL MEDICATION**)
   - Endotracheal (ET) medication administration IS NOT USED in the BioTel system due to lack of proven effectiveness of benefit
6. For questions or assistance AT ANY TIME during evaluation and treatment of the patient, contact the BioTel communications center (214-590-8848) to request consultation with a medical control physician.

UNIVERSAL CARE (PEDIATRIC)

Inclusion Criteria: Persons <14 y/o assessed by EMS personnel who meet the DEFINITION OF A PATIENT
Exclusion Criteria: Persons ≥14 y/o (see UNIVERSAL CARE (ADULT) CPG); Infants <1 week old (see NEWBORN CARE CPG)

Person <14 y/o meeting inclusion criteria[1]

- Determine patient's weight and age using a length-based resuscitation tape (e.g., Broselow tape) or a resource such as the BioTel PEDI-Guide to select equipment and appropriate medication dosing

- Perform a primary survey using the **PEDIATRIC ASSESSMENT TRIANGLE** (**Figure 1**):
  - v All 3 normal: patient is stable
  - v Appearance abnormal: refer to ALTERED MENTAL STATUS CPG
  - v Breathing abnormal (with OR without abnormal appearance): refer to RESPIRATORY DISTRESS (PEDIATRIC) and AIRWAY MANAGEMENT CPGs
  - v Circulation abnormal (with OR without abnormal appearance): refer to SHOCK / HYPOTENSION (PEDIATRIC) CPG
  - v All 3 abnormal: refer to SHOCK / HYPOTENSION (PEDIATRIC) CPG

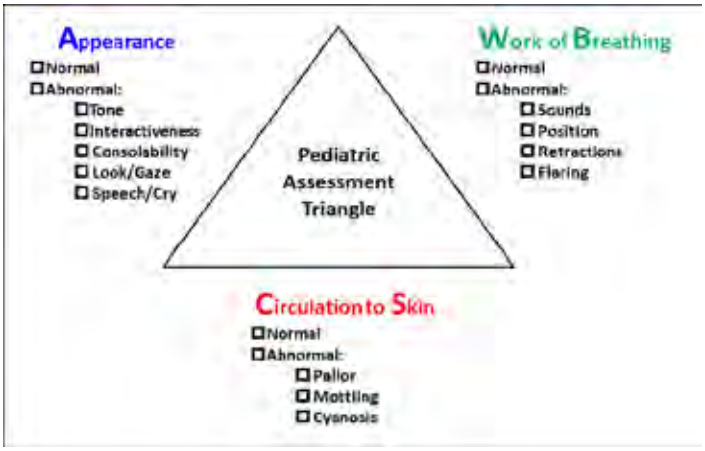


Figure 1. Pediatric Assessment Triangle
(Adapted from: Pediatric Education for Prehospital Providers, 3rd ed.)

- Assess mental status (using the Pediatric GCS[2]) and general neurological function
  - § If abnormal mental status, refer to ALTERED MENTAL STATUS CPG
- Measure POC glucose as indicated by patient complaint; see DIABETIC EMERGENCY CPG if abnormal

- Obtain baseline vital signs[3] for all patients, including:
  - Pulse/heart rate (HR), blood pressure (BP), respiratory rate (RR), pulse oximetry (SpO2), temperature
- Obtain a detailed history of present illness from the patient
- Perform a focused physical examination of the patient

- Initiate 3-lead ECG, SpO2, and ETCO2 monitoring for all patients with abnormal vital signs AND/OR acute illness AND/OR altered mental status AND/OR an advanced airway in place
- Obtain a 12-lead ECG for all patients with history of cardiovascular disease, diabetes, or drug use AND/OR cardiac symptoms, respiratory symptoms, or symptoms of generalized weakness
- Establish IV/IO access,[4] as indicated
- Reference situationally appropriate CPGs based on clinical presentation, signs, and symptoms

- For critically ill or hemodynamically unstable patients, medical care to stabilize the patient should begin ON-SCENE instead of immediately initiating transport.[5,6]
- If a scene is unsafe, consider beginning resuscitation in the back of the ambulance prior to transport.

- Transport to the closest appropriate ED per the DESTINATION POLICY
  - § Monitor and reassess the patient frequently during transport
  - § Obtain at least 1 set of repeat vital signs (at least 5 min apart) in all patients prior to ED handoff
- Document all interventions and changes in clinical status (including vital signs) during patient care

UNIVERSAL CARE (PEDIATRIC), cont.

Special Considerations:

1. The legal age of consent for non-critical pediatric patients is 18 years old, unless they are emancipated (see CONSENT and EVALUATION AND TRANSPORT POLICIES).
   - If a parent or legally responsible individual cannot be contacted, an ill-appearing or injured child should be treated under the concept of 'implied consent.'
   - If a parent or legally responsible individual REFUSES consent for a child who appears ill or injured, contact BioTel to discuss possible need for the EMERGENCY LEGAL AID PROGRAM (ELAP).
2. Pediatric Glasgow Come Scale (GCS):

EYE OPENING (4)	VERBAL RESPONSE (5)
Spontaneous – 4 To Speech – 3 To Touch – 2 None – 1	Coos, Babbles, Talks – 5 Irritable Cry (infant) / Words (child) – 4 Cry to Touch (infant) / Sounds (child) – 3 Moans to Touch - 2 None – 1
MOTOR RESPONSE (6)	
Spontaneous movement – 6 Withdraws to touch – 5 Withdraws from pressure – 4 Abnormal flexion – 3 Abnormal extension – 2 None – 1	Total (3 to 15)

3. Pediatric vital signs:
   - Pediatric VS vary with age. Refer to the following chart (or a resource such as Pedi STAT or the Broselow tape) for age-appropriate normal values.

Zone	WEIGHT	AGE	HR (per min)	RR (per min)	SBP (mmHg)	Handtevy Weight	Age
GRAY	3, 4 and 5 kg	Less than 3 mo	100-180	30-60	At least 60		
PINK	6-7 kg	3-5 mo	100-180	30-45	At least 70		
RED	8-9 kg	6-11 mo	100-180	30-45	At least 70		
PURPLE	10-11 kg	12-23 mo	80-150	25-40	At least 75	10 kg	1 yr
YELLOW	12-14 kg	24-35 mo	80-150	25-40	At least 75		
WHITE	15-18 kg	3-4 yr	80-140	22-35	At least 75	15 kg	3 yr
BLUE	19-23 kg	5-6 yr	70-120	18-30	At least 80	20 kg	5 yr
ORANGE	24-29 kg	7-9 yr	70-120	18-30	At least 85	25 kg	7 yr
GREEN	30-36 kg	10-11 yr	60-100	12-20	At least 90	30 kg	9 yr
BLACK	37-50 kg	12-13 yr	60-100	12-20	At least 100		

Adapted from: Broselow®-Luten Zones (Armstrong Medical Industries, Inc.)

4. Vascular access:
   - IV access is preferred for non-critical patients.
   - Intraosseous (IO) access may be using in critical patients, BUT it is not the first-line option (per the INTRAOSSEOUS ACCESS PROCEDURE).

(Continued on the next page)

UNIVERSAL CARE (PEDIATRIC), cont.

Special Considerations (cont.):

5. Isotonic Fluids (a.k.a., "IV Fluids"):
   - Throughout these guidelines, resuscitation fluids administered by the IV (or IO) route will be referred to by the generic term "Isotonic Fluid."
   - Both **Normal saline** (a.k.a. 0.9% Saline, 0.9%NS) and **Lactated Ringer's** (LR) are both acceptable isotonic fluids in the BioTel System.
   - BioTel member agencies using **Lactated Ringer's** must be aware that LR is INCOMPATIBLE and should not be given in the same IV line with several other medications. Refer to the **Lactated Ringer's formulary page** for additional information on these incompatibilities.
   - When patients receive isotonic fluid for resuscitation, they should be reassessed for improvement or signs of volume overload (or congestive heart failure) between boluses, and before re-dosing.
   - For small infants, use the "push-pull" stopcock and syringe method for administration of IV fluids.
6. Medication administration:
   - Reduced medication doses may apply to those with kidney or liver disease
   - Intranasal (IN) administration may only be used for the following medications in the BioTel system:
     - § Naloxone
     - § Fentanyl
     - § Midazolam
     - § Glucagon (**OPTIONAL MEDICATION**)
   - Endotracheal (ET) medication administration IS NOT USED in the BioTel system due to lack of proven effectiveness of benefit
7. If intentional injury, abuse, or neglect is suspected, refer to REPORTING OF ABUSE, NEGLECT, OR EXPLOITATION POLICY.
8. For questions or assistance AT ANY TIME during evaluation and treatment of the patient, contact the BioTel communications center (214-590-8848) to request consultation with a medical control physician.

THE DETERIORATING/CRASHING MEDICAL PATIENT (ADULT)

Inclusion Criteria: General impression of a crashing patient including new-onset altered level of consciousness, airway compromise, severe respiratory distress/failure, signs and symptoms of shock/poor perfusion, or imminent cardiac or respiratory arrest.
Exclusion Criteria: Traumatically injured patients; Pediatric Patient; Cardiac Arrest

General impression of crashing **MEDICAL** patient

DO NOT INITIATE MOVEMENT OF THE PATIENT[1,2]

- Consider requesting additional resources (EN, TR, and/or 780)
- Obtain full set of vital signs (BP, HR, RR, SpO2, ECG, Temp, BGL)[4,5]
- Initiate EtCO2/capnography[6]
- Attempt to gain 360° access

Assess Airway & Breathing Status (Goal O2 Sat ≥94%)[13]

Respiratory Distress
→ Increased work of breathing
→ Inability to speak in full sentences
→ Accessory muscle use/retractions
→ SpO2 ≤ 90% on room air

- Initiate Non-Rebreather or NIPPV, as indicated
- Treat per RESPIRATORY DISTRESS (ADULT) CPG

Respiratory Failure
→ Poor respiratory effort
→ Unable to speak (severe dyspnea)
→ Loss of muscle tone/control of posture
→ Altered mental status
→ SpO2 ≤ 90% despite NRB or NIPPV
→ Hypoventilation/Increasing EtCO2/Hypopnea

- Immediately begin BVM[7]
- AIRWAY MANAGEMENT – GENERAL (ALL AGES)

If persistent hypoxia

- AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE

Assess Circulatory Status (Goal SBP ≥90 mmHg)[14]

SBP <90 mmHg and signs of shock?

Unstable Bradycardia[10]
- Initiate TRANSCUTANEOUS PACING PROCEDURE
- Treat per BRADYCARDIA (ADULT)

- **Epinephrine** infusion OR PDE PROCEDURE, as indicated

General Medical/Cardiogenic Shock
- Immediate IV/IO access[9]
- **Isotonic Fluids** per SHOCK / HYPOTENSION (ADULT)

- **Norepinephrine** infusion OR PDE PROCEDURE, as indicated

Unstable Tachycardia[11]
- Synch Cardioversion and TACHYCARDIA – UNSTABLE (ADULT)

- Ok to initiate patient extrication and transport to closest appropriate ED
- Maximize therapy per protocol enroute

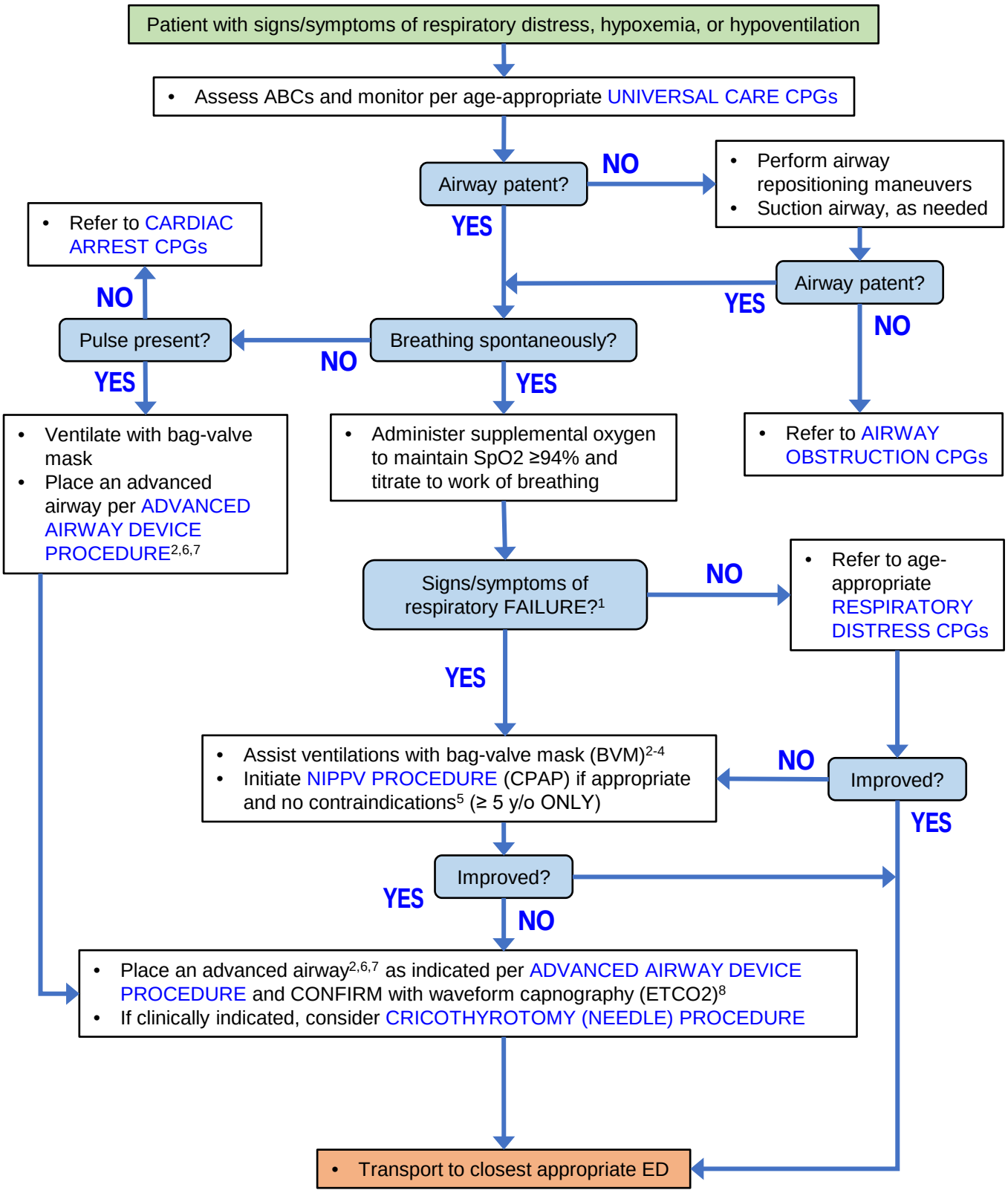
CRASHING MEDICAL PATIENT (ADULT), cont.

Special Considerations:

1. **"Start Where You Stand" – EMS frequently encounters patients who are critically ill and are at risk of quickly deteriorating into cardiac or respiratory arrest. Deterioration often occurs while packaging, moving and loading these patients. The time to intervene for the deteriorating/crashing patient is PRIOR to arrest. Providing immediate treatment at the point of contact to prevent cardiac/respiratory arrest is more beneficial than moving an unstable patient. EMS personnel have the essential tools to initiate resuscitation. Moving the patient delays delivery of critical and potentially life-saving treatments.**
2. EMS personnel should refrain from moving a crashing patient unless the scene is so unsafe that not doing so puts the patient and/or providers at risk of injury, or it is impossible (not just difficult) to provide care where the patient is found.
   - If movement is necessary, use the "Lily padding" technique, moving the patient to the next closest/workable space (e.g., hallway, next room, porch). Fully relocating the patient to the Rescue should be a last resort.
   - When deciding to move an unstable patient, EMS personnel should consider the benefits and risks of movement. Efforts to evaluate and minimize risks should include assessing vital signs and providing treatments such as applying oxygen and/or initiating ventilation via bag-mask.
   - DO NOT ask a critical or potentially critical patient to stand or walk. This could be the tipping point.
3. Thoroughly document in the ePCR narrative, the scene circumstances and rationale for any movement that occurs prior to providing the care outlined in this protocol.
4. Trending of vital signs over time is critically important; one single set of vital signs does not verify stability.
5. Beware of unreliable/poor pleth wave SpO2 and low SpO2 values, assume hypoxia until proven otherwise and treat accordingly.
   - Use the LifePak 15 SpO2 probe (not a portable pulse oximeter) to ensure accuracy and appropriate use of monitor alerts.
   - Unreliable pleth wave is a frequent indicator of both hypoxia and poor perfusion.
6. EtCO2 red flags:
   - EtCO2 ≤25 mmHg is a potential marker of severe illness for a variety of conditions. Consider this as an unstable vital sign.
   - EtCO2 >60 mmHg is also a marker of severe illness (usually pending respiratory failure) and is associated with a higher rate of need for prehospital airway management.
7. High-quality BVM ventilation should include: 2-person technique, ear-to-sternal notch, elevate head of bed, 100% O2, PEEP valve, 2 NPA ± OPA)
8. Patients with an ECG confirmed STEMI, suspected stroke, or a massive medical bleed (e.g., GI bleeding, suspected ruptured ectopic pregnancy or abdominal aortic aneurysm, hemoptysis) should have airway and breathing life threats managed prior to movement, but expedited transport is recommended.
9. There is no specific number that fits all circumstances for the number of IV attempts that should be made prior to moving to IO access. Generally, 1-2 IV attempts should be made in critically ill patients before considering intraosseous access. Humeral or femoral IO sites are preferred over tibial IO.
10. Unstable Bradycardia - Hypoxia is the most frequent cause of bradycardia. Aggressively treat hypoxia before considering pacing, then reassess the need for pacing if bradycardia is not resolved after improvement in SpO2.
11. Unstable Tachycardia -A heart rate less than (220 - age in years) is rarely the cause of hypotension, especially if the rhythm is sinus tachycardia or atrial fibrillation with RVR. Evaluate first for underlying causes (e.g., sepsis, volume depletion, bleeding) through physical exam and history. If an underlying cause is identified, the patient's heart rate is likely a symptom and is NOT the cause of the hypotension.
12. Airway/breathing, and circulation interventions listed in this CPG are intended to be completed simultaneously and not in any specific order.
13. SpO2 ≥94% Goal:
    - Target SpO2 ≥94% for all patients, irrespective of COPD history or oxygen dependency.
14. SBP ≥90 mmHg Goal:
    - This may not always be achievable.
    - Initiate pressor therapy (infusion or push dose epinephrine) when necessary. Following initiation, prioritize patient movement/transport. Do not use pressors in the setting of hemorrhage.

AIRWAY MANAGEMENT – GENERAL (ALL AGES)

Inclusion Criteria: Adult and pediatric patients with signs/symptoms of difficulty breathing or who have evidence of hypoxemia or hypoventilation
Exclusion Criteria: Newly born infants (see NEWBORN CARE CPG)



AIRWAY MANAGEMENT – GENERAL (ALL AGES), cont.

Special Considerations:

1. The following are SOME of the signs and symptoms that suggest RESPIRATORY FAILURE:
   - Persistent or worsening hypoxemia (especially SpO2 <90%)
   - Progressively increasing ETCO2 (especially >50 mmHg)
   - Cyanosis of lips or extremities
   - Altered level of consciousness or confusion
   - Development of bradycardia
   - Rapid respiratory rate that begins to slow as the patient's breathing muscles become fatigued
2. Age-appropriate equipment should always be used for invasive and non-invasive airway procedures.
3. Continuous waveform capnography monitoring should be used to guide ventilation rate and volume.
4. Using Positive End-Expiratory Pressure (PEEP) Valves with BVM Ventilation
   - PEEP valves should be considered in cases of known or suspected pulmonary edema, ARDS, pneumonia, drowning, or aspiration, ESPECIALLY if refractory hypoxemia is present
   - PEEP valves should NOT be used in:
     - Known or suspected cases of asthma (PEEP worsens the patient's air trapping)
     - Cardiac arrest due to decreased venous return
     - Suspected pneumothorax.
   - Use caution with PEEP in the setting of hypotension, although this is not an absolute contraindication.
5. Contraindications to Non-Invasive Positive Pressure Ventilation (NIPPV), a.k.a. CPAP:
   - Decreased level of consciousness (GCS <11), agitated, or otherwise uncooperative
   - Inability protect airway or clear secretions (e.g., active vomiting, significant oral bleeding)
   - Hemodynamic instability (SBP <90 mmHg in adults, or SBP below normal for age)
   - Facial deformities (e.g., trauma, congenital abnormality, recent facial surgery)
   - Suspected or confirmed pneumothorax
   - Tracheostomy
   - Apnea or agonal respirations
6. Selection of an Advanced Airway:
   - See AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE
   - A Supraglottic Airway (SGA) device (e.g., i-gel) is an appropriate first-line advanced airway for patients WITHOUT a gag reflex.
   - An Endotracheal Tube (ETT) is appropriate for patients WITHOUT a gag reflex in the following situations:
     - § Less invasive methods are unsuccessful
     - § Patients with multisystem trauma
     - § Patients with airway burns or smoke inhalation
     - § The airway is soiled with blood or vomit
7. Endotracheal intubation for PEDIATRIC patients has not been shown to improve outcomes and is rarely indicated in the field. Intubation should only be chosen over SGA placement in exceptional circumstances, such as inability to ventilate with an SGA or significant airway soiling with secretions/blood.
8. It is MANDATORY to confirm ETT placement using waveform capnography (ETCO2). Placement should be re-confirmed after a patient is moved.

AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE

Inclusion Criteria: Patients of all ages with inadequate oxygenation, inadequate ventilation, or inability to maintain a patent airway

Exclusion Criteria: Patients who can be adequately managed with less invasive methods such as supplemental oxygen, NIPPV, or bag-mask ventilation

BACKGROUND

- Supraglottic airways (SGA) and endotracheal tubes (ETT) are considered 'advanced airways.'
- In MOST cases, an SGA (e.g., i-gel) should be the first-line device for a patient who requires advanced airway placement.
- For pediatric patients, SGA is heavily preferred to endotracheal intubation WHENEVER POSSIBLE as scientific evidence suggests intubation does not improve outcomes.

INDICATIONS

- General indications for advanced airway:
  - § Unconscious patient WITHOUT gag reflex who is apneic or has inadequate respiratory effort
  - § To provide oxygenation and ventilation during cardiac arrest AFTER high-quality chest compressions have been initiated
- Specific indications for SGA placement:
  - § Intubation is difficult due to limited patient access or challenging airway anatomy
  - § Use as a 'rescue device' after a failed attempt at endotracheal intubation
  - § SBP ≥90 AND SpO2 ≥94% x 3 min requirements for intubation are unable to be met
- Specific indications for endotracheal intubation:
  - § Inability to adequately ventilate a patient using an SGA, and BP/SpO2 requirements met.
  - § Concern for impending loss of airway due to angioedema, anaphylaxis, inhalation injury, airway burns, trauma, expanding hematoma, or similar
  - § High risk of regurgitation or aspiration of blood, vomit, or airway secretions that could complicate ventilation with an SGA

CONTRAINDICATIONS

- Conscious patients
- Patients with a gag reflex present

SUPRAGLOTTIC AIRWAY PLACEMENT

1. Assemble EQUIPMENT for SGA insertion:
   - SGA - appropriate size for patient's anatomy
   - Sterile lubricant
   - Waveform capnography (ETCO2) monitoring equipment
   - Commercial tube securement device (may be included in SGA kit) OR tulle tape
2. Refer to manufacturer's instructions for the specific SGA device.
3. Place the patient in "sniffing position" (neck flexed, chin lifted) per **Figure 1**.

(Continued on the next page)

AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE, cont.

SUPRAGLOTTIC AIRWAY PLACEMENT (cont.)

4. Remove the patient's dentures or dental plates, if applicable.
5. Lubricate the SGA device according to manufacturer instructions.
6. Insert device to proper depth according to manufacturer recommendations.
7. Resume manual ventilation with bag-valve device
8. Verify correct device placement using waveform capnography (ETCO2) and lung auscultation.
9. Secure the SGA using a commercial tube holder or tulle tape.
10. Continuously monitor SGA with waveform capnography (ETCO2), especially during patient movements.
    - If there is a loss of EtCO2 waveform, briefly troubleshoot SGA (see **Table 1** below)
    - If ETCO2 is not immediately regained, promptly remove airway.

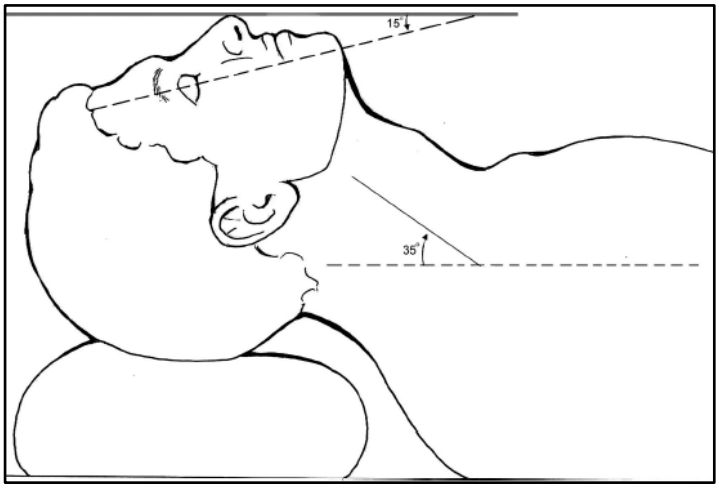


Figure 1. Sniffing position
(Adapted from: El-Orbany M, et a. Anesth Analg. 2011;113:103-9

PREPARATION FOR INTUBATION

1. Assemble EQUIPMENT for endotracheal intubation:
    - Suction machine with suction catheter (tested to confirm functioning)
    - Endotracheal tubes (ETT) in 2 sizes
    - SGA – for use as a 'rescue' device
    - Bag-valve mask (BVM) – connected to high-flow oxygen source
    - Oral and nasal airways
    - Laryngoscope – confirm light source is functioning correctly.
    - Laryngoscope blade(s)
    - Bougie
    - 10-mL syringe
    - Commercial tube securement device OR tulle tape

(Continued on the next page)

AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE, cont.

PREPARATION FOR INTUBATION (cont.)

2. Establish or confirm continuous monitoring of ECG, waveform capnography (ETCO2), BP at frequency of every 2-3 minutes, and SpO2 on opposite side of BP cuff.
3. Manage hypotension per the SHOCK/HYPOTENSION – ADULT CPG. SBP of ≥90 mmHg must be obtained BEFORE proceeding with any intubation attempt. Intubation SHALL NOT be attempted if SBP remains <90, use less invasive methods of airway management (BVM, SGA).

POSITIONING FOR INTUBATION

1. Position the patient with their ear canal at the level of their sternal notch. The next should be flexed, and the head should be extended in "sniffing position" (**Figure 1**).
   - Place padding behind the head and shoulders as needed (**Figure 1**).
   - Large or obese patients may require a ramp to be made behind their neck and shoulders using pillows, towels, or other padding (**Figure 2**).
   - Patients with suspected neck trauma should be intubated with the spine in neutral position.
   - A C-collar may be opened as long as manual in-line stabilization is maintained.

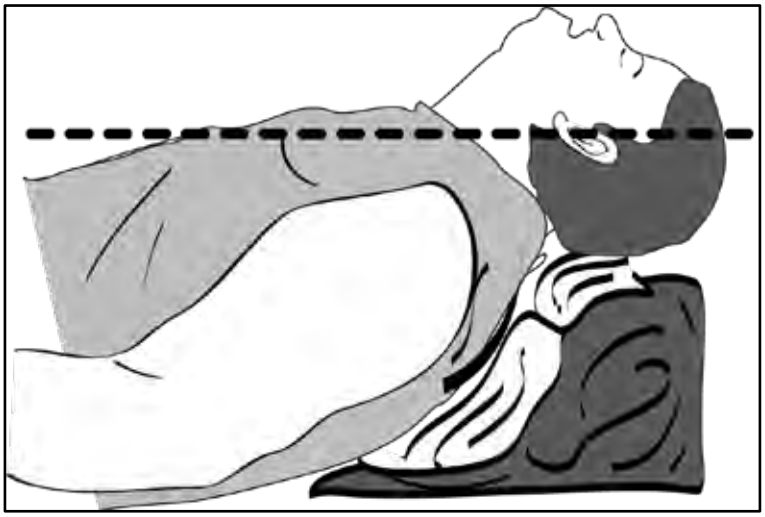


Figure 2. Ramped position
(Adapted from: airwayjedi.com, Dr. Christine Witten

PRE-OXYGENATION FOR INTUBATION

1. Place a nasal cannula on the patient and deliver oxygen WIDE OPEN.
   - This process is known as apneic oxygenation (or denitrogenation).
2. Maintain the patient's SpO2 ≥ 94% for AT LEAST 3 minutes prior to any intubation attempt.
   - If patient is spontaneously breathing, oxygenation with a non-rebreather mask over the nasal cannula can be attempted.
   - If patient is apneic or ventilation is inadequate, oxygenate using a BVM over the nasal cannula.
   - Pre-oxygenation for 5 minutes is preferred when possible.
3. If adequate pre-oxygenation CANNOT be achieved, Intubation SHALL NOT be attempted. Use less invasive methods of airway management (BVM, SGA). Consider prioritizing transport to the closest appropriate ED.

AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE, cont.

DIRECT LARYNGOSCOPY & ENDOTRACHEAL TUBE INSERTION

1. Progressively insert the laryngoscope blade and visualize the epiglottis.
2. Insert and advance the Bougie stylet through the vocal cords.
   - If bougie "hangs up" on anterior tracheal rings rotate bougie tip 90 degrees to right (clockwise)
3. Advance the ETT over the Bougie and through the vocal cords.
   - If the ETT "hangs up" on the cords, retract 1-2 cm and rotate tube 90 degrees to the left (counterclockwise) and then advance.
4. When the ETT reaches the appropriate depth, maintain a firm grip on the tube and inflate the cuff with the 10-mL syringe.
5. Remove the Bougie stylet while maintaining view of the ETT through the vocal cords.
6. Confirm tracheal placement with WAVEFORM CAPNOGRAPHY and other methods, such as:
   - Auscultation of bilateral breath sounds
   - Visualization of symmetric, bilateral chest rise
7. Secure the ETT using a tube holder device (or tulle tape), documenting the ETT depth at the teeth or lip.
8. Immediately abort any intubation attempt and resume BVM if SpO2 drops below 94% before ETT is secured.
9. Return to the **PRE-OXYGENATION** stage (above) before performing a second/final intubation attempt. DO NOT attempt intubation until patient's SpO2 ≥ 94% for AT LEAST 3 minutes
10. If ANY of the following situations occur refer to the **FAILED INTUBATION** section below:
    - Unable to oxygenate/ventilate effectively with BVM
    - Inability to achieve SpO2 ≥94% for at 3 minutes prior to any attempt
    - Intubation is not successful after 2 separate attempts on a single patient
    - Severe hemodynamic instability
    - Patient's heart rate drops >20 bpm below the pre-intubation rate

FAILED INTUBATION

1. Remove the laryngoscope blade (if not done already)
2. Suction as needed.
3. Immediately resume BVM ventilation
4. Insert and confirm placement of SGA using the Supraglottic Airway Placement Procedure above.
5. If intubation fails AND the patient can't be oxygenated AND ventilated using SGA or BVM, EMS personnel should consider NEEDLE CRICOTHYROTOMY PROCEDURE
6. Immediately transport or divert to the closest ED for assistance securing the patient's airway.

POST-INTUBATION (or POST-SGA) MANAGEMENT

1. Obtain and document post-intubation vital signs.
2. Manage hypotension per SHOCK/HYPOTENSION CPG.
3. Continuously monitor ETT with waveform capnography (ETCO2), especially during patient movements.

(Continued on the next page)

AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE, cont.

POST-INTUBATION MANAGEMENT (cont.)

4. Troubleshoot problems with oxygenation or ventilation using the DOPE mnemonic (Table 1).
   - Increased difficulty bagging, a decrease in capnography value, or loss of the capnography waveform may suggest issues with the advanced airway.
   - If using an SGA and there is a loss of EtCO2 waveform that cannot be immediately regained by troubleshooting, promptly remove the SGA, resume BVM ventilation, and attempt replacement of the SGA under controlled conditions per instructions above.
5. Manage post-intubation agitation or discomfort using ONE of the following medications:
   - **Midazolam IV/IO**
     1. ≥14 y/o: **5 mg**
     2. <14 y/o: **0.2 mg/kg** (Max: 5 mg)

        OR
   - **Fentanyl IV/IO**
     1. ≥14 y/o: **50 mcg**
     2. <14 y/o: **0.1 mcg/kg** (Max: 100 mcg)
6. Reassess and document vital signs frequently during transport to the closest appropriate ED.
7. Medications for agitation may be repeated in 5–10-minute intervals, as needed and as appropriate based on patient stability.

D (DISLODGEMENT)	· Examine for dislodged or displaced ETT or SGA. · Confirm BVM is appropriately connected to ETT or SGA.
O (OBSTRUCTION)	· Check for kinked ETT or oxygen tubing. · Suction secretions / vomit / blood from ETT with flexible catheter.
P (PNEUMOTHORAX)	· If suspected, refer to THORACOSTOMY (NEEDLE) PROCEDURE.
E (EQUIPMENT failure)	· Inspect for leaking / broken / disconnected oxygen tubing. · Assess for depleted oxygen source (e.g., empty tank).

Table 1. DOPE mnemonic for troubleshooting airway problems after intubation or SGA

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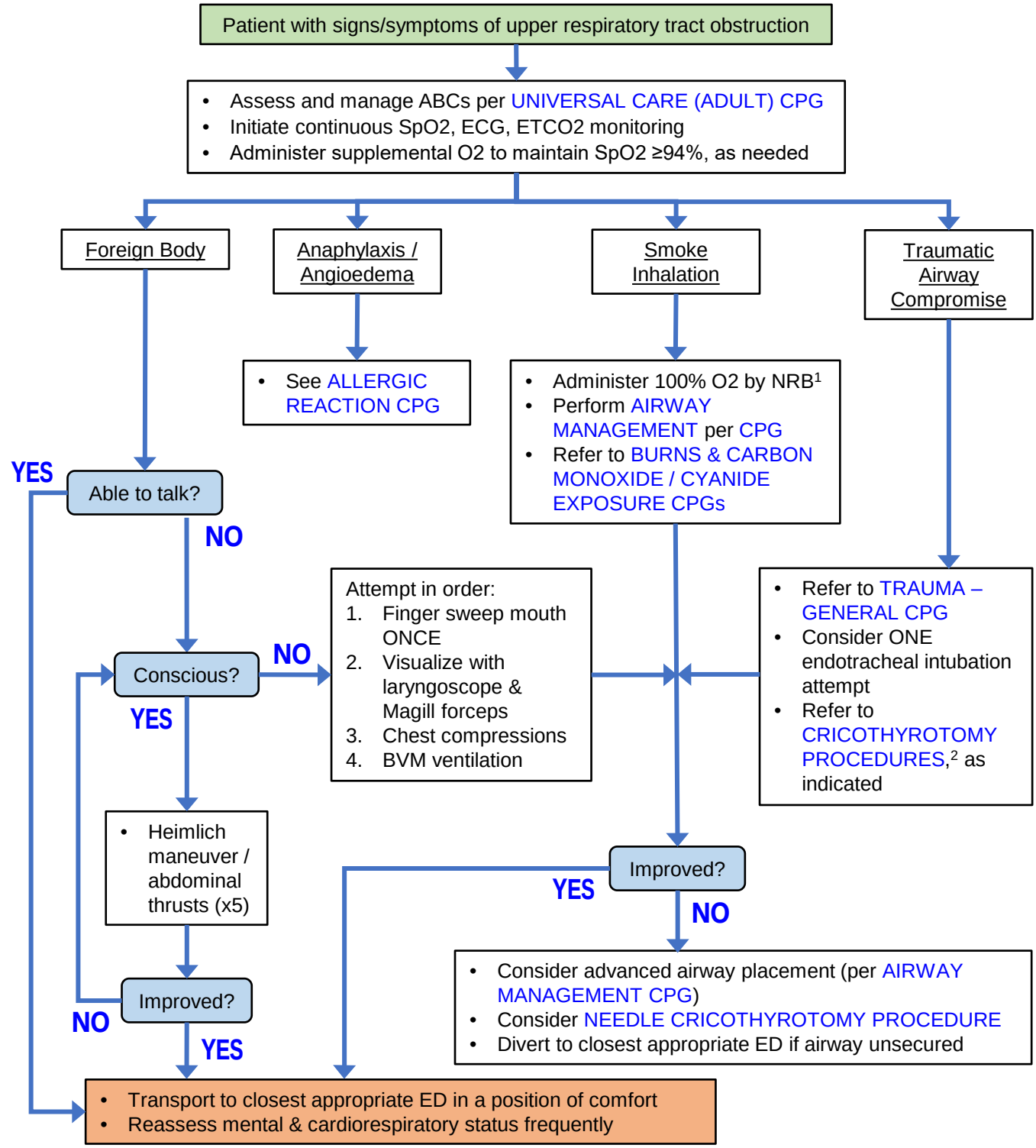
AIRWAY OBSTRUCTION (ADULT)

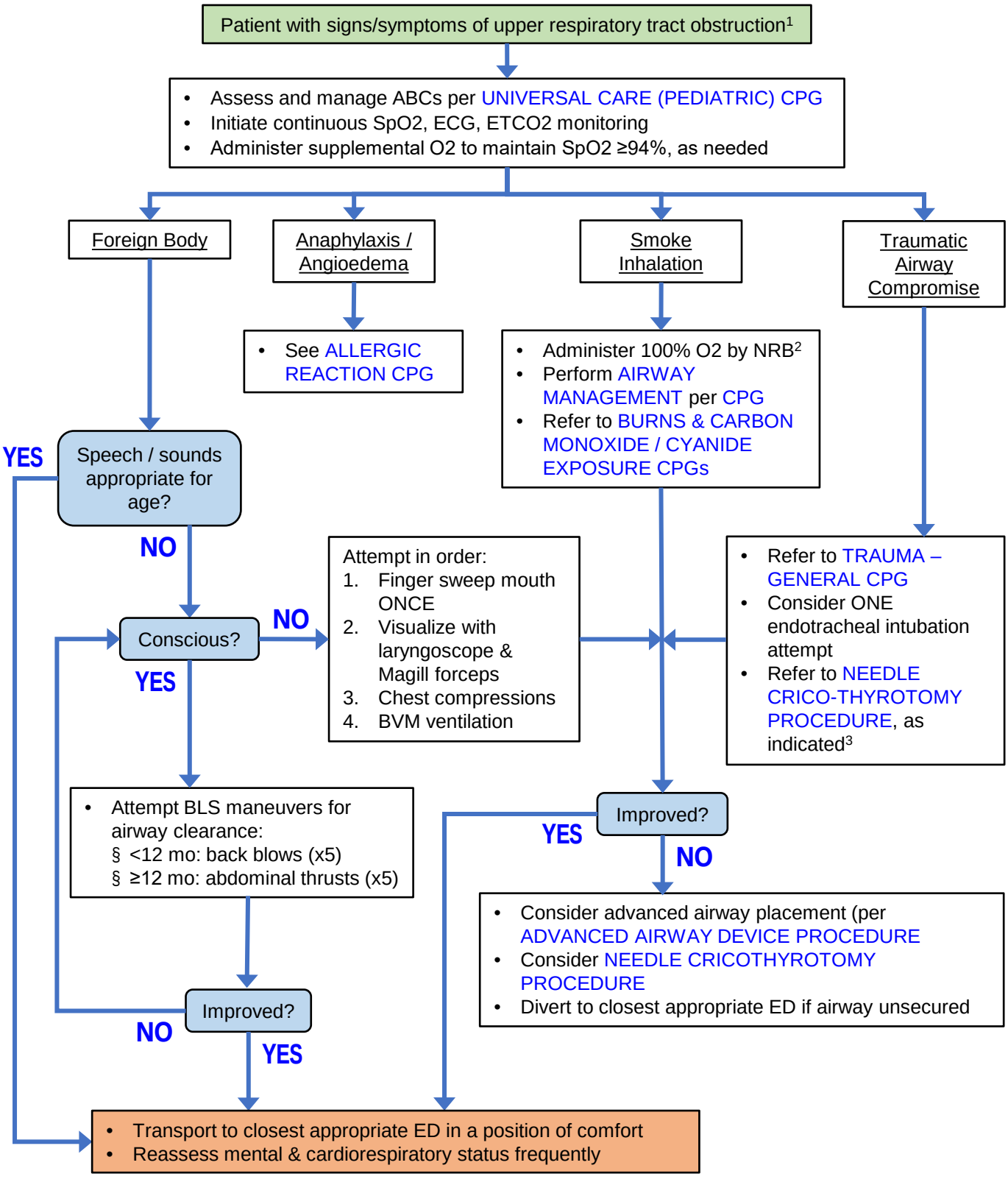
Inclusion Criteria: Patients ≥14 years old with signs/symptoms of upper respiratory tract obstruction (e.g., stridor, drooling, gagging, choking) or concerning history (e.g., insect sting, food allergy, smoke inhalation)
Exclusion Criteria: For patients <14 years old, see AIRWAY OBSTRUCTION (PEDIATRIC) CPG



Special Considerations:
1. ALL patients with concern for smoke inhalation should receive 100% oxygen by non-rebreather mask REGARDLESS of their SpO2 reading to presumptively treat carbon monoxide toxicity.

AIRWAY OBSTRUCTION (PEDIATRIC)

Inclusion Criteria: Patients <14 years old with signs/symptoms of upper respiratory tract obstruction (e.g., stridor, drooling, gagging, choking) or concerning history (e.g., insect sting, food allergy, throat infection)
Exclusion Criteria: For patients with stridor and signs of infection (e.g. croup), see RESPIRATORY DISTRESS (PEDIATRIC) CPG; For patients ≥14 years old, see AIRWAY OBSTRUCTION (ADULT) CPG



AIRWAY OBSTRUCTION (PEDIATRIC), cont.

Special Considerations:

1. In patients with BOTH signs of obstruction (e.g. stridor, “hot potato” voice) AND with signs of infection (e.g., fever, cough), consider the possibility of croup or epiglottitis. Refer to the RESPIRATORY DISTRESS (PEDIATRIC) CPG for guidance on managing these conditions.
2. ALL patients with concern for smoke inhalation should receive 100% oxygen by non-rebreather mask REGARDLESS of their SpO2 reading to presumptively treat carbon monoxide toxicity.

ALLERGIC REACTION / ANAPHYLAXIS (ALL AGES)

Inclusion Criteria: Patients of all ages with suspected[1] allergic reactions
Exclusion Criteria: No specific exclusion criteria

Patient with suspected allergic reaction

- Assess ABCs per UNIVERSAL CARE CPGs
- Initiate continuous ECG, SpO2, ETCO2 monitoring

SEVERE SIGNS / SYMPTOMS
- Ø Hypotension or shock
- Ø Syncope
- Ø Stridor
- Ø Hypoxemia (SpO2 <94%)
- Ø Respiratory distress
- Ø Difficulty speaking in full sentences
- Ø Oropharyngeal swelling
- Ø Difficulty swallowing

Hypotension?

OR

Other SEVERE signs/symptoms (see box to right)?

OR

Signs/symptoms from 2 (or more) body systems?
- v Skin / Mucosa: itching, rash, hives, swelling
- v Respiratory: dyspnea, wheezing, coughing
- v GI: vomiting, abdominal cramps, diarrhea

YES

- Administer **Epinephrine (1 mg/mL) IM**[2] in the anterolateral thigh
  - § <25 kg: **0.15 mg IM**
  - § ≥25 kg: **0.3 mg IM**
- Establish IV/IO access

Improved after 5 min?

YES

NO

- Repeat **Epinephrine IM** at same dose
- Manage SHOCK/HYPOTENSION per age-appropriate CPG
  - § Administer **Normal Saline IV/IO** as needed
  - § For refractory hypotension:
    - § Refer to PUSH DOSE EPINEPHRINE PROCEDURE
    OR
    - § **Epinephrine infusion**, titrate every 2-5 min until hypotension resolves/ perfusion improves
- Perform AIRWAY MANAGEMENT per CPG, as needed

NO

- Administer **Albuterol 2.5 mg / Ipratropium 0.5 mg Nebulized** for wheezing / dyspnea
  - § May repeat twice, as needed
- Administer **Diphenhydramine IV/IM** for itching / rash / hives / swelling as needed
  - § ≥14 y/o: **25 mg**
  - § <14 y/o: **1 mg/kg** (Max: 25 mg)
- For NAUSEA AND VOMITING refer to CPG

- Monitor and reassess
- Transport to closest appropriate ED

Special Considerations:
1. Allergic reactions usually occur minutes to hours after exposure to specific foods, insect stings, or medications. The cause, however, may not immediately be apparent.
2. An appropriate autoinjector may be used to administer **Epinephrine** instead of drawing a dose from a vial.
   - For patients >10 kg but <25 kg: a pediatric autoinjector (e.g., EpiPen-Jr®) may be used
   - For patients ≥25 kg: an adult autoinjector (e.g., EpiPen®) may be used
3. There is no proven benefit to corticosteroids (e.g., **Dexamethasone** or similar) in the management of anaphylaxis. If time allows, may be considered per RESPIRATORY DISTRESS CPGs.

ALTERED MENTAL STATUS (ALL AGES)

Inclusion Criteria: Patients of all ages with altered mental status (AMS), confusion, or decreased level of consciousness
Exclusion Criteria: Patients without a pulse / in cardiac arrest (see CARDIAC ARREST – GENERAL CPG)

Patient with AMS, confusion, or decreased level of consciousness

- Assess and manage ABCs per UNIVERSAL CARE CPGs
- Initiate continuous ECG, SpO2, and ETCO2 monitoring
- Check point-of-care glucose level
- Obtain 12-lead ECG
- Establish IV access

Consider possible underlying causes of AMS, including but NOT LIMITED TO the following:[1]

HYPOGLYCEMIA / HYPERGLYCEMIA
- For a patient with an abnormal blood glucose level, refer to the DIABETIC EMERGENCY CPG.

DYSRHYTHMIA
- For an abnormal monitored cardiac rhythm or an abnormal 12-lead ECG, refer to the BRADYCARDIA and TACHYCARDIA CPGs, as indicated.

HEAD INJURY
- Refer to the HEAD INJURY/TBI and TRAUMA CPGs, as indicated.

STROKE / TIA
- For sudden onset of weakness, numbness, speech / coordination problem, refer to the STROKE/TIA CPG.

DRUG OVERDOSE / TOXICITY[2]
- If suggested by patient presentation. refer to the DRUG OVERDOSE OR TOXICITY CPG.
- If patient has RESPIRATORY DEPRESSION due to suspected opioid toxicity, consider **Naloxone**:
  - ≥14 y/o: **0.4 - 0.5 mg IV/IO or 2 mg IN**
  - <14 y/o: **0.1 mg/kg IV/IO/IM/IN** (Max: 0.5 mg IV/IO/IM or 2 mg IN)
  - May repeat after 3 min if incomplete response

TOXIC CHEMICAL EXPOSURE
- Refer to the TOXIC CHEMICAL EXPOSURE CPG.

SHOCK / HYPOTENSION
- For a patient with abnormally low blood pressure for age, signs of poor perfusion, or signs of shock, refer to the age-appropriate SHOCK/HYPOTENSION CPG.

SEPSIS / SEVERE INFECTION
- Refer to the SEPSIS CPG

BEHAVIORAL HEALTH / MENTAL HEALTH EMERGENCY
- Refer to the BEHAVIORAL HEALTH EMERGENCY CPG and RESTRAINT POLICY.

EXTREME TEMPERATURE EXPOSURE
- Refer to the HEAT EMERGENCY / HEAT STROKE or COLD EMERGENCY / HYPOTHERMIA CPGs.

- Transport patient to closest appropriate ED

Special Considerations:
1. Consider calling a BioTel medical control physician early for complex cases with uncertain cause of AMS.
2. For patients with AMS due to alcohol use, consider co-existing head injury, hypoglycemia, or other illness.
3. Consider AIRWAY MANAGEMENT (per CPG) early for severe AMS or decreasing level of consciousness

BEHAVIORAL EMERGENCY / ACUTE BEHAVIORAL DISTURBANCE (ALL AGES)

Inclusion Criteria: Agitated patients and/or those with a behavioral emergency/disturbance
Exclusion Criteria: Patients who are not agitated or experiencing a behavioral emergency/disturbance.

Patient with agitation or apparent acute behavioral disturbance[1]

- Attempt verbal de-escalation[2]
- Call for additional EMS and law enforcement resources
- Perform patient assessment

Patient de-escalated?

YES

NO

- Assess level of agitation and treat accordingly[3-6]

Mild Agitation and/or Uncontrolled Anxiety[7]	Moderate Agitation	Severe Agitation
Extremely anxious/ apprehensive but does not require restraint.	Uncooperative, belligerent, impeding patient care/monitoring, or escalating aggressiveness; May need restraint.	Altered, aggressive/ combative/ violent, actively a danger to self or others, continues to struggle despite restraint.
Midazolam 2.5 mg IV/IM/IN	**Midazolam 5 mg IM or 2.5 mg IV**	**Midazolam 10 mg IM or 5 mg IV**

- Dosing above for adults only, for <14 y/o **Midazolam 0.1 mg/kg IV/IM/IN** (Max: 5 mg)
- If re-dosing is needed:
  - § **Midazolam** at same dose above or half dose above may be repeated ONCE

Agitation controlled?

YES

NO

- Apply physical RESTRAINTS (per POLICY) to ensure patient and crew safety[9,10]
- Manage ABCs per UNIVERSAL CARE CPGs
- Check blood glucose and manage per DIABETIC EMERGENCIES CPG
- Initiate continuous ECG, SpO2, ETCO2 monitoring and BP every 5 minutes, as early as possible
- Establish IV/IO access, if possible
- Initiate transport at earliest reasonable opportunity

- Consider medical causes of agitation/behavioral per ALTERED MENTAL STATUS CPG
- Manage hyperthermia per HEAT EMERGENCY / HEAT STROKE CPG
- Reassess AND document patient condition frequently[11]
- IN THE EVENT OF sudden cardiac arrest, consider **Sodium Bicarbonate 1 mEq/kg IV/IO**[12] (Max: 50 mEq) and provide further care per CARDIAC ARREST CPGs

Worsening agitation at any point?

YES

NO

- Transport to closest appropriate ED

BEHAVIORAL EMERGENCY / ACUTE BEHAVIORAL DISTURBANCE (ALL AGES)

Special Considerations:

1. "Acute Behavioral Disturbance" is used in this guideline. "Excited Delirium" is a term no longer recognized or supported by the medical community and should NOT be used in patient care or ePCR documentation.
   - EMS Professionals should recognize that patients with agitation or behavioral disturbances are at risk of serious medical illness and may rapidly or suddenly decompensate while under EMS care.
   - A triad of AGITATION, HYPERTHERMIA, and ACIDOSIS in conjunction with positional asphyxiation is thought to contribute to many cases of patient decompensation or adverse outcomes.
   - Physical restraints AND/OR stimulant drug use AND/OR alcohol withdrawal are believed to increase risk of decompensation and adverse outcomes in patients with acute behavioral disturbances.
2. Verbal De-escalation Techniques:
   - Validate the patient's feelings (e.g., "I can see you are upset").
   - Verbalize what behaviors the patient is exhibiting and help them recognize these behaviors are threatening.
   - Clearly explain everything that has occurred, everything that will occur, and why any actions/interventions are required.
   - Show respect for the patient's personal space (e.g., ask permission to touch them, check vitals, perform an exam).
3. Continuous monitoring is MANDATORY and shall include ECG, BP every 5 minutes, SpO2, and EtCO2, as well as visual observation. Monitoring must be maintained during the entirety of transport and until bedside handoff in the Emergency Department.
   - Establish monitoring as early as possible and prior to movement if sedation administered.
   - The LifePak 15 SpO2 probe (not a portable pulse oximeter) should be used to ensure accuracy and appropriate monitor alerts are available.
4. DO NOT administer sedating medication to a patient who WAS BUT NO LONGER IS agitated or combative.
5. IM (preferred route) medications may be given through clothing if necessary for EMS and patient safety.
6. The decision to administer sedating medications is for medical treatment purposes only and is at the sole discretion of EMS personnel (or in consultation with BioTel staff or physicians when appropriate). Sedating medication SHALL NOT be administered solely for law enforcement purposes. If a sedating medication is given to an individual in law enforcement custody, they MUST be transported to an emergency department by ambulance.
7. Anxiety typically responds to reassurance, verbal/situational de-escalation, breathing exercises and rarely requires medications.
8. Upload of the LifePak 15 monitor file (.pco) to the ImageTrend ePCR is mandatory for any patient receiving sedation or restraints.
9. Refer to the RESTRAINT POLICY for additional information on:
   - Best practices for restraint techniques
   - PROHIBITED restraint techniques (e.g., hog-tie, prone position, sandwich technique)
   - MANDATORY elements of documentation for patients who are physically or medically restrained
10. Refer to the CUSTODY POLICY for additional guidance for patients in the custody of law enforcement.
11. Descriptions of patient's agitated behavior (including aggressive/violent, self-destructive, or restless actions) should be included in the narrative to explain use of sedating medications and restraints.
12. Sudden cardiac arrest in a patient with an acute behavioral disturbance may occur, in part, due to acidosis (see Special Consideration #1, above). **Sodium Bicarbonate** may be a useful treatment in this scenario.
13. EARLY BioTel medical control physician contact for guidance when treating patients with acute behavioral disturbance, agitation, or behavioral emergency is STRONGLY recommended.
    - This is ESPECIALLY true when considering using calming medications for pediatric patients.
    - Immediately notify BioTel, DFR EMS Field Supervisor, and OMD Medical Director on-call if a death in custody is suspected.

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BRADYCARDIA (ADULT)

Inclusion Criteria: Patients ≥14 y/o with abnormally slow heart rate
Exclusion Criteria: Patients <14 y/o (see BRADYCARDIA (PEDIATRIC) CPG), Traumatic peri-arrest

Patient (≥14 y/o) with HR <60 bpm

- Assess and manage ABCs per UNIVERSAL CARE (ADULT) CPG
- Administer supplemental oxygen[1] to maintain SpO2 >94%
- Apply pacer pads to patient
- Acquire and interpret 12-lead ECG
- Check point-of-care glucose and manage hypoglycemia per DIABETIC EMERGENCY CPG

Unstable?
(Hypotension, altered mental status, chest pain, dizziness, or shortness of breath)

YES

While preparing for pacing:
- Establish IV/IO access
- Consider administering **Atropine 1 mg IV/IO**[3] while preparing for pacing
  - § If effective, may repeat every 3-5 min (Max total dose: 3 mg)

- Initiate TRANSCUTANEOUS PACING per PROCEDURE at rate of 80 bpm
  - § Consider SEDATION PROCEDURE for conscious patients

Signs / symptoms resolved?

YES

NO

- Consider administering vasopressor:
  - § **Epinephrine 20 mcg IV/IO every 2 min** (per PUSH DOSE EPINEPHRINE PROCEDURE)
    OR
  - § **Epinephrine 2-10 mcg/min IV/IO infusion**
    - Titrate epinephrine every 2-5 min until hypotension resolves/perfusion improves
    - Consider requesting EMS Field Supervisor for IV pump, however, do NOT delay initiation of infusion.

NO[2]

- Establish IV/IO access

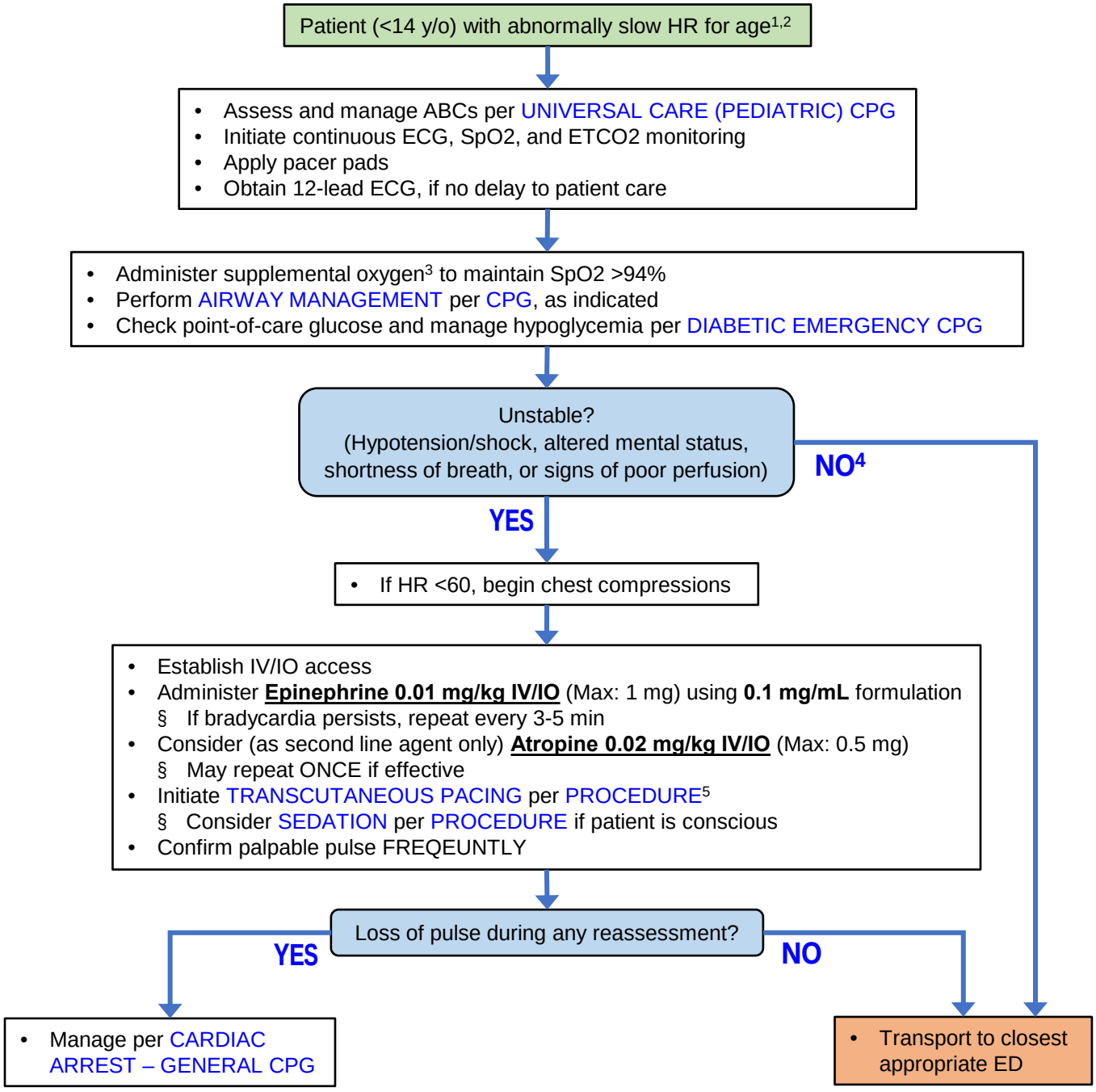
- Reassess frequently during transport
- If concern for elevated potassium level, refer to HYPERKALEMIA CPG[4]
- Refer to other situational CPGs (e.g., CHEST PAIN, DRUG OVERDOSE OR INTOXICATION) as indicated

- Transport to closest appropriate ED

Special Considerations:
1. Hypoxemia is a common underlying cause of bradycardia.
2. Stable / asymptomatic bradycardia does not require intervention before transport. Pacer pads should be pre-emptively applied in case of patient deterioration.
3. 2nd & 3rd degree heart blocks may not respond to **Atropine**. Do not delay pacing to administer.
4. Wide complex bradycardia (QRS >0.12 ms) may suggest hyperkalemia in the appropriate clinical situation.

BRADYCARDIA (PEDIATRIC)

Inclusion Criteria: Patients <14 years of age with abnormally slow heart rate for age[1]
Exclusion Criteria: For newly born infants, refer to NEWBORN CARE CPG; For patients ≥14 y/o, refer to BRADYCARDIA (ADULT) CPG

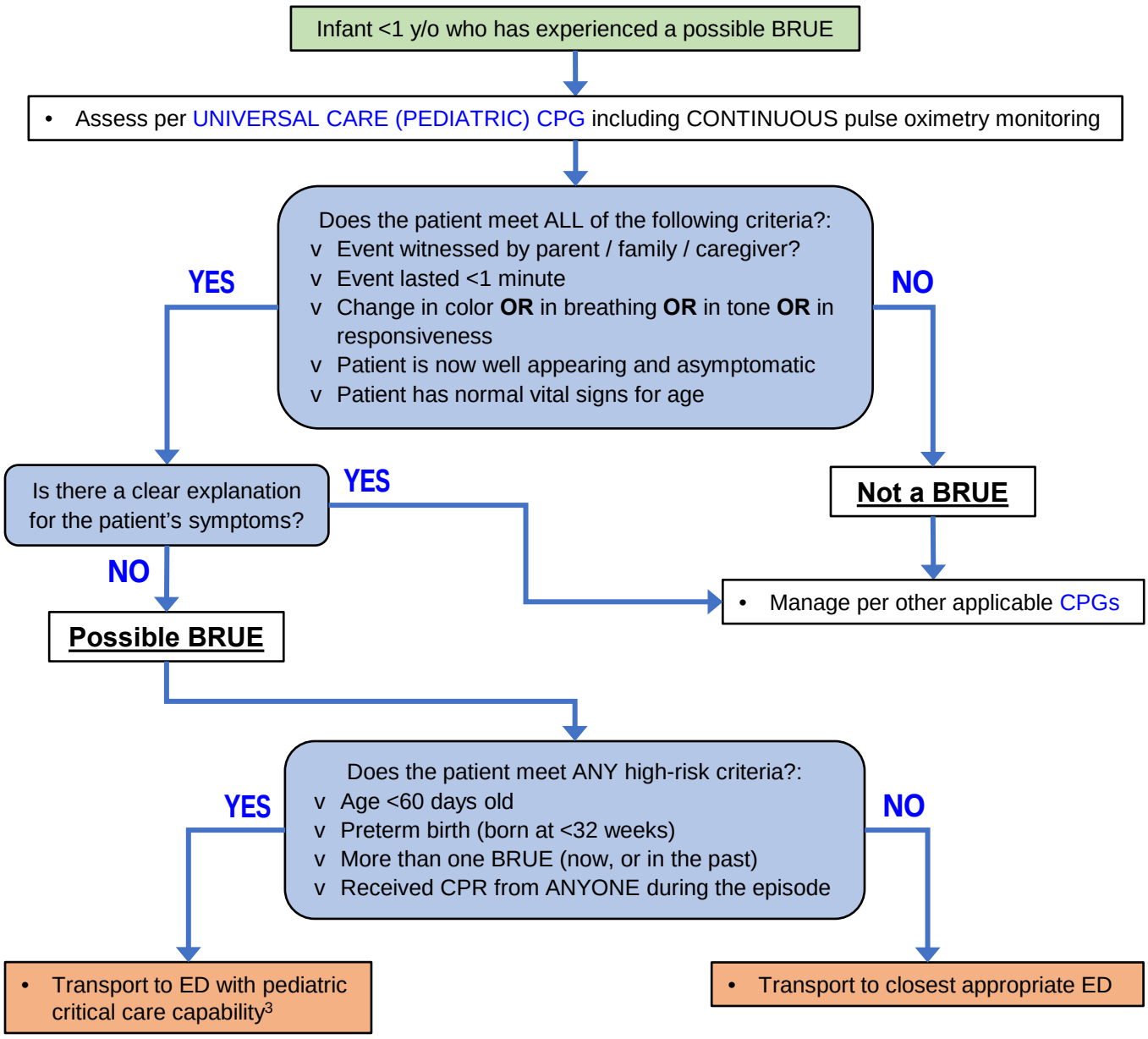


Special Considerations:

1. ****NOTE:**** Management of unstable bradycardia in patients <14 y/o is very different than in adults.
2. Refer to the BioTel PEDI-Guide or another resource for age-appropriate normal pediatric vital signs
3. Hypoxemia is a common cause of symptomatic bradycardia
4. Stable / asymptomatic bradycardia does not require active management prior to transport.
5. Initiate pacing at a rate of 100 bpm for patients ages 3-13 y/o OR a rate of 120 bpm for patients <3 y/o.

BRIEF RESOLVED UNEXPLAINED EVENT (BRUE)

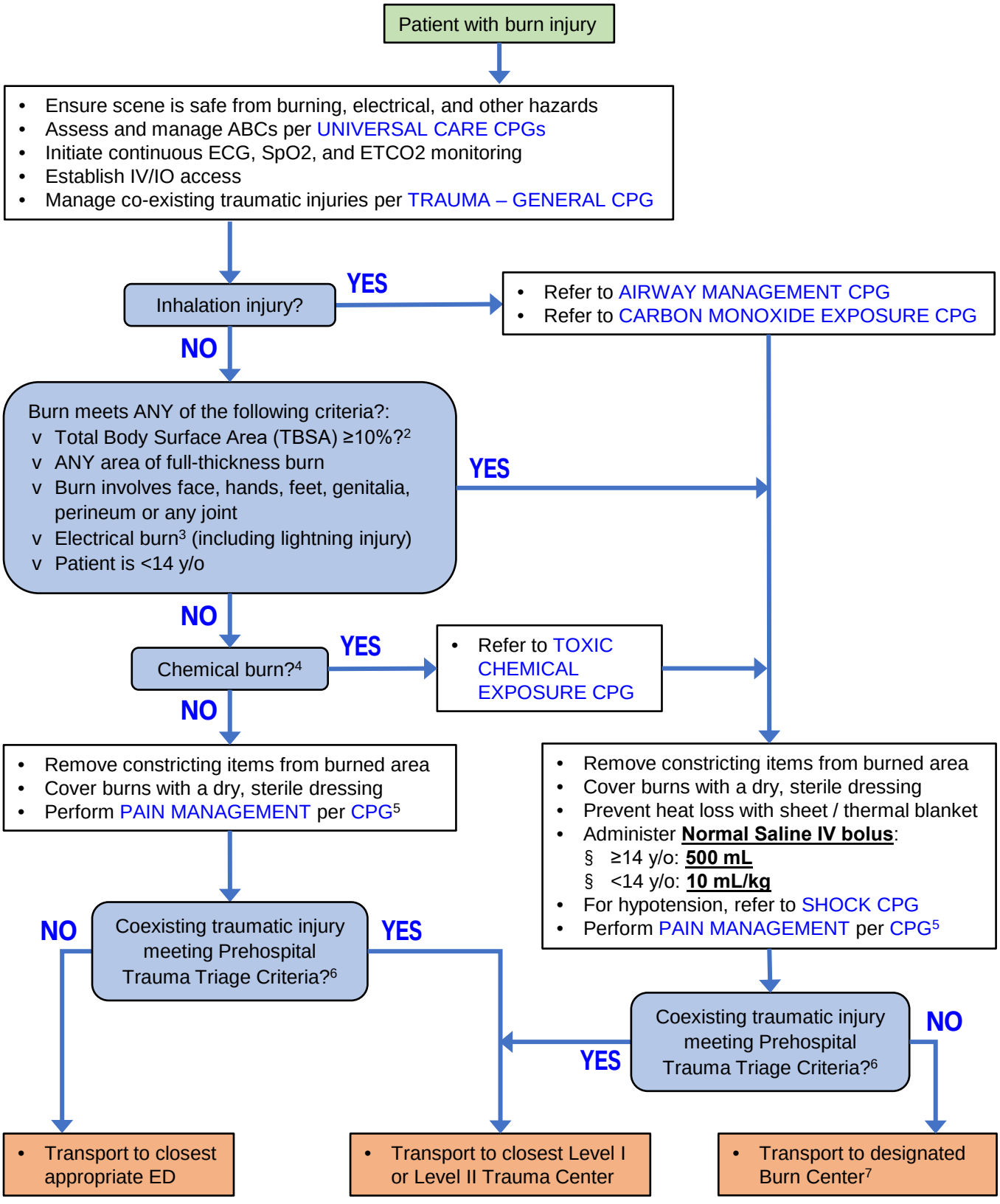
Inclusion Criteria: Infants <1 year old
Exclusion Criteria: Children ≥1 year old
Background:
- Infants <1 year old may experience short, time-limited episodes of abnormal responsiveness, breathing, muscle tone, or color change before returning to an apparently normal state.
- These events are known as Brief Resolved Unexplained Events (BRUE).[1]
- Infants experiencing a BRUE require ED evaluation EVEN IF they appear normal on EMS assessment.[2]



Special Considerations:
1. The term "Brief Unexplained Resolved Event (BRUE)" has replaced the term "Acute Life-Threatening Event (ALTE)" and uses more specific defining criteria.
2. Parents may want to decline transport if the infant returns to normal before EMS arrival. They should be advised to accept transport due to the risks of BRUE. Any refusal is considered a HIGH-RISK refusal.
3. Hospitals with Pediatric Critical Care capability can admit pediatric patients to a Pediatric ICU (PICU).

BURNS (ALL AGES)

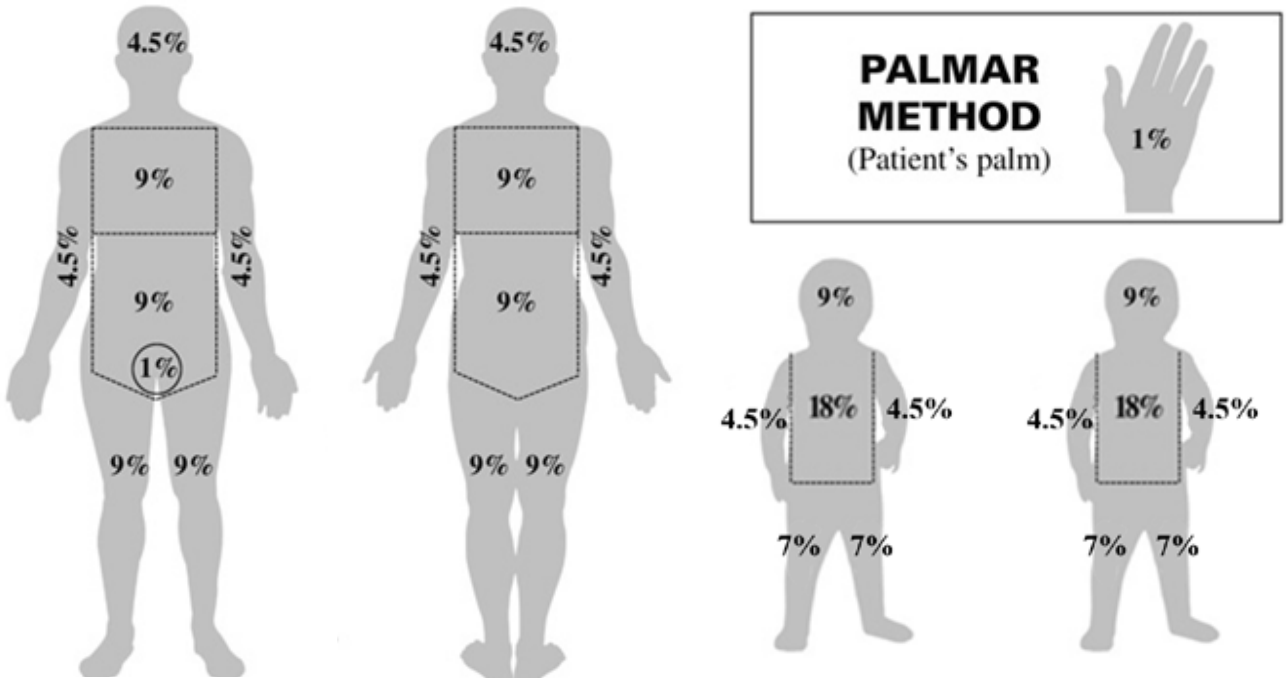
Inclusion Criteria: Patients of all ages with thermal, electrical, or chemical burns
Exclusion Criteria: No specific exclusions



BURNS (ALL AGES), cont.

Special Considerations:

1. Patients with pharyngeal edema, pharyngeal burns, hoarseness, stridor, or severe respiratory distress may have a compromised upper airway due to swelling and secretions from inhalation injury.
   - If there is concern a patient has impending loss of their airway due to worsening signs/symptoms and clinical status, transport should DIVERT to the closest ED for airway securement.
2. Use The Rule of Nines to estimate Total Body Surface Area (TBSA) of partial-thickness (2nd degree) and full-thickness (3rd degree) burns:



ADULT (FRONT) **ADULT (BACK)** **CHILD (FRONT)** **CHILD (BACK)**

3. Do NOT make physical contact with the victim of an electrical burn until it is certain the patient has been removed from the source of electrical current.
4. Chemical Burn Decontamination:
   - Use any available resources at the site (such as Material Safety Data Sheets) to identify the chemical and determine what decontamination measures are appropriate.
   - Some chemicals react with water and should not be flushed. Use caution and do not irrigate burned areas if a water-reactive chemical is identified.
   - For wet chemical contamination, irrigate the affected skin (and eyes) with copious amounts of **Normal Saline** or water.
   - For dry chemical contamination, attempt to carefully brush off any solid chemical prior to irrigating the burned area with **Normal Saline** or water.
5. INTRAMUSCULAR medications are CONTRAINDICATED in patients with burns due to unpredictable and potentially dangerous rates of medication absorption.
6. Refer to the TRAUMA – GENERAL CPG for a complete list of Prehospital Trauma Triage Criteria.
7. American Burn Association-verified Burn Centers:
   - Parkland – Patients of ALL AGES
   - Medical City Plano:
     - All patients ≥14 y/o
     - Patients <14 y/o WITHOUT facial/neck burns, WITHOUT airway involvement, AND with burns involving LESS THAN 15% Total Body Surface Area (TBSA).
   - **NOTE: Dallas Children's Medical Center is NOT an ABA-verified Burn Center**

CARBON MONOXIDE AND CYANIDE EXPOSURE (ALL AGES)

Inclusion Criteria: Patients of all ages with suspected / confirmed exposure to carbon monoxide or cyanide, with or without smoke inhalation
Exclusion Criteria: None

Patient with suspected carbon monoxide (CO)[1,2] or cyanide (CN) exposure

- Remove patient from hazardous environment as soon as possible
- Assess and manage ABCs per UNIVERSAL CARE CPGs
- Initiate continuous ECG, SpO2[3], and ETCO2 monitoring
- Administer 100% oxygen by non-rebreather mask (NRB) REGARDLESS of pulse oximetry (SpO2) reading
- Measure carbon monoxide level (SpCO) with co-oximeter, if available

Do any of the following criteria apply?:
- § SpCO >20%
- § Pregnant
- § Loss of consciousness / syncope
- § Altered mental status, inconsolable crying

YES

- Consider transport to an ED with hyperbaric oxygen (HBO) capability
- Contact BioTel as needed for assistance with destination selection & prenotification

NO

- Treat CHEST PAIN, RESPIRATORY DISTRESS, SHOCK, SEIZURE, BURNS, CARDIAC ARREST, secondary TRAUMA & other conditions according to appropriate CPGs

- Consider cyanide[4] toxicity in a patient with:
  - § Shock / hypotension, Severely altered mental status, Severe respiratory distress, Cardiac arrest
- (**IF AVAILABLE**) For suspected toxicity, prepare and administer **Hydroxocobalamin IV/IO over 15 min**
  - § ≥14 y/o: **5 g (1 vial)**
  - § <14 y/o: **70 mg/kg** (Max: 5 g)

- Monitor & transport to closest appropriate ED

Special Considerations:

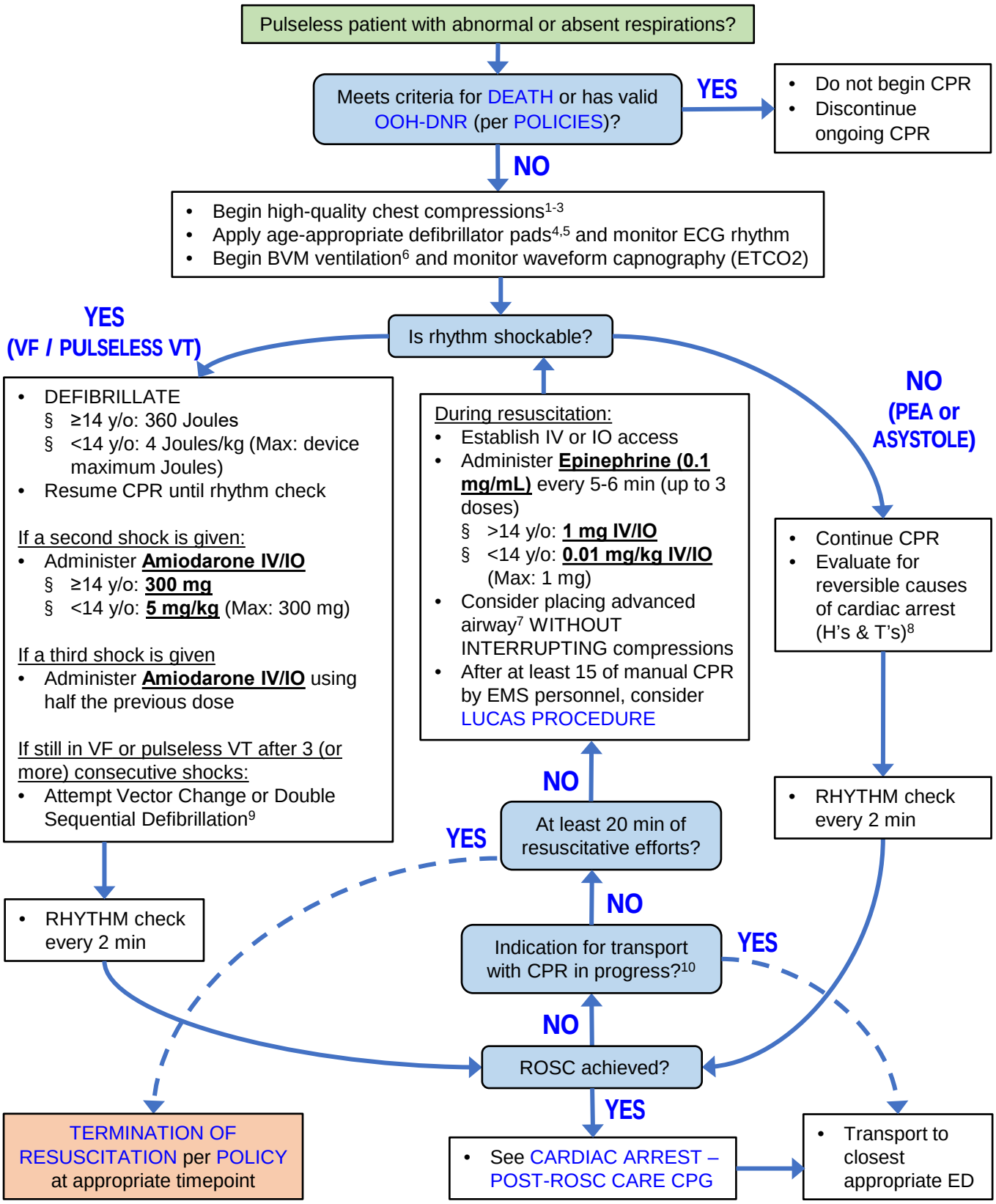
1. Carbon monoxide (CO) is an inhaled toxin that leads to cellular hypoxia and ischemia. Exposure usually occurs by inhalation of byproducts of combustion in an enclosed space (e.g., house fire, heater, generator)
2. Clinical Presentation of Carbon Monoxide Toxicity (according to SpCO level):

SpCO Level	Signs/Symptoms
Greater than 5%	Mild headache
10%	Mild headache, dyspnea on exertion
10% - 20%	Moderate headache, shortness of breath, tachypnea
20% - 30%	Worsening headache, nausea, dizziness, fatigue
30% - 40%	Severe headache, vomiting, vertigo, impaired judgment
40% - 50%	Confusion, syncope, tachycardia
50% - 60%	Seizures, shock, apnea, coma

3. Pulse oximetry (SpO2) values may be normal, EVEN in the presence of severe CO toxicity
4. Cyanide (CN) is a potent toxin that causes cellular hypoxia and ischemia. Exposure occurs by inhalation, ingestion, or skin absorption. Consider after smoke inhalation, industrial accidents, suicide attempt by CN ingestion, or chemical warfare/terrorism incidents.

CARDIAC ARREST – GENERAL (ALL AGES)

Inclusion Criteria: PULSELESS patients WITH abnormal respirations
Exclusion Criteria: Patients with valid OUT-OF-HOSPITAL DNRs (see POLICY); Neonates (see NEWBORN CARE CPG); Trauma patients in cardiac arrest (see CARDIAC ARREST – TRAUMATIC CAUSE CPG)



CARDIAC ARREST – GENERAL (ALL AGES), cont.

Special Considerations:

1. Whenever possible, resuscitation of cardiac arrest should begin ON-SCENE.
   - If the scene is unsafe, crews should withdraw to a safe distance and area with the patient and initiate resuscitation
   - The patient should ONLY be moved to the back of the ambulance for resuscitation when no other safe location exists (or after appropriate POST-ROSC CARE has been provided per CPG).
2. The primary interventions that improve rates of survival are IMMEDIATE high-quality chest compressions and EARLY defibrillation of shockable rhythms.
   - Under most circumstances, these interventions occur fastest with ON-SCENE resuscitation.
3. Components of High-Quality Chest Compressions (CPR):
   - Chest compression rate: 100-120 compressions per minute
   - Chest compression depth:
     - ≥14 y/o: 2 – 2.5 in (5 – 6 cm)
     - <14 y/o: 1/3 the depth of the patient's chest (Max: 2 – 2.5 in)
   - Hand placement:
     - Infants: 2 hands encircling the chest with both thumbs over the sternum
     - All others: 2 hands, midline, over lower half of sternum
   - Chest should recoil completely between compressions.
   - Pauses should be limited to <5 seconds, and unnecessary pauses should be avoided.
   - Using a metronome improves timing of chest compressions.
   - Compressions should not be paused to deliver ventilations.
4. Ensure the cardiac monitor/defibrillator is in MANUAL mode and the PADS or PADDLES lead is selected.
5. Use infant/pediatric pads when available, but adult pads may be used in (AP orientation) if no alternative.
6. Age-Appropriate Compression-to-Ventilation Ratio:

		Bag-Mask Ventilation	Advanced Airway (ET Tube / Supraglottic Device)
Adult (≥14 years old)	1 rescuer	30 compressions / 2 ventilations	1 breath every 6 sec (without pausing compressions)
	2+ rescuers	8-10 breaths per minute (without pausing compressions)	
Pediatric (<14 years old)	1 rescuer	30 compressions / 2 ventilations	1 breath every 3 sec (without pausing compressions)
	2+ rescuers	15 compressions / 2 ventilations	

7. Advanced Airway Placement in Cardiac Arrest
   - Supraglottic airway devices (SGA) are preferred as the FIRST-LINE airway during cardiac arrest resuscitation.
   - Endotracheal intubation has NOT been shown to improve outcomes for adult or pediatric patients when compared to SGAs during cardiac arrest resuscitation.
   - Endotracheal intubation may be considered on a case-by-case basis when ventilation is not possible by less invasive methods.
8. Potentially Reversible Causes of Cardiac Arrest (selected "H's & T's")
   - Hypoxia – see AIRWAY MANAGEMENT – GENERAL CPG
   - Hypovolemia – consider a bolus of **20 mL/kg Normal Saline IV/IO** (Max: 1000 mL)
   - Hyperkalemia (e.g., dialysis patients or crush injury) – consider **Calcium chloride 1 mg IV/IO**
     - **Sodium bicarbonate** is no longer universally recommended without physician consultation
   - Hypothermia – prevent further heat loss AND refer to COLD EMERGENCY CPG
   - Tension Pneumothorax – manage per THORACOSTOMY (NEEDLE) PROCEDURE
   - Toxicity from Specific Medications – refer to DRUG OVERDOSE OR INTOXICATION CPG
     - NOTE: Naloxone is NOT indicated in cardiac arrest, even in suspected/confirmed opioid overdose

(Continued on the next page)

CARDIAC ARREST – GENERAL (ALL AGES), cont.

Special Considerations (cont.):

9. Vector Change and Double Sequential Defibrillation for Refractory VF/pulseless VT
   - Refractory VF or pulseless VT = 3 or more consecutive shocks without conversion
   - Vector Change (VC) Defibrillation:
     - § To perform, place a SECOND set of defibrillation pads in a different orientation than the first set (either AP or AL) per **Figure 1**. Switch the defibrillator connection.
     - § Defibrillate in the new position. This changes the vector (direction) of the electrical current.
   - Double Sequential Defibrillation (DSED)
     - § This can be used in place of with VC Defibrillation IF A SECOND MANUAL DEFIBRILLATOR IS AVAILABLE.
     - § To perform, place a SECOND set of defibrillation pads in a different orientation than the first set (either AP or AL) and connect the second set of pads to the second defibrillator (**Figure 1**)
     - § Simultaneously charge both manual defibrillators. When ready to defibrillate, ensure all personnel are clear and both shock buttons AT THE SAME TIME.

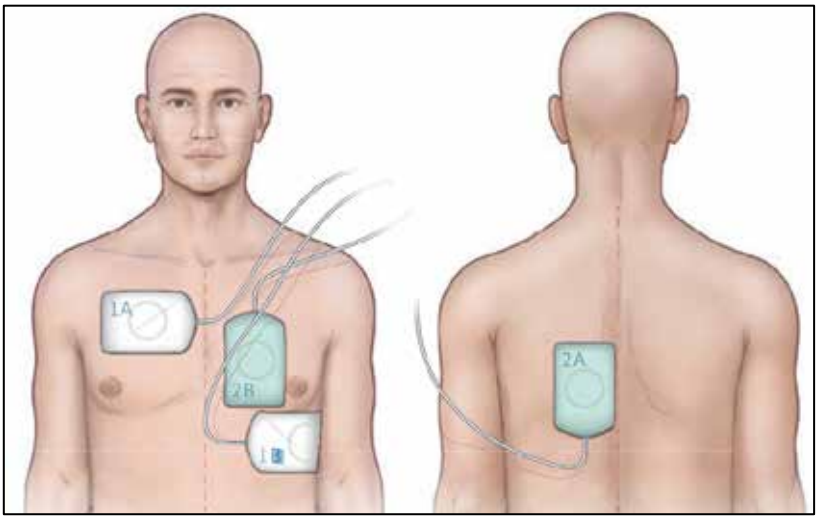


Figure 1. Pad placement for Vector Change (or Double Sequential) Defibrillation
(Adapted from Cheskes S, et al. N Engl J Med. 2022 Nov 24;387(21):1947-1956.)

10. Transport of patients with ongoing CPR should occur RARELY and ONLY when there are circumstances that suggest continued resuscitation may be beneficial.
    - Full resuscitative measures should begin ON SCENE prior to making a transport decision
    - TIMING OF TRANSPORT DECISION
    - Situations in which to consider transport with CPR in progress (rather than TERMINATION OF RESUSCITATION per POLICY)
      - § The patient has a viable pregnancy (known gestational age >22 weeks OR a palpable uterus at or above the umbilicus)
      - § The cause of arrest is hypothermia
      - § The cause of arrest is electrocution or lightning strike
      - § The patient has had >5 minutes of sustained ROSC during resuscitation
      - § The patient's cardiac rhythm is persistent VF or pulseless VT (3 or more consecutive shockable rhythms without conversion)
      - § The patient has any signs of life when considering termination, including: spontaneous respirations, eye opening, motor response
    - Call BioTel for guidance in making a transport or termination decision if there are unique or unusual circumstances

11. Upload of the LifePak 15 cardiac monitor file (.pco) to the ePCR is mandatory for all cardiac arrest cases.

(Continued on the next page)

CARDIAC ARREST – GENERAL (ALL AGES), cont.

Special Considerations (cont.):

12. Lightning Strike as Cause of Cardiac Arrest:
    - Patients who arrest due to lightning strike have HIGH potential for ROSC after PROLONGED efforts
    - These patients do NOT qualify for field termination. Strongly consider early transport.
13. Cardiac Arrest in Pregnancy:
    - Prioritize early transport as soon as key resuscitation components established (e.g., airway, access, medications, rhythm management).
    - For pregnant patients in cardiac arrest WITH a gravid uterus at or above the umbilicus, decompress the aorta & vena cava to improve venous return and effectiveness of chest compressions:
      § Manually displace uterus to the patient's LEFT side during resuscitation (**Figure 2**).
      § Leftward tilt on spinal board is a less effective alternative, if an additional rescuer is not available (**Figure 3**).

Figure 2

Figure 3

(Figures adapted from American Heart Association materials)

MEDICAL CARDIAC ARREST – POST-ROSC CARE (ALL AGES)

Inclusion Criteria: Patients of all ages who have return of spontaneous circulation (ROSC)[1] after undergoing management of cardiac arrest per the CARDIAC ARREST – GENERAL or TRAUMATIC CAUSE CPGs.
Exclusion Criteria: Cardiac arrest from traumatic cause; Patients with persistent shockable rhythms

Patient with ROSC[1] after medical cardiac arrest resuscitation

- **Continue ON-SCENE[2] care and DO NOT transport until interventions for hypotension & hypoxia are initiated (according to guidance below) OR until post-ROSC care has been provided for at least 10 min**

- **Utilize DFR Post-ROSC Checklist (refer to last page of CPG)**
- Maintain continuous ECG, SpO2, and ETCO2 monitoring WITH defibrillator pads in place
- Obtain immediate post-ROSC blood pressure
- Obtain 12-lead ECG 5 minutes after obtaining ROSC

AIRWAY / BREATHING
- Evaluate need for advanced airway and continue AIRWAY MANAGEMENT per CPG
- Titrate SpO2 to maintain in the range of 94-99%
- Assist ventilations with bag-valve mask, titrating ETCO2 to 35-45 mmHg while avoiding overventilation[3]

CIRCULATION
- Recheck blood pressure every 3-5 minutes
- Prepare "on deck" **Norepinephrine** infusion:
  - Mix **4 mg Norepinephrine** in **500 mL Normal Saline** (NOT LR) to make 8 mcg/mL concentration
- Manage dysrhythmias per BRADYCARDIA and TACHYCARDIA CPGs
- If re-arrest occurs, refer to CARDIAC ARREST – GENERAL CPG

Hypotensive (SBP <90 mmHg or below normal for age)?[4]

NO

YES

- Administer **Isotonic Fluid** bolus, if no signs of volume overload:
  - ≥14 y/o: **1 L IV/IO**
  - <14 y/o: **20 mL/kg IV/IO** (Max: 1 L)
- As needed, administer vasopressor and titrate to normal range systolic BP for age:[4]
  - **Norepinephrine infusion IV/IO**[5]
    - ≥14 y/o: **4-10 mcg/min**
    - <14 y/o: **0.1 mcg/kg/min** (Max: 10 mcg/min)

    OR
  - PUSH DOSE EPINEPHRINE per PROCEDURE
- Assess for pneumothorax (unequal breath sounds or chest rise?)

- Manage post-ROSC SEIZURES per CPG
- Do NOT remove advanced airway. If the patient is not tolerating advanced airway / ventilation, refer to post-airway management in AIRWAY MANAGEMENT – ADVANCED AIRWAY DEVICE PROCEDURE

12-lead ECG shows STEMI?

YES

- Transport to closest ED with 24-hour Cath Lab capability

NO

- Transport to closest appropriate ED

CARDIAC ARREST – POST-ROSC CARE (ALL AGES), cont.

Special Considerations:

1. Return of Spontaneous Circulation (ROSC) is defined as having an organized cardiac rhythm and palpable pulses after undergoing resuscitation of cardiac arrest.
2. Risk of re-arrest is highest within the first 10 minutes after ROSC. Initial post-ROSC care should occur ON SCENE until interventions for hypoxemia and hypotension are initiated.
3. Over-ventilation reduces cardiac preload and cerebral blood flow. It can cause hypotension and worsen outcomes.
   - Patients should be ventilated at an adequate rate and tidal volume to maintain ETCO2 level in the range of 35-45 mmHg.
   - Just enough volume should be delivered with each mechanical ventilation to observe slight chest rise.
4. Pediatric Blood Pressure Ranges (in mmHg):
   - 0-28 days old (newborn): >60
   - 1 month – 1 year (infant): >70
   - 1-10 y/o (child): >70 + (2 x age in years)
   - 10-13 y/o (adolescent): >90
5. Norepinephrine Infusion (Drip) Guide:
   - Consider requesting EMS Field Supervisor for IV pump, however, do NOT delay initiation of infusion.
   - Mix **4 mg Norepinephrine** in **500 mL Normal Saline** (NOT Lactated Ringer's) to make 8 mcg/mL concentration
   - Use a 60 drop/mL drip set
   - The following chart can be used to titrate the infusion:

Dose (mcg/min)	Rate (gtt/min)
1	8
2	15
3	23
4	30
5	38
6	45
7	53
8	60
9	68
10	75

6. Refer to the PUSH DOSE EPINEPHRINE PROCEDURE for instructions on mixing this medication.

CARDIAC ARREST – POST-ROSC CARE (ALL AGES), cont.

DFR Post-ROSC Checklist

A-B-C-E-L: ABC's Extend Life
STOP, DO Not Extricate/Transport until checklist complete or at least 10 min of post-ROSC care

Airway

☐ Evaluate need for advanced airway placement (SGAl/ETT)

☐ Ensure 4-phase capnography with every breath

☐ Sedate if patient resisting ventilation (midazolam and/or fentanyl)

Breathing

Oxygenation

☐ Start/maintain SpO2 monitoring

☐ Titrate oxygen to SpO2 of 94-99%

Ventilation

☐ Maintain continuous EtCO2 monitoring

☐ Maintain respiratory rate at 8-10/min

☐ Do NOT attempt to normalize EtCO2 by hyperventilating the patient

Circulation

Pulse

☐ Finger on pulse x 10 min (mark site as needed)

☐ Pace unstable bradycardia <60 bpm or manage tachydysrhythmias

Blood Pressure

☐ Immediately check BP (manual PRN), cycle every 3-5 min

☐ Pre-mix norepinephrine to be "on-deck", start if SBP <100; titrate as needed

EKG/Monitor

☐ Monitor applied, keep eyes on patient from ROSC to ED resus room

☐ 12-lead after 5-min post-ROSC

☐ If STEMI; Transmit; Pre-alert; Expedite packing and loading once stable

Logistics

☐ Adequate personnel for safe extrication without compromising care

☐ Check for adequate portable O2

Move after 10-min

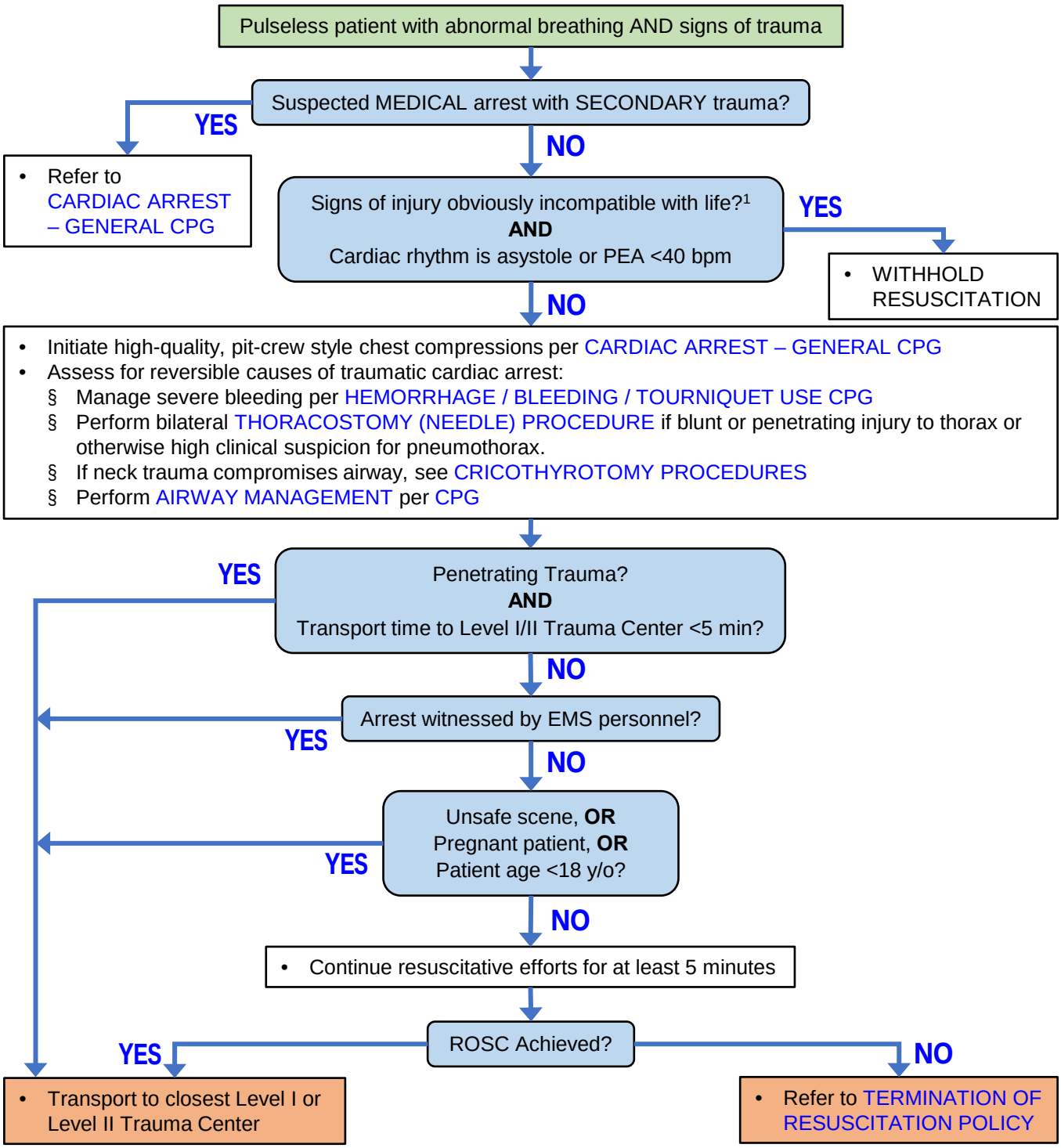
☐ Reassess ABC's and monitor vitals after and significant movement or clinical change

☐ Titrate interventions

☐ Ensure adequate crew to safely work any re-arrest or manage patient enroute

CARDIAC ARREST – TRAUMATIC CAUSE (ALL AGES)

Inclusion Criteria: PULSELESS patients WITH abnormal respirations AND signs of trauma
Exclusion Criteria: Patients with likely MEDICAL causes of cardiac arrest



Special Considerations:

1. Signs of injury incompatible with life:
   - Decapitation, Incineration, Massive brain/heart tissue destruction, Decomposition, Rigor mortis, Lividity
2. Cardiac arrest from ISOLATED head trauma (without massive brain tissue destruction) should be treated per guidelines for MEDICAL cardiac arrest (see CARDIAC ARREST – GENERAL CPG).

CHEST PAIN (ALL AGES)

Inclusion Criteria: Adult patients (≥14 y/o) with chest pain (or other anginal equivalent symptoms[1]) that is potentially caused by a cardiac etiology
Exclusion Criteria: Patients with chest pain due to blunt trauma (see TRAUMA – GENERAL CPG).
For PEDIATRIC patients (<14 y/o) see **Special Considerations** section on next page.[2]

- Assess and manage ABCs per UNIVERSAL CARE CPGs

- Administer **Aspirin 324 mg PO**
  - Instruct the patient to chew and swallow
  - If not administered, document rationale in the ePCR

- Obtain AND interpret[3] a 12-lead ECG within 10 minutes of first patient contact
- Initiate continuous ECG, SpO2, and ETCO2 monitoring
- Administer supplemental O2 to maintain SpO2 ≥94%, as needed
- Establish IV/IO access

ECG shows ST-segment elevation consistent with STEMI?[4-6]

NO

YES

- Begin immediate transport to an ED with 24-HOUR CATH LAB CAPABILITY
- Contact BioTel or receiving hospital for prenotification / "STEMI Alert"
- Transmit 12-lead ECG to BioTel and/or receiving hospital

SBP >100 mmHg and HR >50 bpm

NO

YES

- Administer **Nitroglycerin 0.4 mg SL** IF no contraindications[7]
- May repeat every 3-5 min IF SBP >100 mmHg & HR >50 bpm (up to 3 total doses)

- Consider **Normal Saline 20 mL/kg IV/IO** (Max: 1 L) for SBP <100 mmHg
- Refer to SHOCK / HYPOTENSION CPGs, as needed

- If continued pain[8] after Nitroglycerin AND SBP >100, consider administering **Fentanyl 50 mcg IV/IO/IN**
  - May repeat same dose if inadequate pain relief after 5-10 min
- Repeat ECG every 5-10 minutes after initial acquisition
- Treat any dysrhythmia according to the appropriate CPG (e.g., TACHYCARDIA, BRADYCARDIA)

- Transport to closest appropriate ED

CHEST PAIN (ALL AGES), cont.

Special Considerations:

1. In the correct clinical setting, upper back/shoulder/jaw pain, epigastric pain, shortness of breath, nausea/vomiting, or severe fatigue can be suggestive of cardiac ischemia ("Anginal Equivalents").
2. Pediatric Chest Pain:
   - Ischemic chest pain is extremely rare in pediatric patients without congenital heart disease.
   - Management of pediatric patients with chest pain should focus on addressing coexisting signs and symptoms of illness (e.g., respiratory distress).
   - See PAIN MANAGEMENT CPG for management of painful conditions like sickle cell, lupus, or cancer.
3. Contact BioTel early with difficult or inconclusive ECGs for medical control physician consultation.
4. Criteria ST-segment Elevation Myocardial Infarction (STEMI)
   - ST elevation at the J-point in at least 2 contiguous leads (**Table 1**) indicates STEMI.
     - § For leads V2-V3, at least 1.5 mm (1.5 boxes) of elevation is required.
     - § For all other leads, only 1 mm (1 box) of elevation is required.
   - Bundle branch blocks with ST elevation should be discussed with a medical control physician.
5. An Inferior STEMI (ST elevation in leads II, III, and aVF) may involve the right ventricle.
   - Patients with right ventricular myocardial infarction often have hypotension or signs of shock.
   - **Nitroglycerin** is no longer considered to be contraindicated for NORMOTENSIVE patients with Inferior MI, but BP and HR should be monitored very carefully if this medication is used.
   - Right-sided ECGs are no longer considered to offer additional value when Inferior MI has already been diagnosed. Medications and other management should be guided by the patient's clinical status.
   - In patients with Inferior STEMI, PUSH DOSE EPINEPHRINE PROCEDURE use is not recommended.
6. ST DEPRESSION in leads V1-V3 with upright T-waves may suggest a POSTERIOR STEMI. If these changes are present, obtain a Posterior ECG.
   1. Also consider obtaining a Posterior ECG in a patient with chest pain but no STEMI on initial ECG.
   2. To obtain a Posterior ECG, unsnap leads V4-V6 and connect them to electrodes on the patient's left back as shown in **Figure 1**. Run the ECG as usual and MARK THE ECG strip as in **Figure 2**.

Type of MI	ECG Leads Involved
Septal	V1-V2
Anterior	V2-V4
Lateral	V5, V6, I, aVL
Inferior	II, III, aVF
Posterior	V7-V9

Table 1. Contiguous ECG Leads

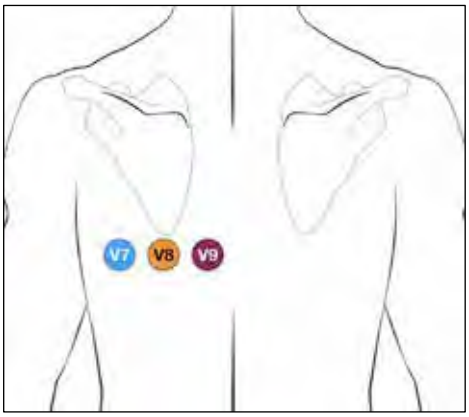


Figure 1. Posterior ECG Lead Placement
(adapted from lifeinthefastlane.com)

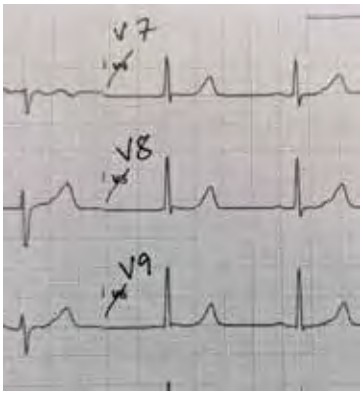


Figure 2. Marking a Posterior ECG

7. Contraindications to Nitroglycerin:
   - SBP < 100 mmHg
   - HR < 50 mmHg
   - Use of phosphodiesterase inhibitors medications for erectile dysfunction or pulmonary hypertension in the LAST 48 HOURS.
     - § Examples: sildenafil (Viagra, Revatio), vardenafil (Levitra, Staxyn), or tadalafil (Cialis, Adcirca)
8. If chest pain is thought to be related to recent stimulant use (e.g., cocaine or methamphetamine), follow guidelines above but also consider **Midazolam 2.5 mg IV/IM/IN** to counter excessive sympathetic activity.
   - May repeat after 5-10 minutes if incomplete response.

COLD EMERGENCY / HYPOTHERMIA (ALL AGES)

Inclusion Criteria: Patients with cold exposure and evidence of cold-related illness (e.g., hypothermia)
Exclusion Criteria: Patients with complaints unrelated to cold exposure (see other symptom-specific CPGs)

Patient[1] with evidence of cold-related illness

- Assess/manage ABCs and initiate ECG, SpO2, BP monitoring per UNIVERSAL CARE CPGs

Pulseless?[2]

NO

- Move patient away from cold environment
- Remove wet clothing
- Cover and wrap patient with warm blanket(s)
- Increase temperature of passenger compartment
- Obtain POC blood glucose and manage abnormal levels per DIABETIC EMERGENCY CPG
- Establish IV/IO access

- Obtain CORE temperature[3]

Core temp <95 °F (35 °C)?[4]

NO

YES

- If available, administer WARMED[5] **Isotonic Fluid 20 mL/kg IV/IO** (Max: 1 L)
- Apply hot packs to bilateral axillae and groin
- If bradycardic, do not pace unless HYPOTENSIVE AND not improved with IV fluids & warming
- Perform AIRWAY MANAGEMENT, as indicated
- If core temperature <88 °F (31.1 °C), handle patient GENTLY to reduce risk of dysrhythmia

YES

- Begin CPR per CARDIAC ARREST – GENERAL CPG, with the following additional considerations:
  - § If shockable rhythm, defibrillate only once
  - § DOUBLE the time interval between drug doses
- Warm to the extent possible:
  - § Administer WARMED,[5] **Isotonic Fluid 20 mL/kg IV/IO** (Max: 1 L), if available
  - § Increase temperature of patient compartment
- Initiate transport as soon as possible

HYPOTHERMIA
Mild: 89-95 °F (32-35 °C)
Moderate: 82-89 °F (28-32 °C)
Severe: <82 °F (<28 °C)

- If patient has evidence of frostbite:
  - § Remove constricting clothing/jewelry
  - § Do NOT rub or apply pressure to area
  - § Cover area with loose, sterile dressing
  - § Refer to PAIN MANAGEMENT CPG

- Transport to closest appropriate ED[6]

Special Considerations:

1. The elderly and very young are at increased risk of hypothermia and can develop it in mild temperatures.
2. A cold patient is NOT eligible for withholding or termination of resuscitation until they are rewarmed.
3. Core temperature is best assessed using a RECTAL thermometer, if available. Otherwise, an ORAL temperature is the next best option.
4. Shivering stops and altered mental status begins <89 °F (32 °C). Unconsciousness occurs <82 °F (28 °C).
5. IV fluids should only be warmed using purpose-built equipment (e.g., warming cabinets or infusers).
6. For patients that are hemodynamically unstable, severely altered, or have a core temp <82 °F (28 °C), consider transport to a Level I/II Trauma Center for possible invasive rewarming techniques.

CRICOTHYROTOMY (NEEDLE) PROCEDURE

Inclusion Criteria: Patients of all ages who cannot be oxygenated or ventilated by BVM, other non-invasive methods, supraglottic airway (SGA), or endotracheal intubation

Exclusion Criteria: Patients who CAN be oxygenated and ventilated by less invasive methods; Patients with tracheal transection (e.g., from trauma); Patients with a tracheostomy / stoma

Special Considerations:

- Ventilation by needle cricothyrotomy only provides SHORT-TERM (about 30 min) oxygenation and MINIMAL ventilation. Patient needs immediate transport to the closest ED.
- Hypercarbia (elevated CO2) develops quickly, and the patient may remain hypoxic.

GENERAL PROCEDURE

1. Prepare the following equipment (ideally in a pre-assembled kit):
   - Angio catheter WITHOUT backflow valve: 10-14 G (patient ≥5 kg) or 14-18 G (patient <5 kg)
   - 10-mL **Normal Saline** flush, CONNECTED to the angio catheter
   - 7.5 endotracheal tube connector (T-piece), SEPARATED from the ET tube
   - 3-mL syringe barrel with the plunger REMOVED
   - Infant bag-valve mask (BVM), connected to 100% oxygen
2. Stabilize the trachea with your non-dominant hand.
3. Identify the cricothyroid membrane at the midline of the neck between the thyroid cartilage (Adam's apple) and cricoid cartilage.
4. Insert the angio catheter (with flush connected) through the skin over the cricothyroid membrane.
   - Aim the catheter/needle at a 45-degree angle toward the patient's feet.
   - Continuously pull back on the plunger of the flush while advancing the angio catheter.
   - Aspiration of air bubbles into the flush confirms the catheter has entered the trachea.
5. Fully advance the angio catheter, remove the needle (and flush), and leave the catheter in place.
   - Maintain a firm grip on the catheter hub from this point until arrival at the hospital ED.
6. Connect the 3-mL syringe and ET tube connector to the angio catheter (per **Figure 1**).
7. Connect an INFANT BVM (per **Figure 2**) and provide CONTROLLED intermittent ventilation.
   - Deliver each breath SLOWLY over 1 full second, then allow 6 seconds of passive expiration.

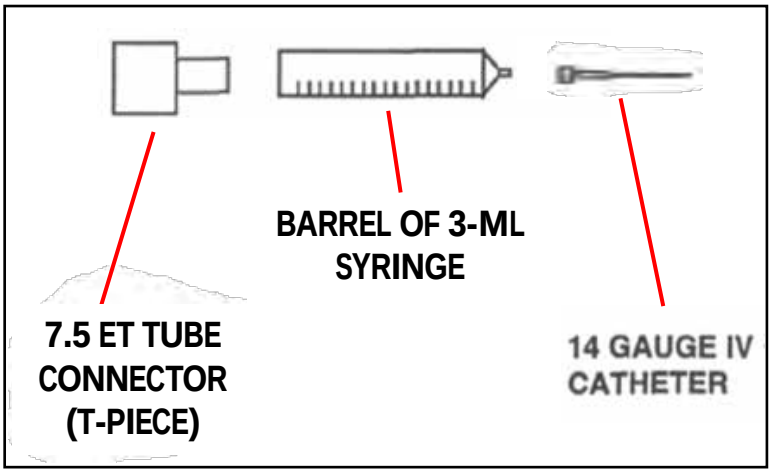


Figure 1. Connector / Syringe / Catheter Assembly
(Adapted from: airwayjedi.com)

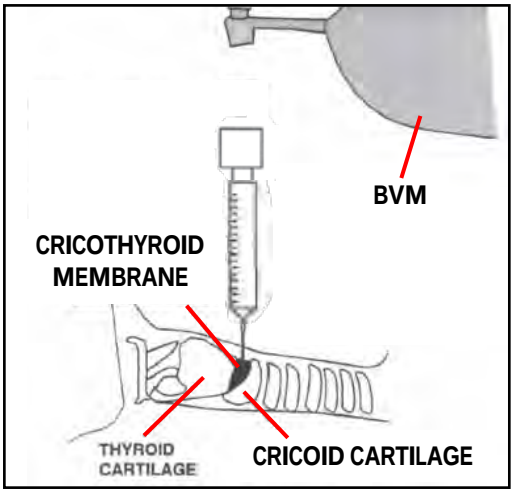
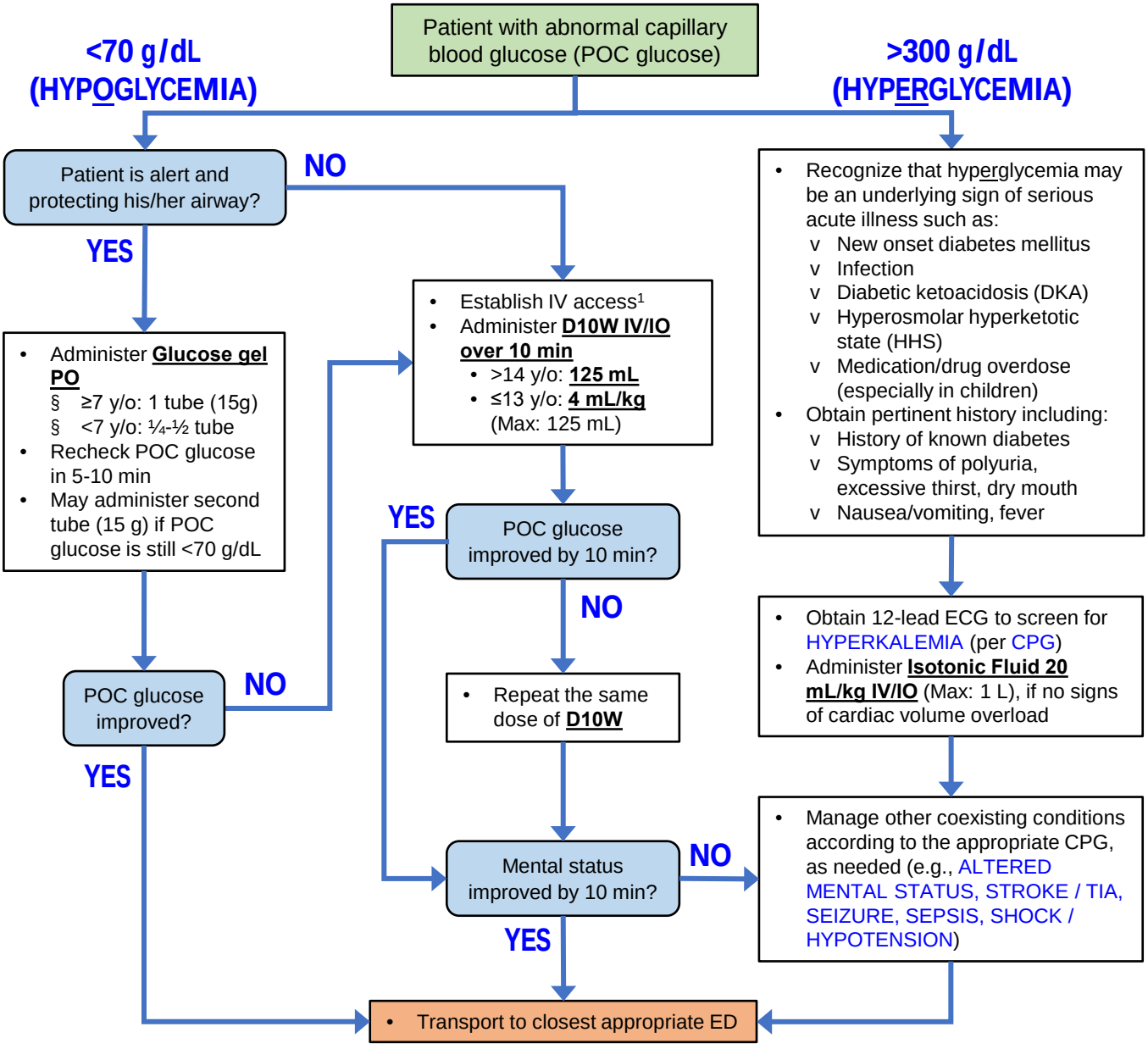


Figure 2
(Adapted from: airwayjedi.com)

DIABETIC EMERGENCY (ALL AGES)

Inclusion Criteria: Patients of all ages with abnormal point of care (POC) capillary blood glucose measurements (a.k.a., "finger-stick glucose" or "dexi-stick")
Exclusion Criteria: For neonatal patients (<1 month old), refer to the NEWBORN CARE CPG



Special Considerations:
1. If unable to give oral glucose OR obtain IV access, may administer one dose of **Glucagon IM/IN** (**IF AVAILABLE**) instead of **D10W**:
   - 1 month old – 4 years old: **0.5 mg**
   - ≥5 years old: **1.0 mg**
2. All patients treated for symptomatic hypoglycemia should have a repeat POC glucose level documented.
3. Although this CPG uses a level of 300 g/dL, there is no standard POC glucose level to define "symptomatic" hyperglycemia. Life-threatening conditions such as diabetic ketoacidosis (DKA) and hyperosmolar hyperketotic syndrome (HHS) can occur at levels below 300 g/dL.
4. DKA may be the initial clinical presentation for children (or young adults) with undiagnosed Type 1 diabetes.

DRUG OVERDOSE / DRUG INTOXICATION (ALL AGES)

Inclusion Criteria: Patients with suspected or confirmed overdose, intoxication, or toxic effects from use of prescribed or recreational drugs.
Exclusion Criteria: Patients with poisoning from environmental sources (see TOXIC EXPOSURE CPG).

Patient with suspected or confirmed overdose or intoxication

- Remove source of ongoing drug exposure (injection/absorption/inhalation/ingestion) to patient, if possible
- Assess/manage ABCs and initiate continuous monitoring per UNIVERSAL CARE CPGs
- Contact BioTel, Poison Control (1-800-222-1222), and law enforcement EARLY for assistance, especially for: multi-substance overdoses, drugs not covered by this CPG, unknown drugs or substances

Consider toxicity from specific drugs/medications based on scene/history/exam and manage as follows:

OPIOIDS ("Narcotics") – e.g., heroin, fentanyl, hydrocodone, oxycodone, methadone, buprenorphine
Ø Signs/symptoms: decreased level of consciousness, hypoventilation/apnea, constricted/pinpoint pupils
- Assist ventilations with BVM, OPA/NPA in patients with inadequate respiratory rate or apnea
- Administer **Naloxone** in patients with inadequate respiratory rate or apnea
  - ≥14 y/o: **0.4 – 0.5 mg IV/IO/IM** OR **2 mg IN**
  - <14 y/o: **0.1 mg/kg IV/IO/IM/IN** (Max: 0.4 mg IV/IO/IM or 2 mg IN)
- If incomplete response, repeat **Naloxone** every 3 min
- Naloxone is NOT indicated in cardiac arrest, even in suspected/confirmed opioid overdose

STIMULANTS – e.g., cocaine, methamphetamine, PCP
Ø Signs/symptoms: agitation, hyperthermia, sweating, acute behavioral disturbance
- Request additional EMS and law enforcement, as needed
- For chest pain, refer to CHEST PAIN CPG and consider **Midazolam** IF APPROPRIATE per that CPG
- Refer to BEHAVIORAL EMERGENCY and HEAT EMERGENCY CPGs as needed

ANTIPSYCHOTICS (Dopaminergic drugs) – e.g., haloperidol, risperidone, quetiapine, ziprasidone, clozapine
Ø Signs/symptoms: dystonia/torticollis, hyperthermia
- For suspected dystonic reaction or torticollis, administer **Diphenhydramine IV/IO/IM**
  - ≥14 y/o: **50 mg**
  - <14 y/o: **1 mg/kg** (Max: 50 mg)
- Refer to HEAT EMERGENCY CPG, as needed

ANTIDEPRESSENTS (Serotonergic drugs) – e.g., amitriptyline, nortriptyline, doxepin, venlafaxine, duloxetine
Ø Signs/symptoms: confusion, muscle rigidity, hyperthermia, dilated pupils
- See BRADYCARDIA, SHOCK / HYPOTENSION, HEAT EMERGENCY and SEIZURE CPGs, as needed
- For widened QRS on ECG, administer **Sodium Bicarbonate 1 mEq/kg IV/IO** (Max: 50 mEq)

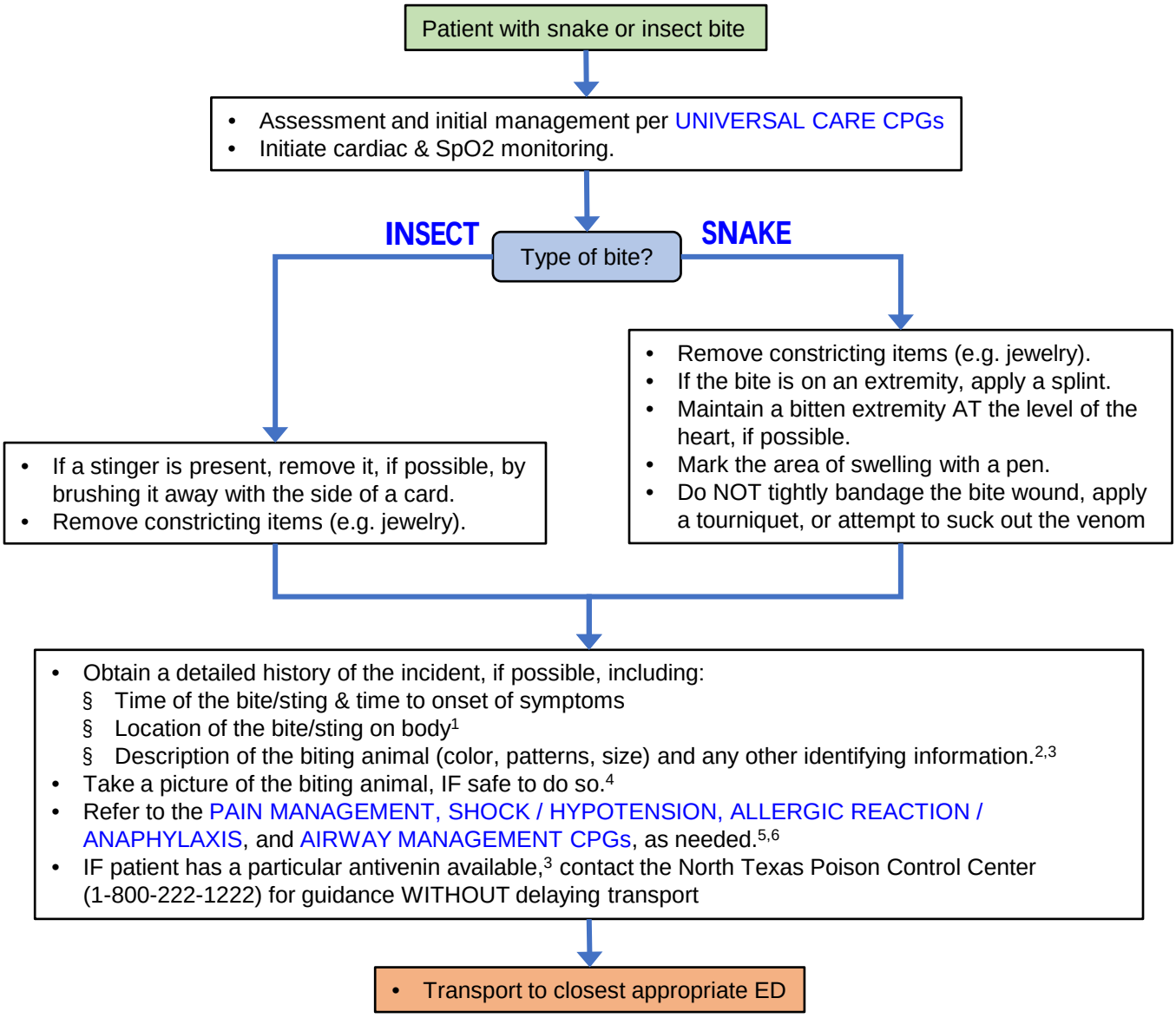
BETA BLOCKERS or CALCIUM CHANNEL BLOCKERS (CCB)
Ø Signs/symptoms: hypotension, bradycardia
- (**IF AVAILABLE**) For overdose of Beta Blocker (e.g., metoprolol, carvedilol), consider **Glucagon IV/IO/IM**
  - ≥14 y/o: **1 mg**
  - <14 y/o: **0.5 mg**
- For overdose of CCB (e.g., amlodipine, diltiazem, verapamil), consider **Calcium chloride**
  - ≥14 y/o: **1 g IV/IO over 5-10 min**
  - <14 y/o: **20 mg/kg IV/IO over 5-10 min** (Max: 1 g)
- Refer to BRADYCARDIA and SHOCK / HYPOTENSION CPGs, as needed

- For a suspected SUICIDE ATTEMPT, see guidance in the EVALUATION AND TRANSPORT POLICY

- Transport to the closest appropriate ED

ENVENOMATION / SNAKE OR INSECT BITE (ALL AGES)

Inclusion Criteria: Any person with a proven or suspected bite by a potentially venomous snake or insect.
Exclusion Criteria: Uncomplicated bites by snakes or insects known to be non-venomous (if in doubt, treat!)



Special Considerations:

1. Fang marks or swelling from a snake bite may not immediately be visible.
2. Most wild snake bites in the North Texas area are pit vipers (e.g., rattlesnakes, copperheads, water moccasins), and their venoms are treated with a UNIVERSAL antidote called CroFab®.
3. Some hobbyists keep NON-NATIVE pet snakes with UNIQUE venoms that don't respond to CroFab®.
   - If such a snake is involved, attempt to obtain detailed information about the snake (scientific or common name, effects of venom) from the patient or other relevant persons on scene.
   - Ask the keeper of an involved non-native snake if they have the appropriate antivenin available!
4. Do NOT attempt to directly handle a live OR dead animal. Take a picture of the animal, IF safe to do so.
5. BioTel can assist with confirming a destination hospital ED with available CroFab® (or another antivenin).
6. Reactions to snake bites are rarely due to allergic reactions. In contrast, insect stings may cause a true allergic reaction (including anaphylaxis).

EXTERNAL JUGULAR VEIN IV ACCESS PROCEDURE

Inclusion Criteria: Critically ill patients ≥14 years old for whom vascular access is imperative and other peripheral IV access or IO access is unavailable or unsuccessful
Exclusion Criteria: Patients <14 years old; Patients without visible anatomical landmarks

GENERAL PROCEDURE

1. Prepare necessary equipment:
   - 18G or 20G angio catheter (IV catheter)
   - Antiseptic solution
   - Flushed and primed saline lock
   - Gauze
   - Transparent dressing
2. Position the patient in supine with the head of bed tilted down (Trendelenburg position) and head turned slightly away from the side on which external jugular vein (EJV) access will be performed.
3. Identify a straight segment of the EJV, as far from the clavicle as possible
4. Cleanse the site with antiseptic (e.g., chlorhexidine or ethyl alcohol)
5. Stabilize the EJV with gentle thumb traction proximal (closer to mandible) to the insertion site.
6. Puncture the EJV at a shallow angle, aiming the angio catheter toward the patient's feet & shoulder on the SAME side as the EJV (**Figure 1**).
7. Advance the catheter like an extremity IV, taking care not to puncture the back wall of the vein.
8. Draw back and flush the catheter to ensure patency before securing like an extremity IV.
9. Monitor the insertion site for extravasation, infiltration, bleeding, or hematoma.

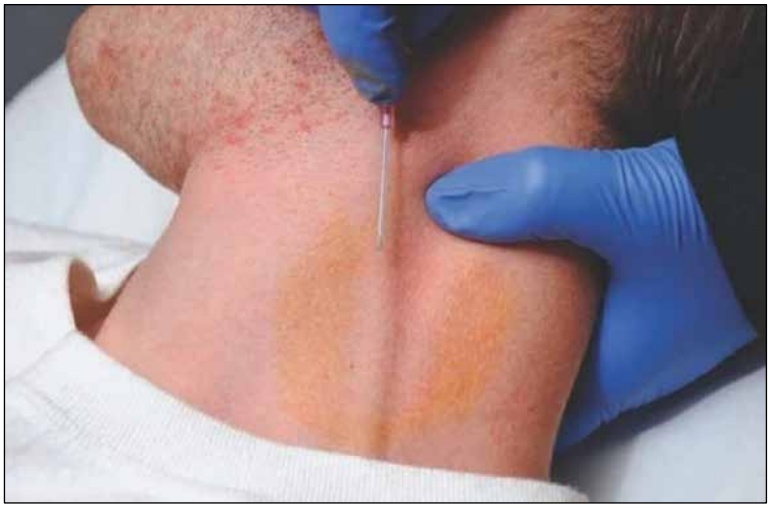


Figure 1
(Adapted from: infusionnurse.org)

Special Considerations:

1. Take care to prevent air embolism by performing the procedure in Trendelenburg position with the patient breathing out through pursed lips.
2. Poor flow after IV insertion may be positional. Elevating the head of bed may resolve the issue.

EYE INJURY (ALL AGES)

Inclusion Criteria: Patients with eye trauma (blunt or penetrating) or chemical exposure to eyes
Exclusion Criteria: No specific exclusions

Patient with injury or chemical exposure to eye(s)

- Assess/manage ABCs and monitor per UNIVERSAL CARE CPGs

What is the mechanism of injury?

TRAUMA

- Refer to TRAUMA – GENERAL CPG

- Do NOT irrigate injured eye
- If globe is avulsed (out of the socket), cover the eye with **Isotonic Fluid**-soaked gauze
- If globe rupture is suspected:
  - § Cover eye with RIGID eye shield (NOT a pressure dressing)
  - § Do NOT put pressure on globe
- If a penetrating foreign body is present:
  - § Do NOT attempt to remove
  - § Stabilize foreign body with padding & tape

CHEMICAL EXPOSURE

- Irrigate affected eye(s) copiously:[1]
  - § Spike a bag of **Isotonic Fluid** with a drip tubing set (10 drops/min)
  - § Remove the drip tubing safety cap
  - § Slide drip set threaded connector out of the way
  - § Insert the end of the drip set tubing into the hub of a nasal cannula (**Figure 1**) and secure with tape
  - § Tape the nasal cannula to the patient's nasal bridge to direct fluid into the medial corner of their eye(s) (**Figure 2**)
  - § Gently hold the eyelid(s) open with 4x4 gauze as needed to assist with irrigation
- Refer to TOXIC CHEMICAL EXPOSURE CPG as needed

- Refer to PAIN MANAGEMENT and NAUSEA AND VOMITING CPGs, as needed

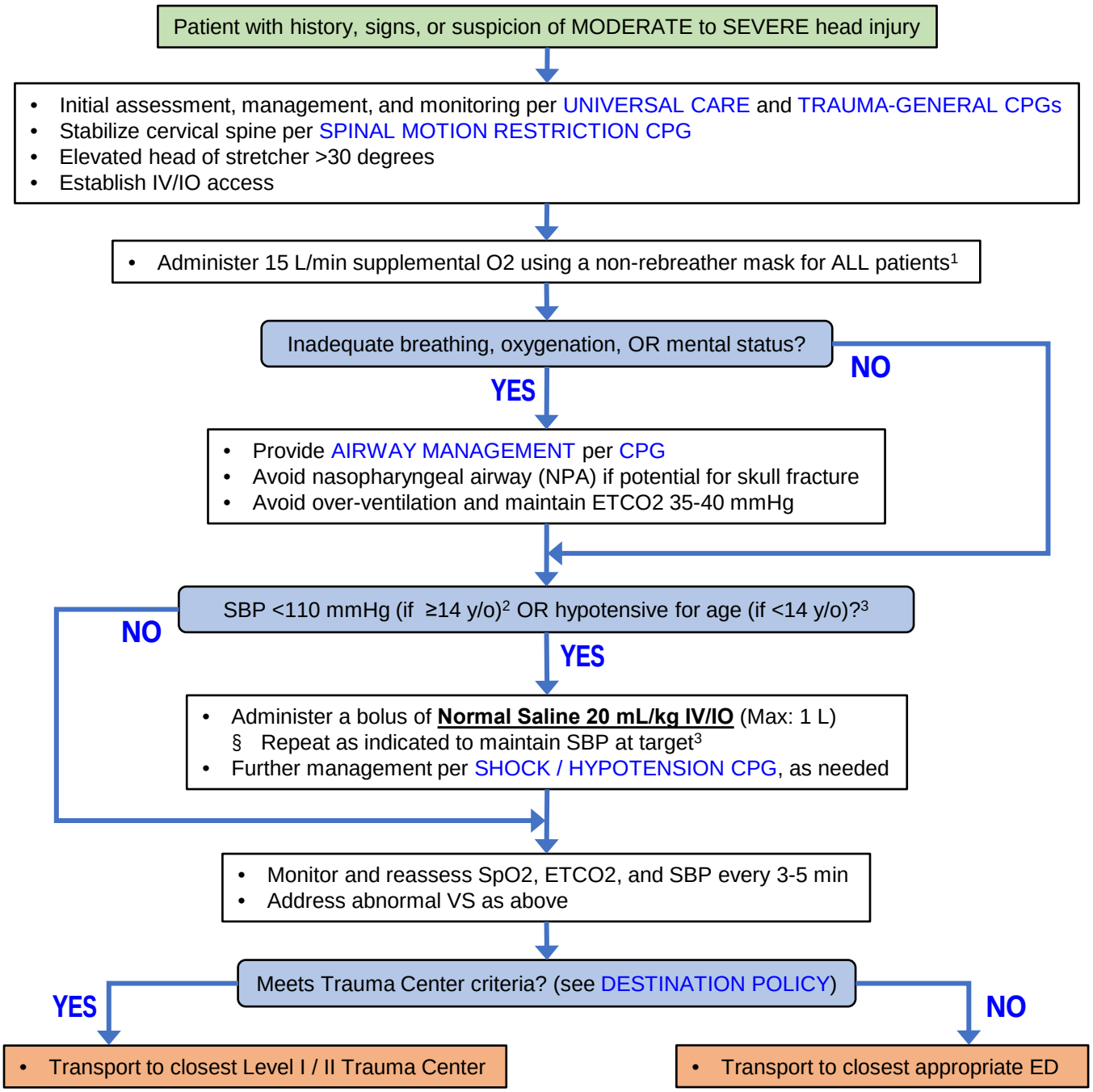
- Transport to closest appropriate ED

Special Considerations:

1. Tap water is an acceptable alternative fluid if **Normal Saline** or **Lactated Ringer's** is not available.

HEAD INJURY / TRAUMATIC BRAIN INJURY (ALL AGES)

Inclusion Criteria: All patients with history, signs, or suspicion of MODERATE to SEVERE head trauma based on concerning mechanism, altered mental status, loss of consciousness, neurological deficit, or seizures
Exclusion Criteria: Minor head injury without concerning features (as above)

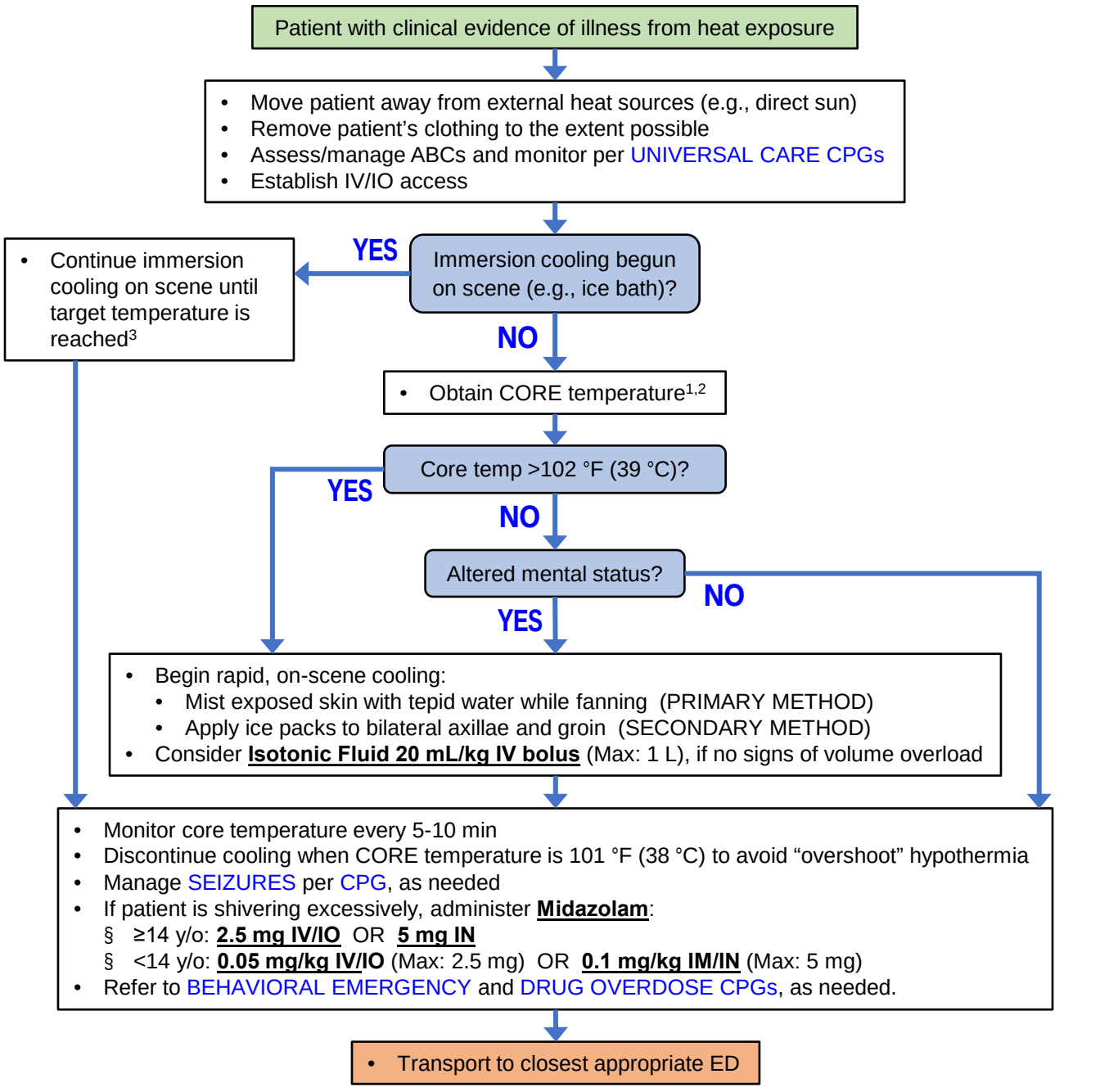


Special Considerations:

1. For patients with moderate to severe head injuries, EVEN BRIEF PERIODS of hypoxemia (SpO2 <94%) or hypotension should be avoided to reduce patient mortality.
2. For patients ≥14 y/o with head injury (WITH OR WITHOUT multisystem trauma), a systolic BP of 110 is the MINIMUM acceptable level. The highest systolic BP possible between 110-140 mmHg should be targeted.
3. For patients <14 y/o, determine the minimum normal SBP using the formula 70 mmHg + (age in years x 2)

HEAT EMERGENCY / HEAT STROKE / HYPERTHERMIA

Inclusion Criteria: Patients with signs and symptoms of illness related to environmental heat exposure
Exclusion Criteria: Patients with elevated temperature due to suspected infection (i.e., fever)



Special Considerations:

1. Core temperature is best assessed using a RECTAL temperature, if available. Otherwise, an ORAL temperature is the next best option.
2. A non-rectal temperature <102 °F in the setting of heat exposure and altered mental status does NOT rule out heat stroke/heat illness.
3. Rate of cooling from ice bath = 1 °C every 5 min (1 °F every 3 min)
4. The presence of sweating does NOT rule out heat stroke. However, DO consider other causes of ALTERED MENTAL STATUS in these patients.

HELMET AND SHOULDER PAD REMOVAL PROCEDURE

Inclusion Criteria: Patients of all ages wearing a sports helmet, motorcycle helmet, or other helmet (and/or shoulder pads) who require emergency medical care
Exclusion Criteria: Patients not wearing a helmet and/or shoulder pads

Special Considerations:

1. The National Athletic Trainers' Association (NATA) recommends that rescuers should remove a patient's helmet AND shoulder pads prior to transport when necessary for patient care.
2. Do not remove ONLY the helmet while leaving shoulder pads in place OR vice versa.
3. Screwdrivers are preferred to cutting tools for facemask removal to minimize neck motion.
4. Athletic trainers on-scene may assist BioTel EMS personnel with the procedure.
5. A minimum number of personnel is needed for safe equipment removal:
   - At least 2 for helmet removal
   - At least 4 for helmet & pads removal
   - A 'six-person lift' is the preferred method for transferring the patient to a stretcher.

PROCEDURE – HELMET REMOVAL

1. Prepare necessary equipment:
   - Screwdriver (manual or cordless)
   - Bandage shears
   - Cervical collar
   - Tongue blade (for helmets with removable ear/cheek pads)
2. **Rescuer 1** positions themselves behind the patient's head and maintains inline spinal stabilization with hands on each side of the helmet and fingers on patient's mandible (**Figure 1**).

Figure 1

Figure 2

Figure 3

3. **Rescuer 2** removes all screws securing the facemask to the helmet before removing the facemask (**Figures 2 & 3**).
   - If the screws or facemask cannot be removed and no cutting tool is available, go to step 4.
4. **Rescuer 2** uses a tongue blade to loosen the snaps and remove both ear/cheek pads, if present.
5. **Rescuer 2** then switches to provide inline stabilization of the spine by:
   - Cupping the patient's mandible with the fingers and thumb of one hand (**Figure 4**)
   - Sliding the second hand under the patient's neck and applying pressure to the occiput
   - Stating aloud "I have stabilization" to Rescuer 1 before proceeding to the next step

HELMET AND SHOULDER PAD REMOVAL PROCEDURE, cont.

PROCEDURE – HELMET REMOVAL, cont.

Figure 4

Figure 5

6. Rescuer 1 expands the helmet by pulling the ear holes laterally away from the patient's head, then slides the helmet off the patient's head (**Figure 5**).
   - For full-face helmets (e.g., motorcycle), Rescuer 1 may need to tilt the helmet backward to clear the nose
7. After removing the helmet, Rescuer 1 places their hands on either side of the patient's head with their palms over the patient's ears, maintaining inline spinal stabilization until a cervical collar is in place.
8. For patients with shoulder pads in place, place padding under the patient's head to maintain neutral spinal alignment until shoulder pads have been removed (see Procedure below).
9. If the patient complains of paresthesia or neck pain at any time during equipment removal, the procedure should be discontinued, and the patient should be immobilized and transported.

PROCEDURE – SHOULDER PAD REMOVAL

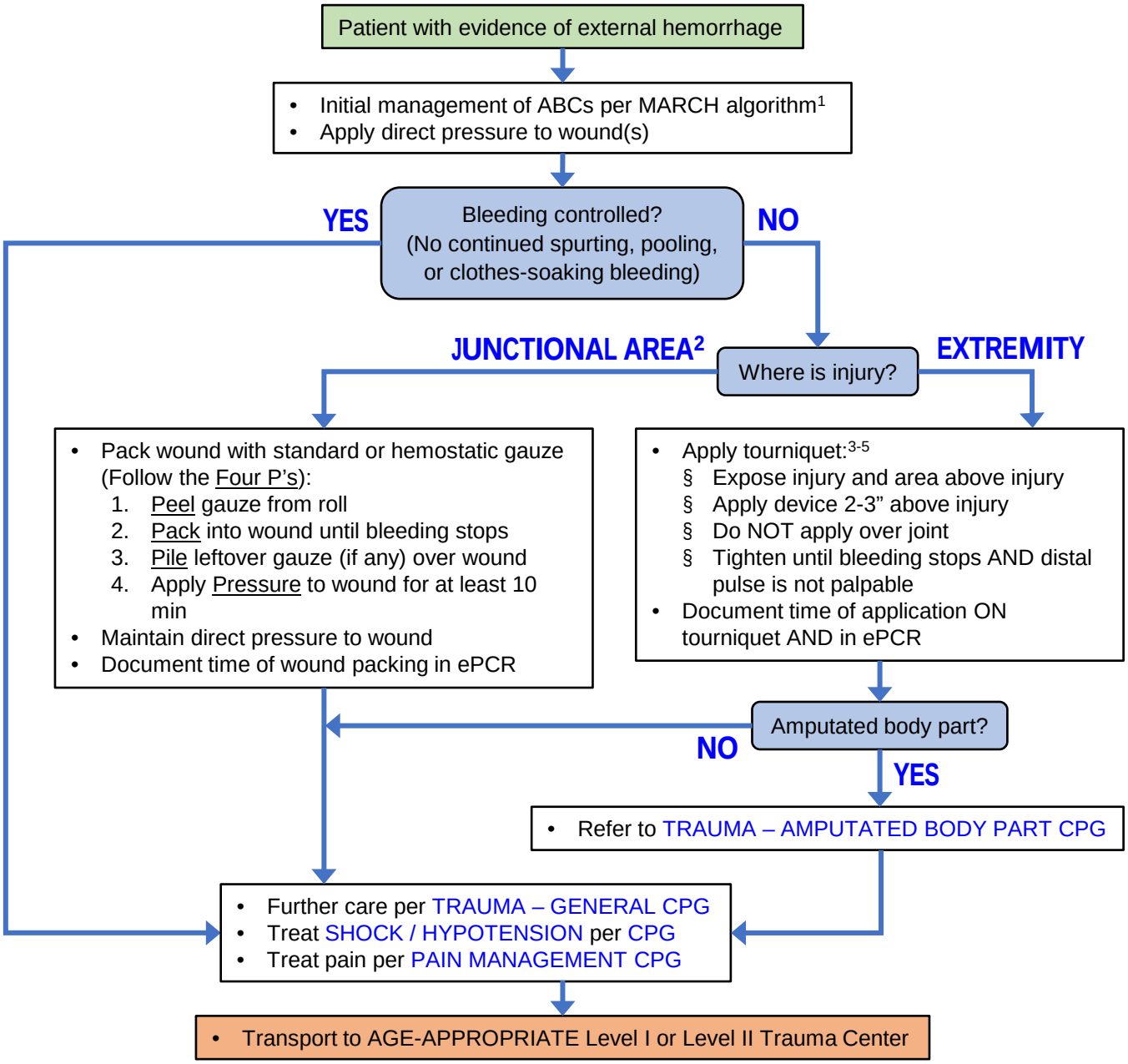
1. While **Rescuer 1 & 2** prepare the helmet for removal and maintain inline stabilization of the spine, **Rescuer 3** should cut the laces on the front of the shoulder pads.
2. **Rescuer 3** should remove the shoulder pads simultaneously with removal of the helmet by **Rescuer 1**, while **Rescuer 2** maintains inline stabilization of the spine (**Figure 6**)
3. **Rescuer 4** prevents neck flexion by sliding their hands under the patient's shoulders, starting by stabilizing the upper arms, then moving behind the patient's scapulae as pads are removed (**Figure 7**).

Figure 6

Figure 7

HEMORRHAGE / BLEEDING / TOURNIQUET USE (ALL AGES)

Inclusion Criteria: Adult and pediatric patients with evidence of external hemorrhage
Exclusion Criteria: No specific exclusions



Special Considerations:

1. Per TRAUMA – GENERAL CPG, assessment & management of traumatic injuries should use the MARCH algorithm: Massive external hemorrhage, Airway, Respiration, Circulation, Head injury/Hypothermia.
2. Junctional areas include: axilla (armpit), inguinal fold (crease of groin), perineum, and gluteal crease
3. Improvised tourniquets (e.g., belts) are not a suitable substitute for a medical tourniquet. If one is present, position a medical tourniquet proximal to the improvised tourniquet, loosen the improvised tourniquet, and then tighten the medical tourniquet as needed for uncontrolled bleeding.
4. If possible, do not apply a tourniquet over the clothes.
5. If a single tourniquet does not control the bleeding, adding a second tourniquet side-by-side to the first tourniquet should be considered.

HYPERKALEMIA (ALL AGES)

Inclusion Criteria: Patients of all ages with a condition and/or situation predisposing them to the presence of and complications from hyperkalemia (elevated potassium level)
Exclusion Criteria: No specific exclusions

Patient with condition predisposing to hyperkalemia[1]

- Assess/manage ABCs and initiate monitoring per age-appropriate UNIVERSAL CARE CPGs
- Acquire and interpret 12-lead ECG
- Establish IV/IO access (ideally a large-bore, antecubital IV for administering medications for hyperkalemia)

ECG changes suggesting hyperkalemia? [3]

NO → Transport to closest appropriate ED[6]

YES

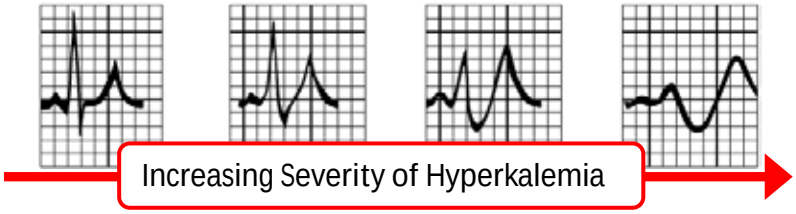
- Administer **Calcium chloride**
  - ≥14 y/o: **1 g slow IV/IO over 5-10 min**
  - <14 y/o: **20 mg/kg slow IV/IO over 5-10 min** (Max: 1 g)
- Consider **Albuterol 10 mg Nebulized**,[4] if no contraindication[5]

- Repeat 12-lead ECG 5 minutes after administration of **Calcium chloride** infusion
  - If ECG changes have not improved, administer ONE HALF of the prior dose of **Calcium chloride**
- Manage SHOCK / HYPOTENSION per CPGs
- Refer to BRADYCARDIA CPG, but recognize that transcutaneous pacing may be ineffective for hyperkalemic bradycardia
- Refer to CARDIAC ARREST – GENERAL CPG, as needed

→ Transport to closest appropriate ED[6]

Special Considerations:

1. Conditions predisposing to hyperkalemia:
   - Patients on dialysis, ESPECIALLY after missed sessions
   - Patients with end-stage renal disease (ESRD) or severe chronic kidney disease (CKD)
   - Patients with severe soft tissue crush injury, burns, or electrical injury, ESPECIALLY if >24 hours old
   - Patients with diabetic ketoacidosis (DKA) – see DIABETIC EMERGENCY CPG
2. ECG findings concerning for hyperkalemia:
   - Peaked T-waves
   - Widened QRS
   - Loss of P-waves
   - Bradycardia



Adapted from: Lewis, JL. (2022). Hyperkalemia. In Merck Manal Professional Version. Merck & Co., Inc.

4. The dose of **Albuterol** for hyperkalemia is equivalent to FOUR back-to-back **2.5 mg** breathing treatments.
5. Do NOT administer **Albuterol** to patients with significant tachycardia or likely ischemic chest pain.

INTRAOSSEOUS (IO) ACCESS PROCEDURE

Inclusion Criteria: Critically ill patients weighing ≥3 kg for whom peripheral IV access is unavailable, unsuccessful, or may result in treatment delay
Exclusion Criteria: Infants & neonates weighing <3 kg

CONTRAINDICATIONS

- Inability to locate anatomic landmarks
- Fracture of extremity
- Orthopedic surgery at selected site
- Prior IO in same extremity within last 24 hr
- Signs of infection at the insertion site
- Vascular compromise of extremity

EQUIPMENT

- Intraosseous driver
- Intraosseous needle
- Antiseptic swab
- 1-2x 10-mL **Normal Saline** flushes
- IV extension set (flushed & primed)
- IO needle stabilizer (or gauze & tape)
- Pre-filled **Lidocaine** syringe (OPTIONAL)

GENERAL PROCEDURE

1. Prepare necessary equipment (see above).
2. Select an appropriate insertion site[1] based on age and clinical situation, identify the site using anatomic landmarks,[2] and cleanse the site using antiseptic swab or solution.
3. Prepare the needle driver and appropriately sized IO needle.[3]
4. Stabilize the extremity to prevent extremity rotation during insertion.
5. Insert the needle BY HAND through the skin and soft tissue until the needle tip touches bone at a 90-degree angle to the bone.
   - When touching bone, AT LEAST 5mm of needle (1 black line) must be visible outside of the skin to confirm the correct needle size before drilling. If not visible, use a larger IO needle.
6. Drill the IO needle to the proper depth which is usually indicated by a sensation of 'pop' or 'give.'
7. Remove the stylet from the lumen of the IO needle and dispose of it in a sharps container.
8. Attach the IV extension set and a 10-mL **Normal Saline** flush to the IO. Aspirate a small amount of bone marrow to confirm IO placement, then flush **5-10 mL Normal Saline** to clear the needle.
9. IF TIME PERMITS for conscious patients, infuse **Lidocaine** into the IO needle **over 30 seconds** and let it dwell for 30 more seconds.
   - ≥14 y/o: **40 mg**
   - <14 y/o: **0.5 mg/kg** (Max: 40 mg)
10. If **Lidocaine** was infused, flush the needle again with **10 mL Normal Saline**.
11. Secure the IO needle and extension tubing using the IO needle stabilizer (or gauze & tape).
12. Establish a saline lock or begin a continuous fluid infusion as clinically indicated.[4]

Special Considerations:

1. Insertion Sites:
   - The humeral head is a preferred site for patients ≥14 y/o ONLY and is not allowed if <14 y/o.
   - The distal femur is a preferred site for ANY AGE, but ONLY if landmarks can be identified.
   - The proximal tibia may be used for patients of ANY AGE, but tibial IOs have lower rates of fluid flow and are more likely to fail than humeral head or distal femur sites.

INTRAOSSEOUS (IO) ACCESS PROCEDURE, cont.

Special Considerations (cont.):

2. Anatomic Landmarks:

Humeral Head (>14 y/o ONLY)

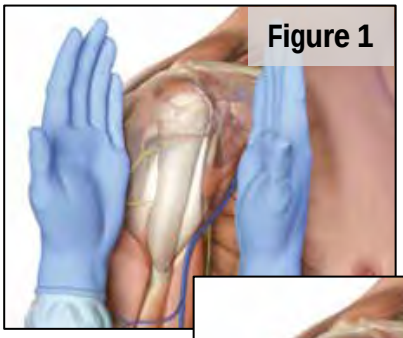
- Flex the patient's elbow at 90 degrees. Place their hand PALM DOWN over their abdomen.
- Place the ulnar aspect of one hand vertically over the axilla. Place the ulnar aspect of the opposite hand along the midline of the upper arm laterally **(Figure 1)**
- Place thumbs together over the arm and palpate deeply **(Figure 2)**, walk thumbs up the humerus to identify the prominent bony bulge (greater tubercle of the humerus) over the upper arm beneath the deltoid, "golf ball on a tee". (**Figure 3**).
- Insert the IO needle at this spot, aiming at a 45-degree angle toward the patient's feet.
- Avoid abducting/externally rotating or raising arm above 45º tor prevent dislodgement.

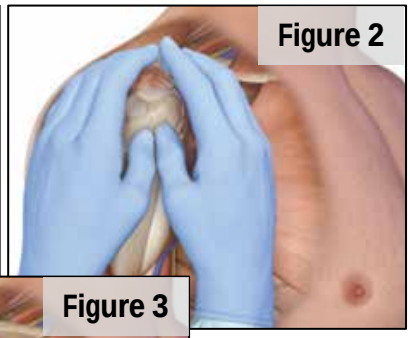
Distal Femur (ANY AGE)

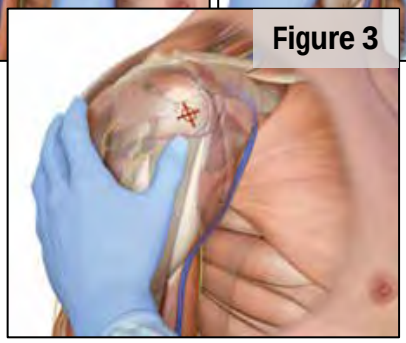
- Extend patient's leg and find a spot in the MIDLINE of the patient's thigh above the kneecap.
  - § 1 finger width above for small children, 2 finger widths above for large children or adults
- Ensure you are in the MIDLINE, especially if the leg is rotated!
- Insert the IO needle in this spot (**Figure 2**) at a 90-degree angle relative to the skin.

Anterior Tibia (ANY AGE)

- Identify the anteromedial part of the proximal tibia below the inferior patella (**Figure 3**).
- Measure 2 finger breadths below the patella on the flat portion of the tibia.
- Insert the IO needle at a 90-degree angle relative to this flat surface.







Figures 1-3 adapted from www.teleflex.com/ezioeducation;
Figure 4 adapted from Vinmec.com; Figure 5 adapted from epmonthly.com

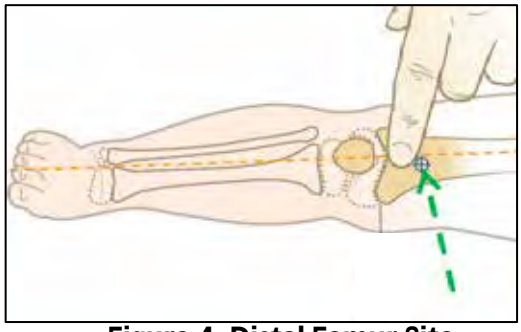


Figure 4. Distal Femur Site

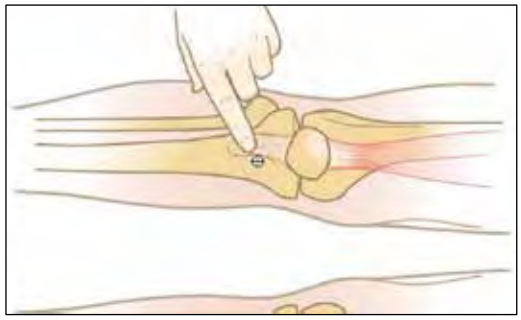


Figure 5. Proximal Tibia Site

3. Needle Size Selection by Age and Insertion Site

Color (needle length)	Pink (15 mm)	Blue (25 mm)	Yellow (45 mm)
Patient weight	<40 kg (<90 lbs)	≥40 kg (≥90 lbs)	≥40 kg (≥90 lbs)
Appropriate sites	• Tibial • Distal Femur	• Tibial • Distal Femur	• Humeral • Tibial (if excess tissue) • Distal Femur

4. Any medication administered by IO route should be followed by a flush of **10 mL Normal Saline**.

IV Medication Infusion Pump Procedure

(For Use Only by DFR Paramedics Approved by the DFR Medical Director)

Purpose: To provide guidance on the use of IV medication infusion (Sapphire) pumps and the documentation of infusions administered to patients.
Inclusion Criteria: Any patient requiring Epinephrine (Adrenalin), Norepinephrine (Levophed), or Magnesium Sulfate, or other medication infusions.
Exclusion Criteria: IV infusion pump unavailable; Medications not requiring infusion

1. Background
   - Patients experiencing hypotension, Torsade's de Pointes, severe asthmatic bronchospasm, or eclamptic seizures benefit from a steady dose/infusion of a medication. IV pumps are safer, and more accurate than gravity-based drip rates for potent IV medication delivery.
   - ***ONLY*** **those who have completed the approved DFR Office of The Medical Director Training may use the Sapphire Infusion pumps for medication administration.**
2. Administration
   - IV Pump Setup:
     - Mix desired medication concentration, place cassette into housing, and secure with lock door.
     - Prime tubing with either self-prime function or gravity.
     - Select new infusion, find correct drug, and cross check mixture with profile.
     - Confirm the six R's of medication delivery and begin infusion; titrate infusion per policy.
     - Recheck IV-line patency.
     - Monitor for line kinking and secure IV pump.
     - Alarm troubleshooting:
       - *Air-in-line:* Clean bubble detector, minimize shaking fluids/med, close clamps and remove cassette, disconnect line from patient and prime manually. If unsuccessful, replace cassette.
       - *Occlusion - Upstream/Downstream*: Close clamps, remove cassette, disconnect from patient, then prime manually. If unsuccessful, replace cassette.
   - If a pump malfunctions, stops working, or an issue with infusion flow and alarms occurs, *immediately stop the infusion via IV pump and begin using CPGs drip guide for infusion.*
   - Medications to be administered via IV pump
     - **Epinephrine** - 1 mg/ 250 mL given at 10-50 mcg/min, titrate by 5 mcg every 2-5 min
     - **Norepinephrine** - 4 mg/ 500 mL given at 10-50 mcg/min, titrate by 5 mcg every 2-5 min
     - **Magnesium Sulfate** - Refer to formulary page for disease specific dosing/concentration
3. Electronic Patient Care Record (ePCR) Documentation
   - Document use of the IV pump under the procedures tab.
   - After the Rescue crew has completed their chart, the EMS Field Supervisor must complete the additional questions under the IV Pump tab in the QA/QI tab.
   - Following prompts, complete the additional data questions including 780 call sign, drug administered, concentration, concentration volume, total volume infused.
   - Document any pump malfunction or issue in including a detailed description of the issues occurring during use of equipment.

Special Considerations:
1. **The EMS Field Supervisor, at their discretion, will ride in the Rescue or follow behind in their 780-response vehicle to the receiving hospital to retrieve the pump after patient handoff completed.**
2. Epinephrine/norepinephrine infusion limits & titration is liberalized for IV pumps vs. gravity drips.

LUCAS MECHANICAL COMPRESSION DEVICE PROCEDURE

Inclusion Criteria:
- **Non-traumatic** cardiac arrest (adult or appropriately-sized pediatric)
- Situations where high-quality manual CPR is impossible (e.g., confined space, high-angle, or technical rescues), or manual compressions increase risk to providers (highly-infectious disease)

Exclusion Criteria:
- Patient size prevents proper application or operation of device
- Scene factors likely requiring extended CPR pause for application[1]

- Maintain high quality chest compressions prior to placement
- **Do NOT apply until at least 15 min of manual CPR performed by DFR personnel**
- Ensure monitor/AED pads applied (ideally anterior-posterior position)
- Do not attempt LUCAS placement with less than 3 providers
- LUCAS device placement should not interrupt CPR for greater than 10 seconds.

PRE-APPLICATION TIME OUT

S-T-A-R-S	**S**IZE – Patient too big or too small **T**URN ON – Ensure device powers on and sufficient battery **A**BORT – Review with team when to stop application / resume manual CPR **R**OLES – Role assignments and ensure providers in position - Position providers (3) at patient's right and left shoulder and head **S**TRAP – No neck strap = NO application

TWO PHASE APPLICATION

IF UNABLE TO COMPLETE EITHER PHASE IN 10 SECONDS - ABORT APPLICATION
****At 8 sec prepare to ABORT and resume manual compressions for a full 2-minute cycle**

PHASE 1	1. After full 2-minute CPR cycle, pause CPR for rhythm check, manage rhythm 2. ****BEGIN VERBAL 10 SECOND COUNTDOWN**** 3. Each provider lifts patient by respective shoulder 4. Provider at head places back plate and ensures attachment points are visible 5. ****RESUME MANUAL CPR****
PHASE 2	1. After full 2-minute CPR cycle, pause CPR for rhythm check, manage rhythm 2. ****BEGIN VERBAL 10 SECOND COUNTDOWN**** 3. Pull both release rings once to open claw locks 4. Click one arm to back plate 5. While maintaining manual CPR as long as possible, connect other arm to back plate. 6. ADJUST/push suction cup down until touches chest, verify lower edge of cup is immediately above the end of the sternum (see next page for diagrams) 7. Push PAUSE to lock start position 8. Push ACTIVE to start compressions – Continuous mode only

POST-APPLICATION

- PAUSE device for appropriate rhythm +/- pulse check every 2 minutes;
- Apply neck and wrist straps
- Mark appropriate suction cup position on chest with a permanent marker/pen
- LUCAS "Overwatch" - Assign one provider to keep a hand on the device and monitor for device migration (Walk) and to operate device.

LUCAS MECHANICAL COMPRESSION DEVICE PROCEDURE, cont.

POST-APPLICATION *(Continued)*

If migration occurs adjust device keeping pauses <10 sec

- If minor migration, wait until the next 2 min rhythm check
- If significant migration/malposition, pause device and immediately correct

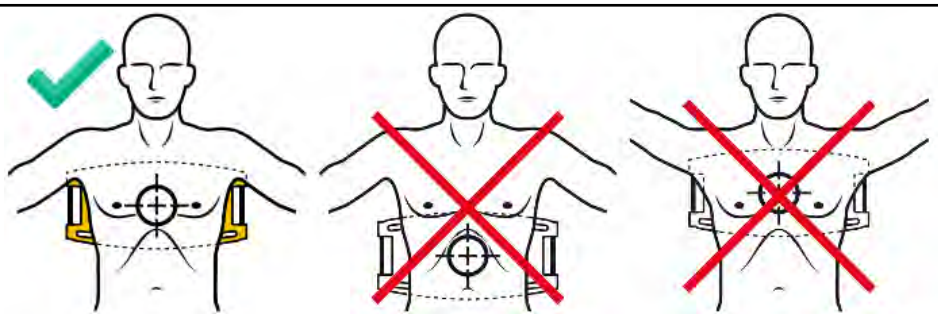
3 Strike Rule – If device requires adjustment THREE times during its use, pause and discontinue LUCAS and resume manual CPR

- If compression depth is clearly compromised, attempt to lower suction cup further. If depth does not improve, pause and remove LUCAS device and resume manual CPR.
- Confirm that femoral pulse (if palpable) and ETCO2 are at least as good after LUCAS application as they were with manual CPR.
- If sustained ROSC achieved, retract suction cup to allow for full chest excursion and tidal volume during ventilations.

Special Considerations:

- **Rigorous research studies have shown no difference in cardiac arrest survival between manual CPR and mechanical compression devices like the LUCAS. High quality CPR and early defibrillation remain the cornerstones of effective CPR care. The LUCAS device is only an aid and should not interfere with these priorities.**
- Device migration/walk is the most detrimental complication due to inappropriate depth/location of compressions and is most likely to occur during patient movement/ transport or defibrillation. This must be immediately identified and corrected if it occurs.
- 90% of survivors from cardiac arrest achieve ROSC in the first 15 minutes. This period is the most critical for survival and interruptions in CPR must be minimized.
- After rhythm checks, resume mechanical compressions and perform defibrillation, if indicated, without stopping compressions.
- Use care during LUCAS placement to not externally rotate shoulder if humeral head IO in place
- Do NOT attempt to lift the patient or the device by the arm straps.
- LUCAS may be used on pregnant patients if appropriately sized. If 3rd trimester, maintain continuous leftward uterine displacement.

[1] Too large: Unable to lock upper part of device to the back plate without compressing chest. Too Small: Device alerts with 3 fast signals when lowering suction cup and active mode does not start.



MEDICATION ADMINISTRATION CROSS-CHECK (MACC) PROCEDURE

Purpose: To outline a standardized process for verifying medications for BioTel EMS personnel
Inclusion Criteria: All patients who are administered medications by BioTel EMS personnel
Exclusion Criteria: No specific exclusions

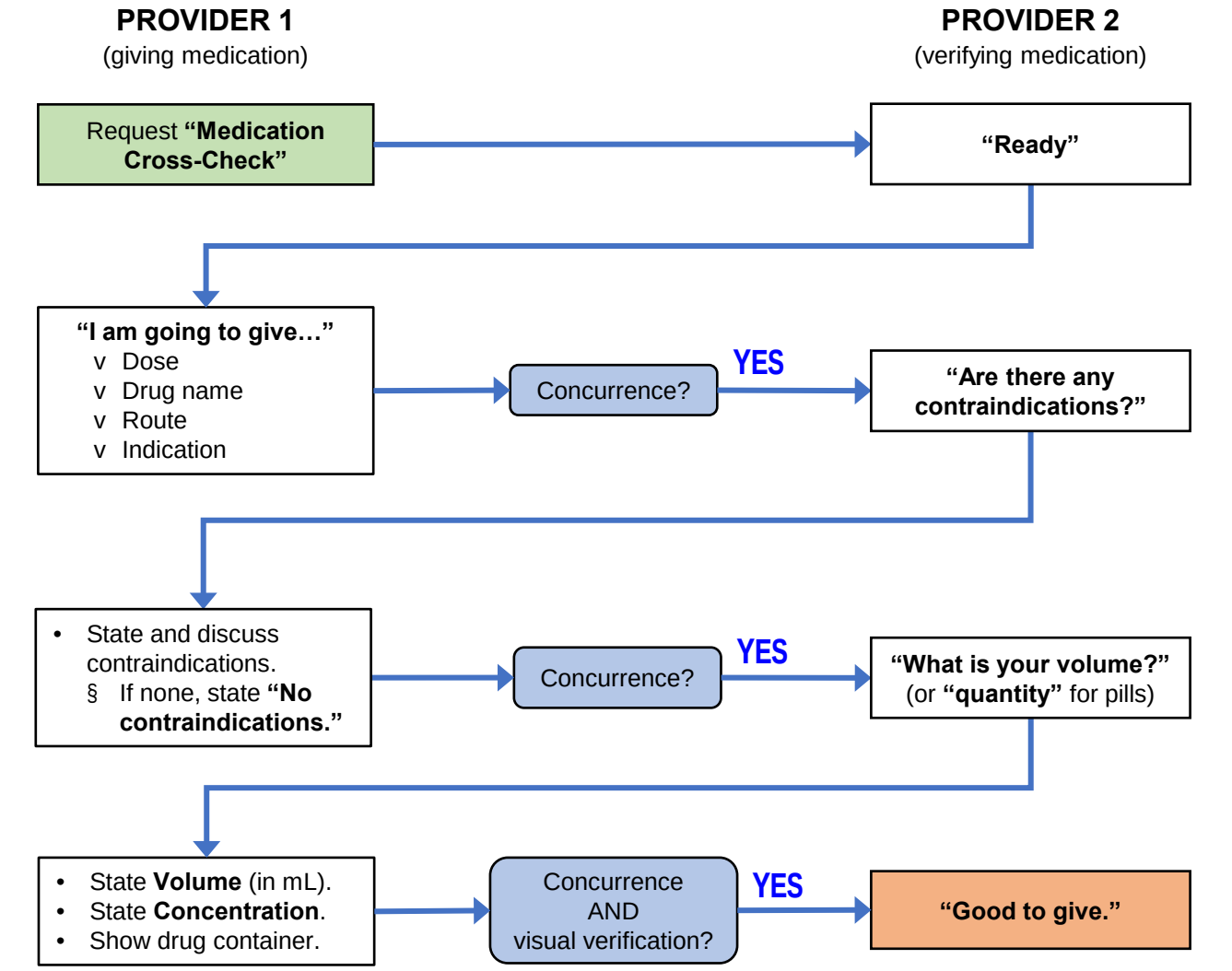
I. Background
   A. Safe, out-of-hospital medication use depends on verifying multiple details about a medication prior to administering it to a patient. Remember the “5 Rights”:
      1. Right Patient
      2. Right Drug
      3. Right Dose
      4. Right Route
      5. Right Time
   B. Several factors increase the complexity of EMS medication use and increase the risk of errors:
      1. Some EMS medications have similar names but different effects (e.g., adenosine & amiodarone).
      2. The same medication may vary in concentration between two different vials.
      3. At times, limited availability of a medication may require substitution with a less familiar medication.
      4. Some medications may require dilution or administration by a different route for patients of different age groups.

II. Overview
   A. The BioTel Medication Administration Cross-Check (MACC) is a TWO-PERSON communication tool used to standardize the medication verification process and reduce the risk of medication errors.
      1. Provider 1 is the paramedic administering the medication.
      2. Provider 2 can be a 2nd paramedic or an EMT.
   B. The MACC should be used for EVERY out-of-hospital medication administration unless extenuating circumstances apply. Use should be documented in the electronic patient care record (ePCR).
   C. EMS personnel must ALWAYS be able to visualize the vial, bottle, or ampule from which the contents of a syringe were immediately drawn.
   D. For PEDIATRIC patients, refer to the BioTel PEDI-Guide for medication dilution and/or dose reduction guidance.

III. Procedure
   A. Refer to the flowchart on the next page.

MEDICATION ADMINISTRATION CROSS-CHECK (MACC) PROCEDURE, cont.

RED RULE of Medication Administration: A Duty to Avoid Causing Unjustifiable Harm



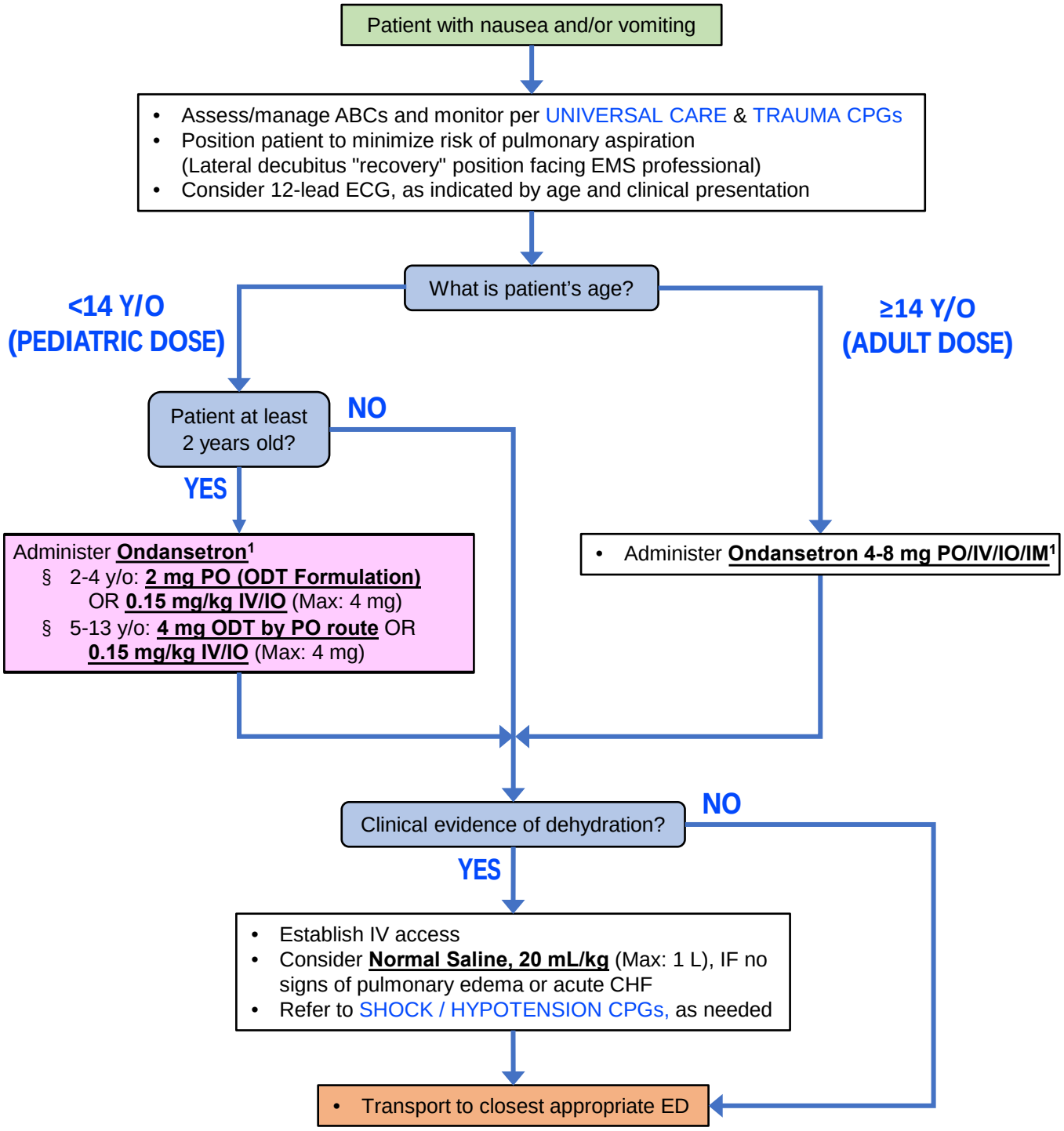
Special Considerations:

1. Contraindications include:
   - Patient clinical findings or vital signs incompatible with medication (refer to FORMULARY drug sheets)
   - Known patient allergy
   - Expired medication
2. If Provider 1 and Provider 2 do NOT concur at any point, the discrepancy must be resolved before continuing the cross-check.
3. Provider 2 AUTHORIZES medication administration. Provider 1 PERFORMS medication administration.
4. The MACC should be completed before administration of ANY medication, especially when using unfamiliar medication concentrations, diluted doses, or pediatric doses.
5. Avoid ambiguous statements such as **"OKAY"** during the MACC.

(Adapted from: Wichita-Sedgwick County EMS System 2012)

NAUSEA AND VOMITING (ALL AGES)

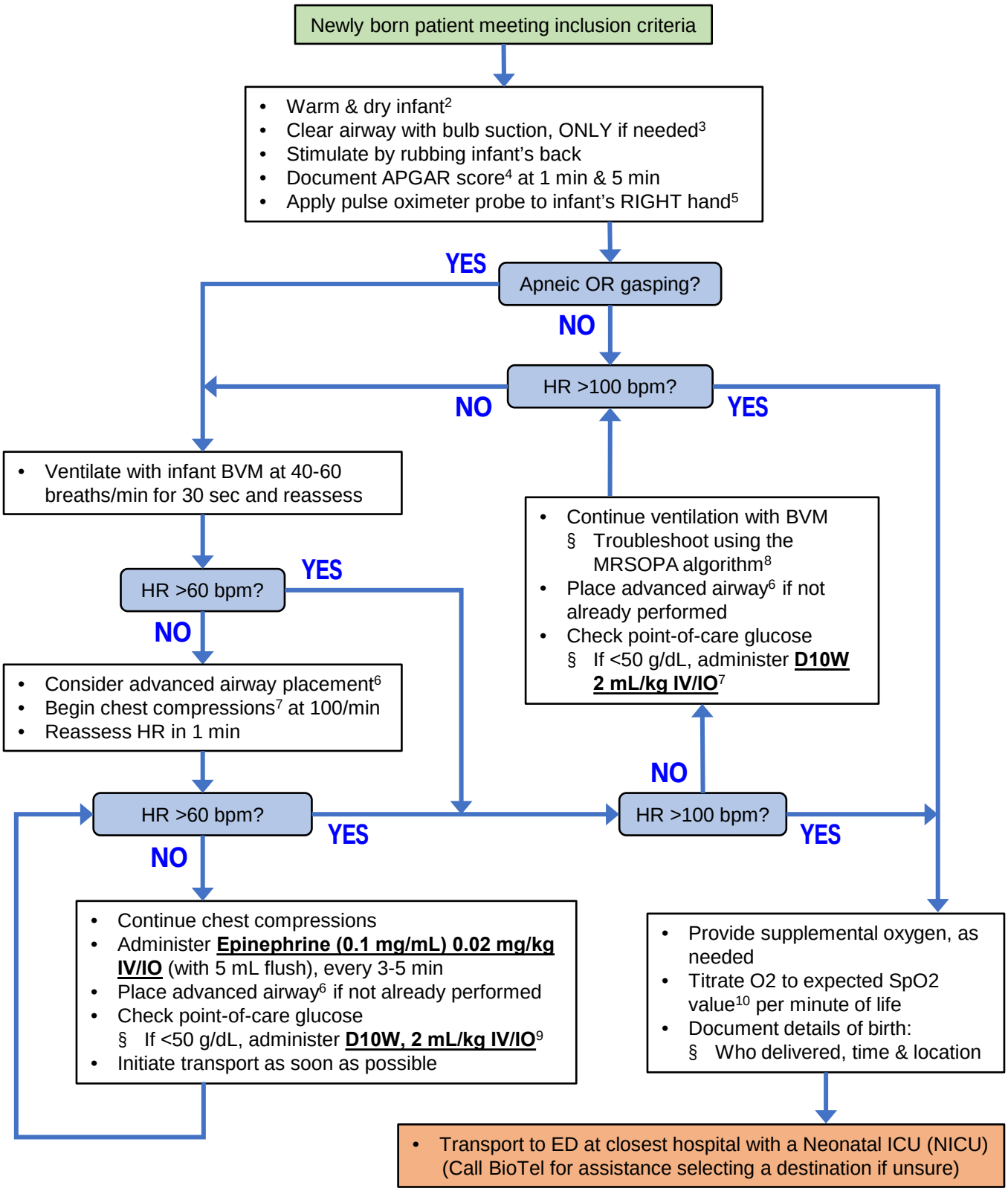
Inclusion Criteria: Patients with nausea and/or recent or active vomiting
Exclusion Criteria: No specific exclusions



Special Considerations:
1. If an ECG has been performed (as indicated by another CPG) and shows QTC prolongation >500 ms, do NOT administer **Ondansetron**.

NEWBORN CARE

Inclusion Criteria: All term and preterm infants who have just been delivered ("newly born") outside of or prior to arrival at a hospital and who are encountered by EMS personnel.
Exclusion Criteria: Infants who are not newly born; stillborn infants below the age of viability[1]



NEWBORN CARE, cont.

Special Considerations:

1. Infants born <20 weeks of estimated gestational age are not viable. WHEN IN DOUBT OF GESTATIONAL AGE OR VIABILITY, full resuscitation should be performed!
2. Warming and drying an infant:
   - Vigorous term infant: Dry the infant, place them skin-to-skin on mother's chest/abdomen, then cover them with a blanket
   - Preterm infant: If available, place the infant in a polyethylene bag (e.g., 1-gallon zip food storage bag) up to the level of the neck
3. Routine airway suctioning for EVERY newly born patient is no longer recommended, even if the amniotic fluid is meconium-stained. Suction the patient's airway only if indicated by abnormal respirations.
4. APGAR Score

Sign	0 Points	1 Point	2 Points
Appearance (skin color)	Blue, pale	Body pink, extremities blue	Completely pink
Pulse Rate (heart rate)	Absent	Less than 100 bpm	Greater than 100 bpm
Grimace (irritability)	No response	Grimaces	Cough, sneeze or cry
Activity (muscle tone)	Limp	Some flexion	Active motion
Respirations (respiratory effort)	Absent	Slow, irregular	Good, crying

5. A pulse oximetry reading in the RIGHT hand measures upstream of the ductus arteriosus (pre-ductal) and is best for guiding supplemental O2 therapy in a neonate.
6. Advanced airway management for newly born infants:
   - Bradycardia in newly born infants is most commonly caused by inadequate ventilation. Early placement of an advanced airway often significantly improves the ability to ventilate a newly born infant.
   - Advanced airway management may be performed using an Endotracheal Tube (ETT) or Supraglottic Airway (i-gel)
   - Select appropriately sized device:
     - Supraglottic airway: A Size 1 i-gel is usually appropriate for newly born infants weighing <5 kg
     - Endotracheal tube for TERM infant: 3.0 - 3.5 UNCUFFED
     - Endotracheal tube for PREMATURE infant: 2.5 - 3.0 UNCUFFED
     - Confirm airway device placement using waveform capnography (ETCO2). This is MANDATORY.
   - Assess response to intubation based on evaluation of HR, RR, and SpO2
   - Use ONLY enough pressure to move the chest while performing ventilation with an INFANT-sized BVM to limit the risk of causing a pneumothorax.
7. For chest compressions, encircle the chest with 2 hands and compress over the sternum with both thumbs.
8. MRSOPA Algorithm – for troubleshooting neonatal ventilation
   - Mask – check seal
   - Reposition – adjust neck into sniffing position
   - Suction – mouth, then nose
   - Open the mouth
   - Pressure – GENTLY increase the amount of pressure used for bag mask ventilation
   - Advanced airway – follow guidance for SGA placement or intubation
9. If POC glucose is <50 g/dL AND unable to establish IV/IO access, **Glucose Gel 5 mL PO** can be massaged into the infant's cheek, BUT DO NOT delay or compromise airway placement or ventilation.
10. Expected Oxygen Saturation (SpO2) Goals per Minute of Life

Time	Oxygen Saturation (SpO_2) Goal
1 minute	60-65%
2 minutes	65-70%
3 minutes	70-75%
4 minutes	75-80%
5 minutes	80-85%
10 minutes	85-95%

NON-INVASIVE POSITIVE PRESSURE VENTILATION (NIPPV, or "CPAP") PROCEDURE

Inclusion Criteria: NIPPV should be CONSIDERED for any patient with severe respiratory distress or inadequate ventilation who is still conscious.
Exclusion Criteria: Patients with faces too small for the NIPPV mask to seal; Patients with any of the contraindications below.

INDICATIONS

Consider NIPPV (CPAP) EARLY for a CONSCIOUS patient with any of the following:
- Respiratory distress not improved with supplemental oxygen by non-rebreather mask
- Hypoxemia (SpO2 <94%) not improved with supplemental oxygen by non-rebreather mask

CONTRAINDICATIONS

- Decreased level of consciousness (GCS <11), agitated, or otherwise uncooperative
- Inability protect airway or clear secretions (e.g., active vomiting, significant oral bleeding)
- Hemodynamic instability (SBP <90 mmHg in adults, or SBP below normal for age)
- Facial deformities (e.g., trauma, congenital abnormality, recent facial surgery)
- Suspected or confirmed pneumothorax
- Tracheostomy
- Apnea or agonal respirations

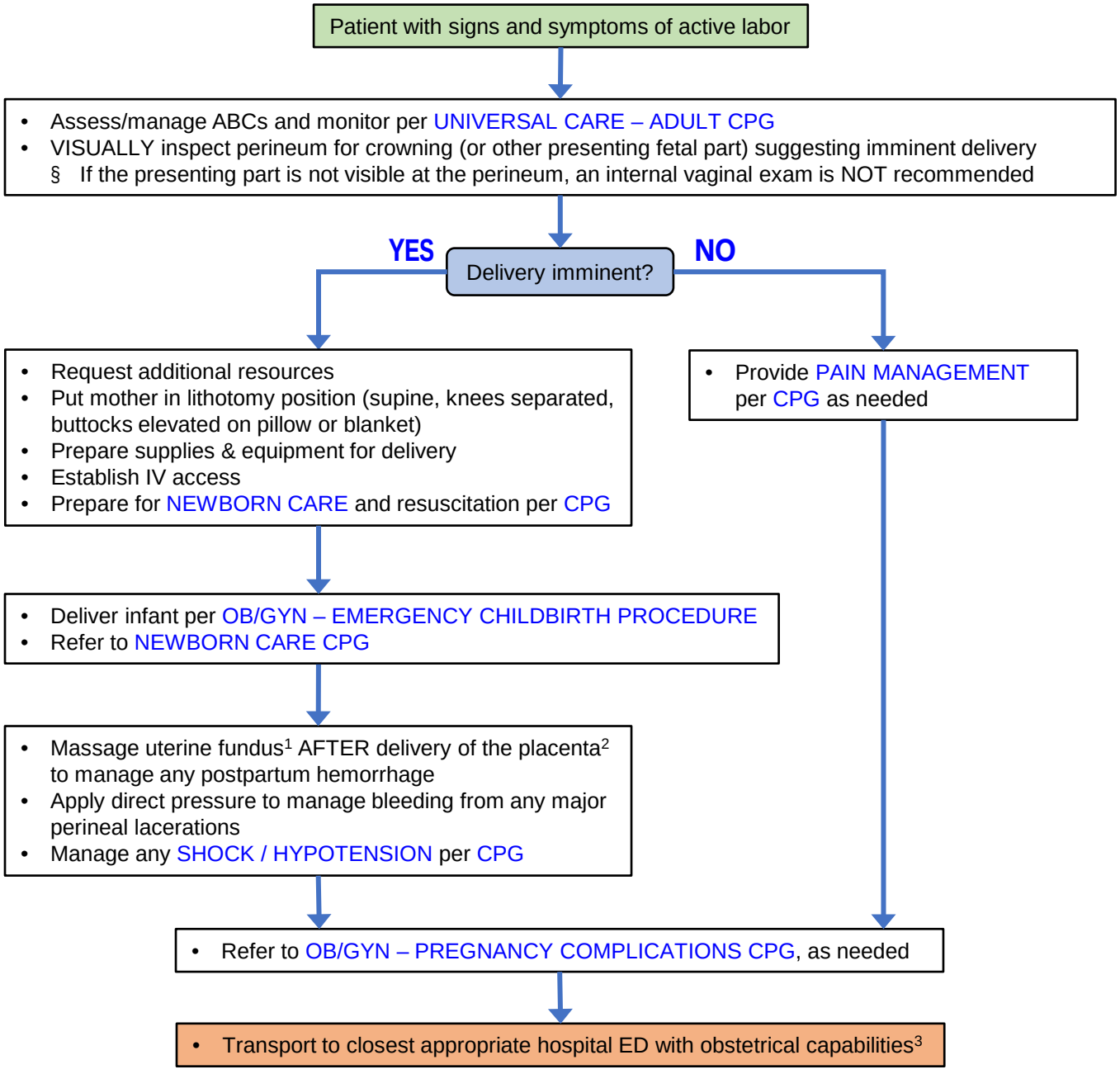
GENERAL PROCEDURE

1. Ask if patient has used NIPPV (CPAP) mask before. If not, explain the procedure to the patient and provide coaching throughout use to keep mask in place.
2. Ensure ongoing monitoring of ECG, SpO2, and ESPECIALLY waveform capnography (ETCO2)
3. Place the patient in an upright, seated position.
4. Prepare NIPPV (CPAP) device and connect it to 100% oxygen.
5. Prepare suction equipment.
6. Place the mask over the patient's nose and mouth, then secure it by tightening the straps (starting with the lower straps first).
7. Assess for leaks and adjust straps, as needed.
8. Set airway pressure (CPAP) at 5 cmH2O.
9. Monitor, reassess, and DOCUMENT patient's response to treatment EVERY 5 minutes.
10. If the patient tolerates NIPPV but their respiratory status does not improve, airway pressure (CPAP) may be increased in increments of 2-3 cmH2O (max 15 cmH2O).
11. If the patient's respiratory status deteriorates (or does not improve within 10 min), remove the device and assist ventilations with a bag-valve mask (BVM). Escalate to supraglottic airway (SGA) or endotracheal tube as needed (see ADVANCED AIRWAY DEVICE PROCEDURE).
12. Contact BioTel OR receiving hospital to alert them that the patient requires NIPPV equipment.
13. After ED arrival, do NOT remove the NIPPV mask until the hospital's equipment is ready.
    - DO connect NIPPV equipment to a wall source (from the portable tank) as soon as able.

Special Considerations:
- Extra caution should be used for patients younger than 5 y/o who may have more difficulty tolerating discomfort from the NIPPV mask and procedure.
- NIPPV does NOT violate a patient's OUT-OF-HOSPITAL DO NOT RESUSCITATE ORDER.

OB/GYN – ACTIVE LABOR

Inclusion Criteria: All pregnant women in active labor (having frequent, regular, and painful uterine contractions along with the urge to push
Exclusion Criteria: Pregnant women with emergencies not involving active labor (see OB/GYN – PREGNANCY COMPLICATIONS CPG)



Special Considerations:
1. The fundus is the UPPER part of the uterus near the umbilicus. Massage of the suprapubic area will NOT help with delivery of the placenta or management of postpartum hemorrhage.
2. The placenta usually delivers spontaneously about 30 min after delivery of the infant. Do NOT pull on the umbilical cord to speed up the process.
3. If possible, patients should preferentially be transported to the hospital where they intended to deliver.

OB-GYN – EMERGENCY CHILDBIRTH PROCEDURE

Inclusion Criteria: Pregnant women in active labor with a fetal part (e.g., head, extremity, buttocks) presenting at the vaginal opening, which indicates imminent delivery.
Exclusion Criteria: Pregnant women (including those in labor) without signs of IMMINENT delivery.

IDENTIFICATION OF PRESENTING PART

- If HEAD is presenting part, proceed to **NORMAL CHILDBIRTH**
- If UMBILICAL CORD is presenting part, proceed to **UMBILICAL CORD PROLAPSE**
- If BUTTOCKS is presenting part, proceed to **BREECH CHILDBIRTH**
- If presenting part is a LEG or ARM, transport immediately to an ED with obstetrical capabilities.

PROCEDURE – NORMAL CHILDBIRTH

1. Prepare obstetrical kit / supplies
2. Put the patient in lithotomy position (supine, knees separated, feet & legs above hips, buttocks elevated on pillow or blanket) and place biohazard bag under her buttocks. See **Figure 1**.
3. During contractions, encourage the patient to push.
4. Use a towel to support the mother's perineum during delivery.
5. Support and deliver the emerging infant's head.
6. As the head emerges, check for a nuchal cord (cord around neck). If present slip it over the head.
   - If the cord is too tight to slip over the head, refer to **NUCHAL CORD MANAGEMENT** below.
7. Deliver the infant's shoulders, first by applying gentle downward pressure to deliver the anterior shoulder, then by applying gentle upward pressure to delivery the posterior shoulder.
   - If the anterior shoulder does not deliver, refer to the **SHOULDER DYSTOCIA** section below.
8. Continue with delivery of the infant's body.
9. Perform assessment and interventions for infant per NEWBORN CARE CPG.
10. Place the newborn infant on the mother's abdomen, skin to skin.
11. After 1 minute, double clamp the umbilical cord (2 inches apart) about 6 inches from the infant's abdomen and cut between the clamps (see **Figure 2**). Leave BOTH clamps IN PLACE.
12. Record the time and county of birth to later be used on the birth certificate.
13. Refer to the OB/GYN – ACTIVE LABOR CPG for additional postpartum guidance.

Figure 1. Dorsal Lithotomy Position

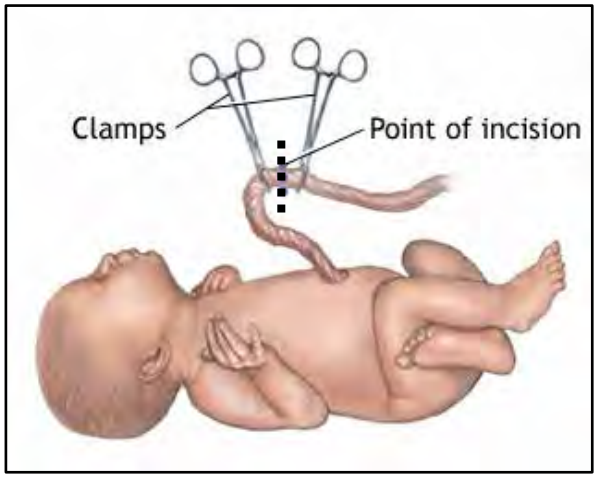


Figure 2. Double Clamp and Cut Cord
(Adapted from: medlineplus.gov ADAM Encyclopedia)

OB-GYN – EMERGENCY CHILDBIRTH PROCEDURE, cont.

PROCEDURE – NUCHAL CORD MANAGEMENT

1. Follow Steps 1-6 under NORMAL CHILDBIRTH, as above
2. If unable to slip cord over the infant's head, double clamp the cord (2 inches apart) and carefully cut the cord between the clamps.
3. Proceed with delivery promptly (per Steps 7-13 above).

PROCEDURE – SHOULDER DYSTOCIA MANAGEMENT

1. Follow Steps 1-7 under NORMAL CHILDBIRTH, as above
2. If the anterior shoulder will not delivery, flex the mother's hips, keep the legs spread, and bring the mother's knees to her chest. This is called the McRoberts Maneuver (**Figure 3**).
3. Apply steady SUPRAPUBIC pressure (**Figure 3**) to mother's abdomen to try to dislodge the infant's impacted shoulder. Do NOT apply FUNDAL pressure (**Figure 4**).
4. DO NOT place excessive traction on the infant's head or neck to attempt to deliver the shoulder.
5. If unsuccessful, initiate immediate transport to the nearest hospital with obstetrical capabilities.

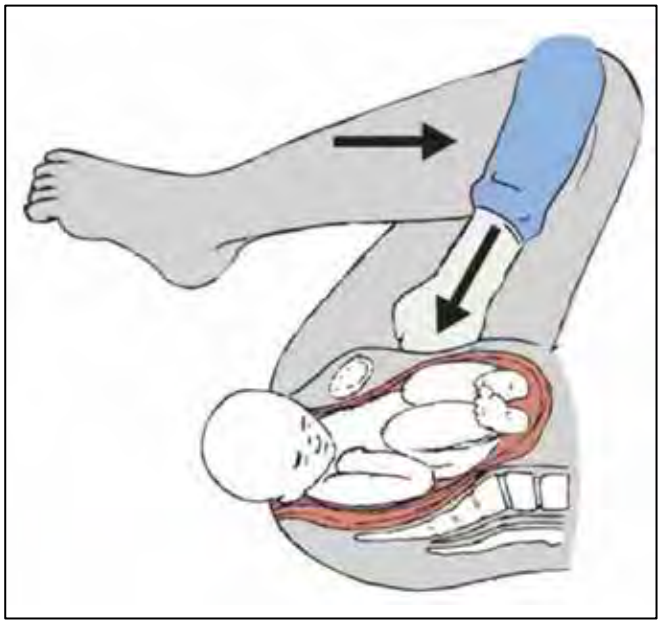


Figure 3. The McRoberts Maneuver: Hyperflexion of Hips & SUPRAPUBIC Pressure
(Adapted from: teachmeobgyn.com)

Figure 4. Do NOT apply FUNDAL Pressure for Shoulder Dystocia
(Adapted from: Advances in Labour and Risk Management, 4th Ed. Manual)

PROCEDURE – UMBILICAL CORD PROLAPSE

1. Do NOT attempt to push the umbilical cord back into the uterus.
2. Avoid delivery if possible. Encourage patient NOT to push.
3. Place the mother in Trendelenburg position (head of bed down, legs up).
4. Place a sterile, gloved hand into the vagina and use 2 fingers to apply pressure to the presenting part (e.g., head, limb, buttocks) to relieve compression of the umbilical cord (**Figure 5**).
5. Leave this hand in place until relieved by hospital staff.
6. Initiate immediate transport to the closest ED with obstetrical capabilities.

OB-GYN – EMERGENCY CHILDBIRTH PROCEDURE, cont.

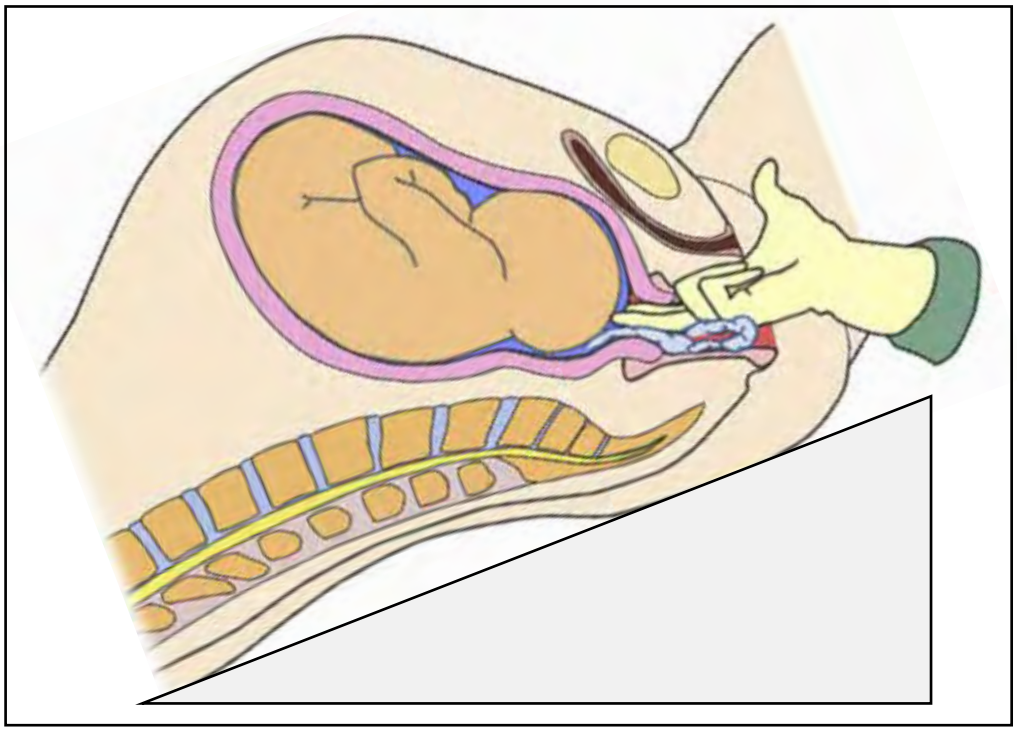


Figure 5. Elevating Presenting Part (Fetal Head) off the Umbilical Cord with Mother in Trendelenburg Position
(Adapted from: Wong L, et al. Am J Obstet Gynecol. 2021;225(4):357-366.)

PROCEDURE – BREECH CHILDBIRTH

****NOTE: Breech deliveries carry a VERY HIGH risk of complications. AVOID DELIVERY WHENEVER POSSIBLE and initiate transport to a hospital with obstetric capability instead of attempting delivery.****

1. Identify the presenting part **(Figure 6**):
   - If the BUTTOCKS is the presenting part AND delivery is UNAVOIDABLE, proceed to Step 2.
   - If a LEG or ARM is the presenting part, DO NOT attempt delivery, DO NOT proceed to Steps 2-10. Initiate IMMEDIATE transport to a hospital with obstetric capability.
2. Prepare obstetrical kit / supplies
3. Put mother in lithotomy position (supine, knees separated, feet & legs above hips, buttocks elevated on pillow or blanket) per **Figure 1**.
4. Allow UNASSISTED delivery of the buttocks until the infant's umbilicus is at the vaginal opening.
   - Do NOT pull on the infant at any point during delivery.
   - If you are committed to delivery, DO encourage mother to push along with contractions.
5. After delivery of the buttocks, support the body with your non-dominant hand to avoid excessive traction on the infant's neck.

(Continued on the next page)

OB-GYN – EMERGENCY CHILDBIRTH PROCEDURE, cont.

PROCEDURE – BREECH CHILDBIRTH (cont.)

7. If a leg does not spontaneously deliver, flex (bend) the knee and rotate the hip outward to assist in extracting the leg from the vagina. Repeat the process for the other leg if necessary.
8. At this point, GENTLY attempt to rotate the infant so the spine is facing up (toward mother's abdomen) and continue to support the infant as delivery continues.
9. Once the scapulae (shoulder blades) are visible, it may be necessary to flex (bend) the infant's elbows to extract the arms.
10. After the shoulders are delivered, rotate the fetal head away from the maternal pubic symphysis.
11. If the infant's head fails to spontaneously deliver within 30 seconds:
    - Place a sterile, gloved hand into the vagina (**Figure 7**).
    - Place your index and ring fingers (in the shape of a 'V') on the infant's cheeks below its eyes and flex its neck by tilting the chin toward the chest (see inset of **Figure 7**).
    - Use the back of the same gloved hand to create separation between the infant's face and the vaginal wall to keep the infant's airway open.
    - Use your other hand to apply firm SUPRAPUBIC (not fundal) pressure to mother's abdomen.
    - If head does not deliver within 3 minutes, IMMEDIATELY initiate transport to the closest ED with obstetrical capabilities while maintaining your hand position.
10. Once the head has delivered, follow Steps 10-13 under the **NORMAL CHILDBIRTH** section above.

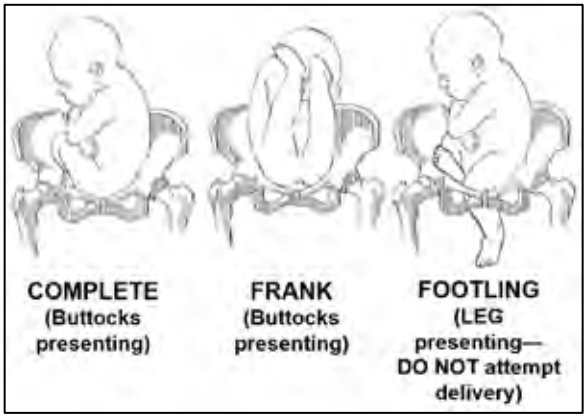


Figure 6. Types of Breech Presentation
(Adapted from: Medecins Sans Frontieres medical guidelines, https://medicalguidelines.msf.org)

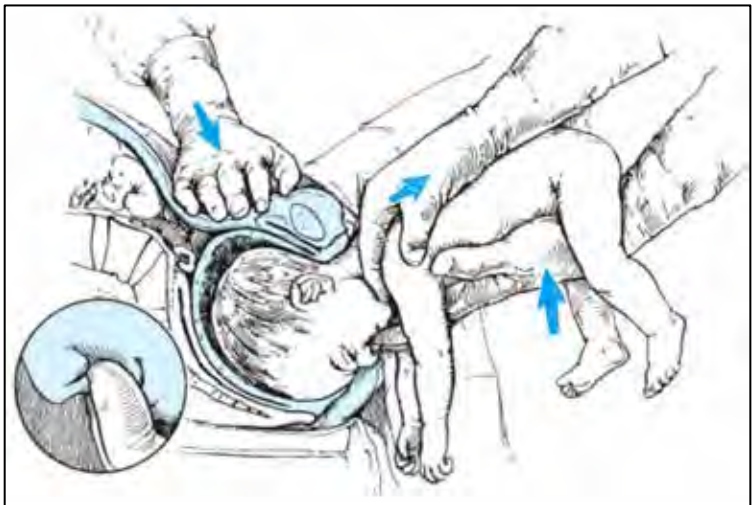


Figure 7. Maneuver to Deliver Fetal Head in Breech
(Adapted from: Cunningham FG et al. Breech Presentation and Delivery. Williams Obstetrics, 22nd ed. 2005.)

Special Considerations:

- Call BioTel for assistance or medical control physician guidance at any time!

OB/GYN – PREGNANCY COMPLICATIONS

Inclusion Criteria: Pregnant patients with a potentially VIABLE[1] pregnancy, post-partum patients up to 6 weeks, or patients with a potential miscarriage / abortion.
Exclusion Criteria: Female patients who have not reached puberty

Pregnant (or postpartum) patient meeting inclusion criteria

- Assess / Manage ABCs and monitor per UNIVERSAL CARE CPGs[3]

What is the nature of the emergency?

MISCARRIAGE / ABORTION / PREMATURE DELIVERY

Is fetus pulseless and apneic?
- **YES** → Is fetus of viable[1] age or POTENTIALLY viable[2]?
  - **NO** →
    - Do NOT initiate resuscitation
    - Wrap fetal remains in clean blanket/towel
    - Place other uterine contents in a biohazard bag
    - Transport everything to the hospital.[4]
  - **YES** →
    - Resuscitate infant per NEWBORN CARE CPG
    - Manage mother per pathway below
- **NO** →
  - Resuscitate infant per NEWBORN CARE CPG
  - Manage mother per pathway below

CARDIAC ARREST[5]
- Begin resuscitation per CARDIAC ARREST CPGs
- Manually displace uterus to the patient's LEFT[6]
- Initiate transport at the earliest possibility

IMMINENT DELIVERY
- Refer to OB/GYN – ACTIVE LABOR CPG & OB/GYN - EMERGENCY CHILDBIRTH PROCEDURE

VAGINAL BLEEDING[7]
- Manage SHOCK / HYPOTENSION per CPGs
- Manage postpartum hemorrhage with uterine fundal massage AFTER delivery of the placenta
- Manage perineal lacerations after delivery with direct pressure

PRE-ECLAMPSIA (& ECLAMPSIA)[8,9]
- Suspect if SBP >160 mmHg, DBP >110 mmHg, and/or symptomatic
- Administer **Magnesium Sulfate** for all suspected cases
  - § IV/IO: **5 g (in 100-250 mL Isotonic Fluid) IV/IO over 15 min**
    OR
  - § IM: **10 g (undiluted), half of total dose in each buttock**
- Manage active seizures with **Midazolam 10 mg IM** or **5 mg IV/IO**
  - § If still seizing after 5-10 min, administer same dose of **Midazolam**
  - § If still seizing at 15 min, administer ADDITIONAL **3 g Magnesium Sulfate IV/IO**

TRAUMA
- Manually displace uterus to patient's LEFT[6]
- Manage aggressively per TRAUMA CPGs
- Prepare for difficult airway if intubation is needed (per AIRWAY MANAGEMENT CPG)

→
- Transport to closest appropriate ED with obstetrical capabilities
- Transport to Level I or II Trauma Center

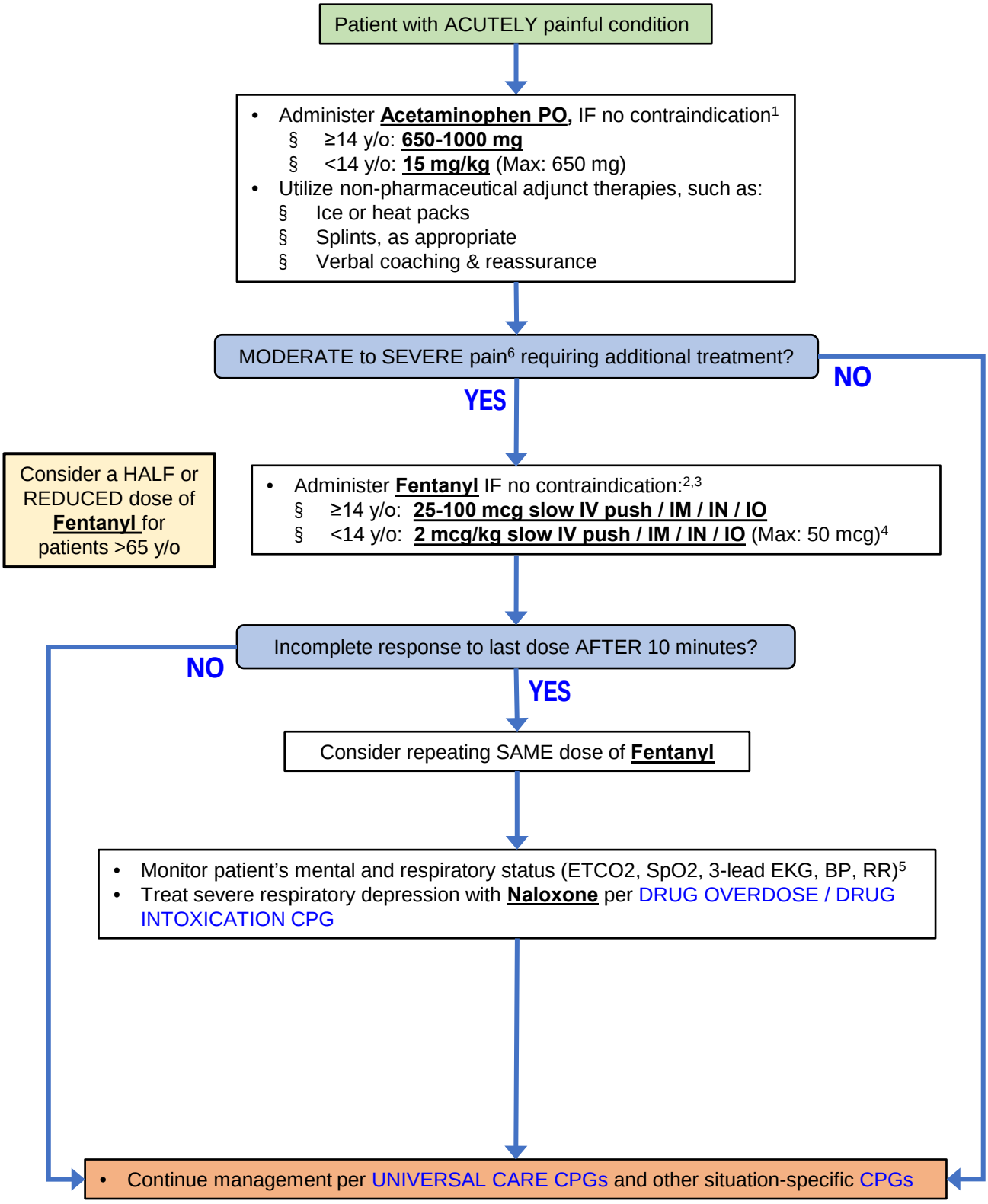
OB/GYN – PREGNANCY COMPLICATIONS, cont.

Special Considerations:

1. A viable pregnancy is determined by a KNOWN gestational age >22 weeks OR a palpable uterus at / above the umbilicus.
2. What is a POTENTIALLY viable fetus?
   - A fetus with an unknown gestational age that appears large enough to undergo neonatal resuscitative efforts according to the NEWBORN CARE CPG.
   - If a potentially viable fetus has been delivered, initiate resuscitative efforts AND contact BioTel.
3. Aggressive resuscitation of unstable pregnant patients is key to survival for both the mother and the fetus.
4. Managing a miscarried or expired fetus:
   - Provide emotional support.
   - Allow mother to hold bundled remains IF DESIRED.
   - Do NOT place fetus in biohazard bag.
5. A pregnant woman in cardiac arrest with a potentially viable pregnancy should be transported as soon as possible to an ED with obstetrical capabilities for resuscitative hysterotomy (a.k.a. perimortem C-section).
6. Manual uterine displacement decompresses the great vessels and improves venous return. Elevating the RIGHT side of a backboard 15-20° is an acceptable alternate method IF limited personnel are available.
7. Hypotension in pregnancy is a LATE finding and suggests SEVERE blood loss. Manage aggressively.
8. Signs and Symptoms of Pre-eclampsia (and Eclampsia): Abdominal pain, headache, mental status changes, visual disturbances, peripheral edema, seizure
9. **Seizures of eclampsia can occur anytime between 20 weeks of gestation and 6 weeks postpartum**.

PAIN MANAGEMENT (ALL AGES)

Inclusion Criteria: Patients with acutely painful conditions, including traumatic injuries
Exclusion Criteria: Patients with chronic pain; patients with acute ischemic chest pain (see CHEST PAIN CPG); patients with a care plan prohibiting IV/IO/IM opioids; patients with allergies to available medications



PAIN MANAGEMENT (ALL AGES), cont.

Special Considerations:

1. Contraindications to Acetaminophen:
   - Unable to swallow or maintain airway
   - Active vomiting
   - Took Acetaminophen or combination (e.g., Norco, Percocet, Vicodin, cold medicine) in last 6 hours
   - Severe jaundice or signs of liver failure
2. Contraindications to Fentanyl:
   - Signs or symptoms of circulatory shock
   - Systolic BP <100 mmHg (Pediatric SBP < 70 + 2*Age)
   - Signs of respiratory depression
   - Altered level of consciousness or mental status change
3. For intranasal medications, NO MORE THAN 0.5 mL (<14 y/o) or 1.0 mL (≥14 y/o) can be given in EACH nostril
4. INTRANASAL (IN) Fentanyl is the preferred first-line medication for SEVERE pain in patients <14 y/o.
5. Carefully document the patient's response to every pain management intervention or medication dose.
6. Standardized Pain Resources - The tools below may be helpful for assessing and documenting a patient's pain level.

Adults, or Mature Pediatric Patients: Self-Report Numeric Rating Scale (NRS)

	0	1	2	3	4	5	6	7	8	9	10
Verbal Descriptor Scale	No Pain	Mild Pain		Moderate Pain		Severe Pain		Very Severe Pain		Excruciating Pain	
Descriptive Scale	Alert, Smiling	No Humor, Serious, Flat		Furrowed Brow, Pursed Lips, Breath Holding		Wrinkled Nose, Raised Upper Lip, Rapid Breathing		Slow Blink, Open Mouth		Eyes Closed, Moaning, Crying	

Pediatric Patients / Children:

PUSH DOSE EPINEPHRINE PROCEDURE

Inclusion Criteria: Patients of all ages with shock or hypotension who have any of the indications below.
Exclusion Criteria: Patients who have any of the contraindications listed below.

BACKGROUND

- Push Dose **Epinephrine** allows EMS personnel to provide very small amounts of vasopressor to treat hypotension (when appropriate) without needing to prepare a continuous infusion / drip.
- Before administration, a special **10 mcg/mL (0.01 mg/mL)** concentration of **Epinephrine** must be prepared. This concentration is DIFFERENT from the concentrations used for cardiac arrest **(0.1 mg/mL)** and anaphylaxis **(1 mg/mL)**.
- Preparation of Push Dose **Epinephrine** should be performed carefully, double checked by the preparing paramedic, and confirmed by a 2nd EMS professional.

INDICATIONS

- Shock or hypotension that does not respond to fluid resuscitation or other first-line treatments, per the SHOCK / HYPOTENSION (ADULT and PEDIATRIC) CPGs
- Cardiogenic shock in the setting of ANTERIOR STEMI (ST elevation in leads V1-V4) may respond better to Push Dose **Epinephrine** than to **Isotonic Fluid** infusion / boluses.

CONTRAINDICATIONS

- Cardiogenic shock in the setting of INFERIOR STEMI (ST elevation in leads II, III, aVF) may WORSEN with Push Dose **Epinephrine**.
  - § In this setting, see the CHEST PAIN CPG for guidance on **Isotonic Fluid** infusion/boluses.

PREPARATION

- Three simple methods to prepare Push Dose **Epinephrine** are below. EMS personnel should master 1 method for routine use BUT ALSO become familiar with the alternative methods.

Method 1

1. Take a 10-mL flush of **Normal Saline**. Discard 1 mL of saline so that there are 9 mL of fluid left in the syringe.
2. Into this syringe, draw 1 mL of **0.1 mg/mL Epinephrine** using a needle or a stopcock.
3. The syringe should now contain 10 mL of **10 mcg/mL Epinephrine**.
4. Label the syringe with the drug name and new concentration (10 mcg/mL).

Method 2

1. Take a 100-mL bag of **Isotonic Fluid**. Discard 10 mL of saline so that there are 90 mL of fluid left in the bag.
2. Inject **1 mg** (10 mL) of **0.1 mg/mL Epinephrine** into the bag.
3. The bag should now contain 100 mL of fluid again.
4. Withdraw 10 mL of the solution into a 10-mL syringe.
5. The syringe should now contain 10 mL of **10 mcg/mL Epinephrine**.
6. Label the syringe with the drug name and new concentration (10 mcg/mL).

PUSH DOSE EPINEPHRINE PROCEDURE, cont.

PREPARATION (cont.)

Method 3

1. Inject **1 mg** (1 mL) of **1 mg/ml Epinephrine** into a 100-mL bag of **Isotonic Fluid**.
2. Withdraw 10 mL of the solution into a 10-mL syringe.
3. The syringe should now contain 10 mL of **10 mcg/mL Epinephrine**.
4. Label the syringe with the drug name and new concentration (10 mcg/mL).

ADMINISTRATION

****NOTE: Push dose epinephrine is given in fixed amounts by IV/IO push, NOT as a drip****

ADULT

1. Prepare a syringe containing 10 mL of **10 mcg/mL Epinephrine** following the instructions above.
2. Administer **20 mcg** (2 mL) **IV/IO push every 2-5 min**, as needed.
3. Flush with **2-3 mL Normal Saline IV/IO push** immediately after each dose.
4. Titrate frequency of repeat administrations to desired clinical effect, as demonstrated by improvement in signs and symptoms of shock.
   - Often, this correlates to a systolic BP >90 mmHg.

PEDIATRIC

1. Prepare a syringe containing 10 mL of 10 mcg/mL Epinephrine following the instructions above.
2. Administer **1 mcg/kg Epinephrine** (10 mcg/mL) **IV/IO push** (Max: 20 mcg) **every 2-5 min**, as needed.
   - Refer to the dosing charts below (or the PEDI-Guide) for convenience.

GRAY	PINK	RED	PURPLE	YELLOW
< 3 mo	3-5 mo	6-11 mo	12-24 mo (1-2 y)	24-36 mo (2-3 y)
< 5 kg	5-8 kg	8-10 kg	10-12 kg	12-15 kg
3 mcg (0.3 mL)	5 mcg (0.5 mL)	10 mcg (1.0 mL)	10 mcg (1.0 mL)	15 mcg (1.5 mL)

WHITE	BLUE	ORANGE	GREEN	**BLACK**
3-4 y	5-6 y	7-9 y	10-11 y	12-13 y
15-19 kg	19-24 kg	24-30 kg	30-37 kg	37-50 kg
15 mcg (1.5 mL)	20 mcg (2 mL)	20 mcg (2 mL)	20 mcg (2 mL)	20 mcg (2 mL)

3. Flush with **1-2 mL Normal Saline IVP/IO** immediately after each dose.
4. Titrate frequency of repeat administrations to desired clinical effect, as demonstrated by improvement in signs and symptoms of shock.

Special Considerations:

- Dosing errors can be harmful; double check all concentrations while mixing and perform a MEDICATION ADMINISTRATION CROSS-CHECK before dosing.
- Push Dose **Epinephrine** may increase the risk for dysrhythmias. Refer to the TACHYCARDIA CPGs as needed.

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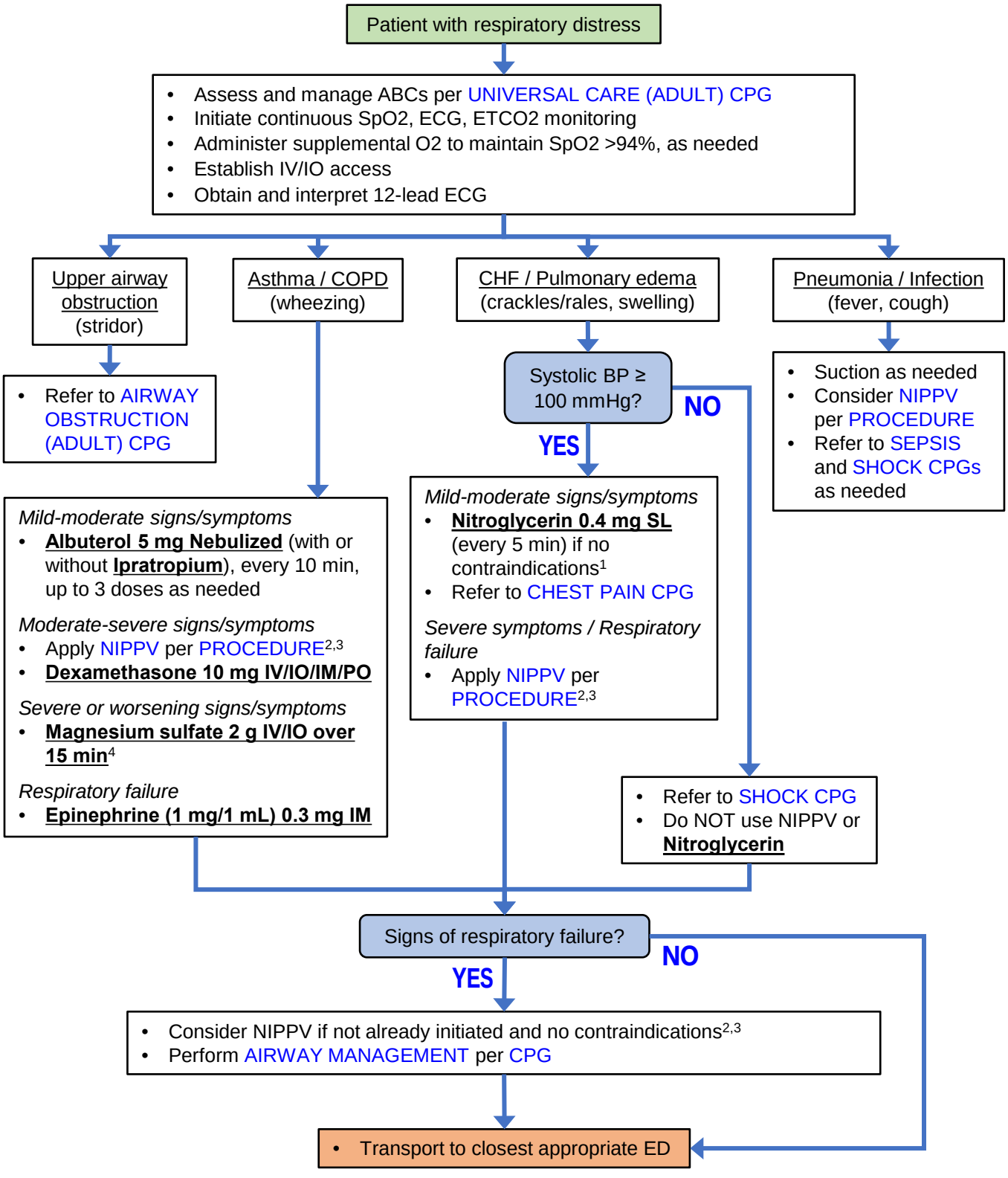
RESPIRATORY DISTRESS (ADULT)

Inclusion Criteria: Patients ≥14 y/o with signs and symptoms of respiratory distress (tachypnea, dyspnea, increased work of breathing, wheezing, and/or evidence of volume overload)
Exclusion Criteria: For patients <14 years old, see RESPIRATORY DISTRESS (PEDIATRIC).



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RESPIRATORY DISTRESS (ADULT), cont.

Special Considerations:

1. Contraindications to **Nitroglycerin** include:
   - Systolic BP <100 mmHg
   - Heart rate <50 bpm [see BRADYCARDIA (ADULT) CPG]
   - Use of erectile dysfunction medications including sildenafil (Viagra), tadalafil (Cialis), or vardenafil (Levitra)
2. Initial Non-Invasive Positive Pressure Ventilation (NIPPV or "CPAP") settings:
   - Set airway pressure (CPAP) at 5 cmH2O.
   - If the patient tolerates NIPPV but their respiratory status does not improve, airway pressure (CPAP) may be increased in increments of 2-3 cmH2O (max 15 cmH2O).
   - See NIPPV PROCEDURE for more detailed guidance
3. Contraindications to Non-Invasive Positive Pressure Ventilation (NIPPV or "CPAP"):
   - Decreased level of consciousness (GCS <11), agitated, or otherwise uncooperative
   - Inability protect airway or clear secretions (e.g., active vomiting, significant oral bleeding)
   - Hemodynamic instability (SBP <90 mmHg in patients 14 years of age or older)
   - Facial deformities (e.g., trauma, congenital abnormality, recent facial surgery)
   - Suspected or confirmed pneumothorax
   - Tracheostomy
   - Apnea or agonal respirations
4. Instructions for preparing **Magnesium sulfate IV/IO** infusion:
   - Dilute 2 g **Magnesium sulfate** in 100-250 mL **Isotonic Fluid**
   - Administer entire volume over 15 minutes
   - If stocked, may use premixed bag(s) to administer **2 g**.
5. If tension pneumothorax is suspected due to history/signs/symptoms PLUS hemodynamic compromise, refer to THORACOSTOMY (NEEDLE) PROCEDURE.

RESPIRATORY DISTRESS (PEDIATRIC)

Inclusion Criteria: Patients <14 years old with signs and symptoms of respiratory distress including tachypnea, dyspnea, increased work of breathing, wheezing, and/or evidence of volume overload[1]
Exclusion Criteria: For patients ≥ 14 years old, see RESPIRATORY DISTRESS (ADULT).

Patient with respiratory distress

- Assess and manage ABCs per UNIVERSAL CARE (PEDIATRIC) CPG
- Ensure airway patency with positioning, suctioning, OPA/NPA, as needed
- Initiate continuous SpO2, ECG, ETCO2 monitoring
- Administer supplemental O2 to maintain SpO2 ≥94%, as needed
- Establish IV/IO access

Asthma / Reactive Airway Disease (wheezing)[1,2]

Bronchiolitis[2] / Pneumonia / Infection (fever, cough, sputum)

Upper Airway Obstruction (stridor)

Patient <2 y/o?

YES

NO

Mild-moderate signs/symptoms
- **Albuterol 5 mg Nebulized** (with or without **Ipratropium**), every 10 min, up to 3 doses as needed

Moderate-severe signs/symptoms
- Apply NIPPV per PROCEDURE if patient can tolerate[3,4]
- **Dexamethasone IV/IV/IM/PO 0.5 mg/kg** (Max: 10 mg)[6]

Severe or worsening signs/symptoms
- **Magnesium sulfate 40 mg/kg IV/IO over 15 min**[5] (Max: 2 g)

Respiratory failure
- **Epinephrine (1 mg/1 mL) 0.01 mg/kg IM** (Max: 0.3 mg)

Signs of croup or epiglottitis? (stridor, drooling, gagging)

YES

NO

- Place in upright position

Epiglottitis
- Avoid IV/IO placement or other actions that may worsen agitation

Croup only
- **Dexamethasone IV/IV/IM/PO 0.5 mg/kg** (Max: 10 mg)[6]
- If respiratory distress with stridor at rest, administer **Epinephrine (1 mg/mL) 5mg Nebulized**

- Refer to AIRWAY OBSTRUCTION (PEDIATRIC) CPG

- Suction as needed
- Refer to SEPSIS CPG and SHOCK CPG as needed

Signs of respiratory failure?

NO

YES

- Consider NIPPV PROCEDURE if not already initiated and no contraindications[3,4]
- Refer to AIRWAY MANAGEMENT – GENERAL CPG and ADVANCED AIRWAY DEVICE PROCEDURE, as indicated

- Transport to closest appropriate ED

RESPIRATORY DISTRESS (PEDIATRIC), cont.

Special Considerations:

1. If concern for volume overload or congestive heart failure (CHF) in a pediatric patient, contact BioTel for guidance from a medical control physician.
2. Wheezing in patients YOUNGER THAN 2 years old is most likely caused by BRONCHIOLITIS and should be treated by following the 'Bronchiolitis / Infection / Pneumonia' pathway. This population is generally too young to have developed asthma.
3. Initial Non-Invasive Positive Pressure Ventilation (NIPPV or "CPAP") settings:
   - Set airway pressure (CPAP) at 5 cmH2O.
   - If the patient tolerates NIPPV but their respiratory status does not improve, airway pressure (CPAP) may be increased in increments of 2-3 cmH2O (Max: 10 cmH2O).
   - See NIPPV PROCEDURE for more detailed guidance
4. Contraindications to Non-Invasive Positive Pressure Ventilation (NIPPV or "CPAP"):
   - Decreased level of consciousness (GCS <11), agitated, or otherwise uncooperative
   - Inability protect airway or clear secretions (e.g., active vomiting, significant oral bleeding)
   - Hemodynamic instability (SBP below normal for age)
   - Facial deformities (e.g., trauma, congenital abnormality, recent facial surgery)
   - Suspected or confirmed pneumothorax
   - Tracheostomy
   - Apnea or agonal respirations
5. Instructions for preparing **Magnesium sulfate IV/IO** infusion:
   - Mix 2 g **Magnesium sulfate** in 100-250 mL **Isotonic Fluid**
   - Administer **40 mg/kg** of solution over 15 minutes, per the following instructions:
     - If diluted in 100 mL, administer 2 mL/kg (Max: 100 mL)
     - If diluted in 250 mL, administer 5 mL/kg (Max: 250 mL)
   - If stocked, may use a premixed bag BUT confirm that appropriate volume is administered to achieve a **40 mg/kg** dose (Max: 2 g).
6. Ensure receiving hospital staff are notified of administration during handoff to ensure patient is not inadvertently re-dosed in the Emergency Department.
7. If Tension Pneumothorax is suspected due to history/signs/symptoms PLUS hemodynamic compromise, refer to THORACOSTOMY (NEEDLE) PROCEDURE.

SEDATION PROCEDURE

Inclusion Criteria: Patients of any age who require management of discomfort and anxiety caused by specifically approved painful prehospital procedures, including:
- § Transcutaneous pacing (see TRANSCUTANEOUS PACING PROCEDURE & BRADYCARDIA CPG)
- § Direct current cardioversion (see TACHYCARDIA – UNSTABLE CPGs)

Exclusion Criteria: Patients who require sedation for management of agitation or aggression (see BEHAVIORAL EMERGENCY CPG); Patients with contraindications below

CONTRAINDICATIONS

- For hemodynamically unstable patients, transcutaneous pacing or cardioversion should not be delayed for procedural sedation.
  - § For patients with improved hemodynamic status with ONGOING transcutaneous pacing, sedation may be administered according to the procedure below.
- Apneic or unresponsive patients do not require sedation for transcutaneous pacing or cardioversion.
- Patients with inadequate breathing or respiratory distress due to another medical condition unrelated to their need for transcutaneous pacing or cardioversion should NOT receive sedation.

GENERAL PROCEDURE

1. Continuous monitoring of ECG, SpO2, and ESPECIALLY waveform capnography (ETCO2) is MANDATORY before, during, and after procedural sedation.
2. Establish IV or IO access (if not already obtained).
3. Ensure bag-valve mask (BVM), supplemental O2, and adjunctive airway equipment are prepared and IMMEDIATELY available in case of over-sedation or need for assisted ventilation.
4. Select and administer ONE of the following medications at the dose described below:
   - **Midazolam**:
     - § ≥14 y/o: **2.5 mg IV/IO** OR **5 mg IN/IM**
     - § <14 y/o: **0.1 mg/kg IV/IO/IN/IM** (Max: 5 mg)
5. If patient's response to the first dose is inadequate after 5-10 minutes, a second dose Midazolam may be re-dosed ONCE.
   - Contact BioTel for guidance if patient does not respond adequately to 2 doses.
6. Perform indicated procedure (cardioversion or transcutaneous pacing) according to the TACHYCARDIA – UNSTABLE CPGs and TRANSCUTANEOUS PACING PROCEDURE.
7. In case of oversedation, administer supplemental O2, assist ventilations using BVM, and refer to the AIRWAY MANAGEMENT – GENERAL CPG, as indicated.

Special Considerations:
- Strongly consider contacting BioTel for guidance when considering procedural sedation.
- Refer to the BioTel PEDI-Guide for assistance with medication dosing for pediatric patients.

SEIZURE (ALL AGES)

Inclusion Criteria: Patients of all ages with observed seizure-like activity[1-3], post-ictal appearance, or reported new / recurrent seizures on EMS arrival
Exclusion Criteria: No specific exclusions

Patient with observed or reported seizure-like activity[1-3]

- Assess and manage ABCs per UNIVERSAL CARE CPG

Is patient ACTIVELY seizing?

YES

- Administer **Midazolam**[4]
  - **Adults ≥ 14 y/o: 10 mg IM** or **5 mg IV/IO**
  - **Pediatrics (0-13 years): IM/IN only** (IM preferred, IN only as a backup)
    - Use chart below or BioTel PEDI-Guide for dosing. Ask bystander/caregiver for patient's age, if age unknown use length-based tape to determine color zone.[5]

Color Zone					
Age	0 – 3 mo	4 – 16 mo	17 mo – 5 yrs	6 – 11 yrs	12-13 yrs
Dose	0.2 mg/kg *Refer to PEDI-Guide*	1.25 mg	2.5 mg	5 mg	10 mg
Volume		0.25 mL	0.5 mL	1 mL	2 mL

NO

- Check point-of-care blood glucose and manage abnormal level per DIABETIC EMERGENCIES CPG
- Initiate continuous EKG, SpO2, and ETCO2 monitoring
- If signs of trauma, refer to TRAUMA-GENERAL, HEAD INJURY & SPINAL MOTION RESTRICTION CPGs

Signs or history of pregnancy?

YES

- Refer to OB/GYN - PREGNANCY COMPLICATIONS CPG for management of eclampsia

NO

Still seizing after 5 min?

NO

YES

- Administer same dose of **Midazolam**[4] once (Pediatric IM/IN routes only[5])
  - *Patients 12-13 years:* Contact BioTel to discuss dosing prior to administering a 2nd dose
- If seizure continues ≥ 5 minutes after 2nd dose, consider contacting a BioTel medical control physician for guidance on possible additional medications.

- Perform AIRWAY MANAGEMENT per CPG, as needed
- Refer to HEAT EMERGENCIES, and DRUG OVERDOSE CPGs, as needed

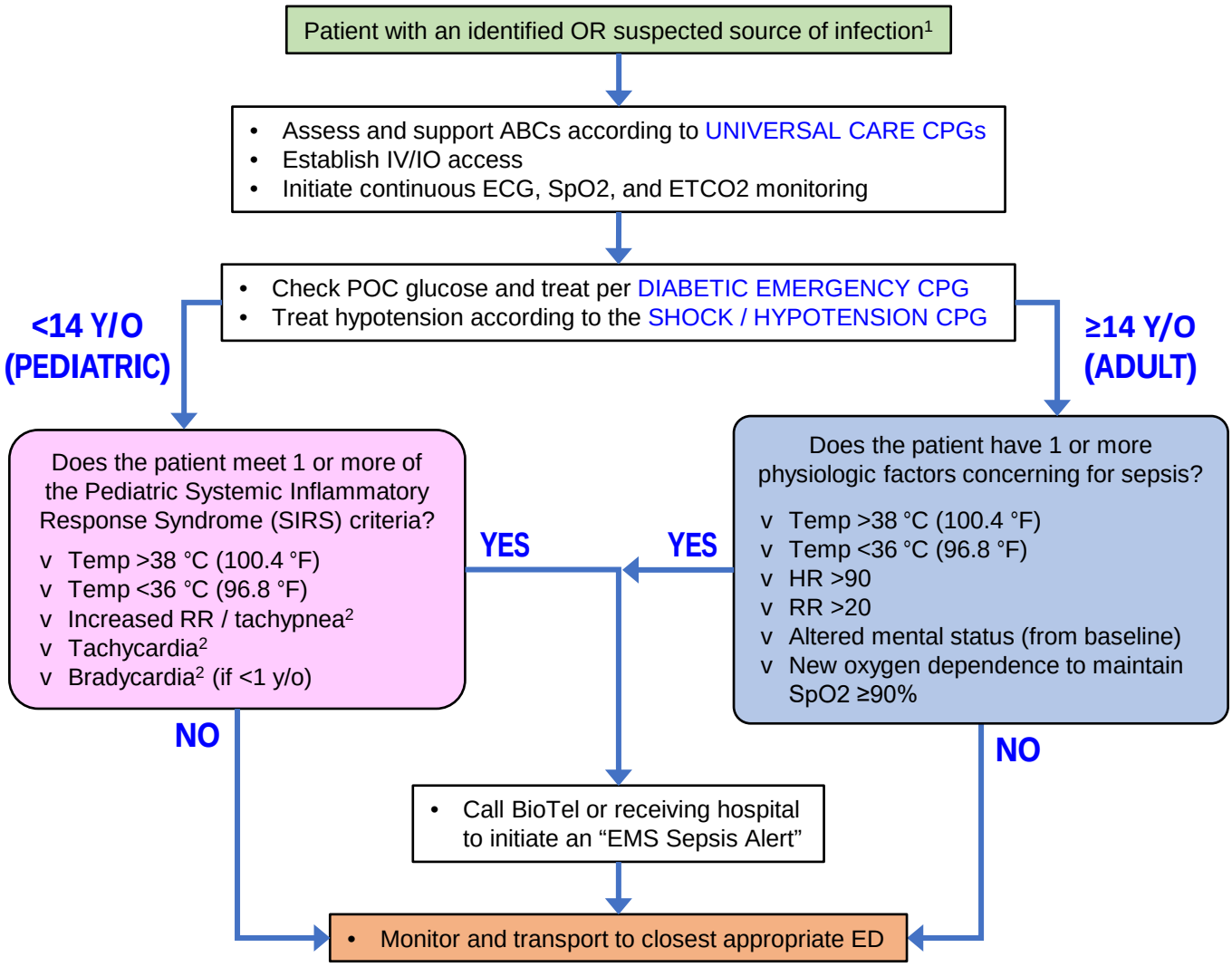
- Transport to closest appropriate ED

Special Considerations:

1. Status epilepticus refers to seizures lasting > 5 min (or recurring seizures without return to baseline). Patients actively seizing upon EMS arrival should generally be assumed to be in status epilepticus.
2. The PRIMARY GOAL of EMS is to stop seizures rapidly.
3. Non-convulsive seizure-like activity should still be treated according to the algorithm above. This often manifests as altered mental status with staring spells or subtle motor activity (e.g., facial or hand twitching).
4. IM and IN routes allow rapid medication administration. Do NOT delay treatment to obtain IV/IO access.
5. For pediatric patients with severe growth restriction (very low wt.), use 0.2 mg/kg IM/IN or contact BioTel for guidance.
6. Pediatric/ pregnant patients with seizures are high-risk, strongly consider BioTel contact if EMS transport not accepted.

SEPSIS (ALL AGES)

Inclusion Criteria: Patients with a suspected source of infection and abnormal vital signs suggesting sepsis
Exclusion Criteria: No specific exclusion criteria



Special Considerations:

1. The following clinical signs or findings suggest a possible source of infection:
   - v Cough
   - v Shortness of breath
   - v Nausea and/or vomiting
   - v Diarrhea
   - v Fatigue
   - v Malaise
   - v Indwelling venous or urinary catheter (e.g., Foley, central line, PICC)
   - v Wound infection (with or without drainage)
   - v History of immunosuppressive condition (e.g., cancer, leukemia, chemotherapy, HIV, organ transplant)
   - v Fever
   - v Chills
   - v Residence in a skilled nursing or other long-term care facility
2. Normal pediatric vital signs vary by age. Consult a resource such as the BioTel PEDI-Guide, a phone app (e.g., Pedi STAT), or other appropriate printed resources for age-appropriate vital sign ranges.

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SHOCK / HYPOTENSION (ADULT)

Inclusion Criteria: Patients ≥14 years old with clinical signs of shock[1] or systolic BP <90 mmHg
Exclusion Criteria: For patients <14 years old, refer to SHOCK / HYPOTENSION (PEDIATRIC) CPG

Patient with SBP <90 mmHg or signs of shock[!]

- Assess and manage ABCs per UNIVERSAL CARE (ADULT) CPG
- Initiate continuous ECG, SpO2, and ETCO2 monitoring
- Establish IV/IO access
- Obtain 12-lead ECG for undifferentiated shock

What is the apparent underlying cause?

TRAUMATIC/ HEMORRHAGIC

- Refer to TRAUMA and HEMORRHAGE CPGs
- Refer to HEAD INJURY / TBI CPG, as indicated
- Administer **Isotonic Fluid 500 mL IV/IO**
  - § Repeat as indicated and titrate to SBP >90 mmHg for general trauma OR >110 mmHg for head injury/TBI
- Manage tension pneumothorax[2] per THORACOSTOMY (NEEDLE) PROCEDURE, as indicated

CARDIOGENIC

- Refer to CHEST PAIN CPG, as needed[3]
- Administer **Isotonic Fluid 250 mL IV/IO**
  - § Repeat, as indicated, titrating to SBP >90 mmHg
  - § Discontinue if signs of developing fluid overload[4]

GENERAL MEDICAL

- Administer **Isotonic Fluid 20 mL/kg IV/IO** (Max: 1 L)
  - § Assess for response, and repeat as needed
- Refer to symptom-specific CPGs, as indicated[5]

DYSRHYTHMIA

- Refer to BRADYCARDIA (ADULT) CPG and TRANSCUTANEOUS PACING PROCEDURE, as indicated
- Refer to TACHYCARDIA – UNSTABLE CPG for guidance on synchronized cardioversion, as indicated

- If inadequate response to treatment, administer vasopressor:
  - § PUSH DOSE EPINEPHRINE per PROCEDURE
  - **OR**
  - § **Norepinephrine 4 mcg/min IV/IO Infusion** (Max: 10 mcg/min)[6]
    - Titrate norepinephrine every 2-5 min until hypotension resolves / signs of shock improve

- Transport to closest appropriate ED

SHOCK / HYPOTENSION (ADULT), cont.

Special Considerations

1. Signs of shock include: pale skin, delayed capillary refill (>2 s), dry mucosae, impaired mental status
2. Signs of tension pneumothorax: respiratory distress, hypoxia, JVD, diminished breath sounds on one side.
3. Do not give **Nitroglycerin** to a hypotensive patient Inferior/Posterior STEMI (see CHEST PAIN CPG).
4. Signs of fluid overload include: pulmonary edema, shortness of breath, JVD, worsening hypotension
5. For shock falling under the 'General Medical' branch of the flowchart, refer to the ALLERGIC REACTION, OB/GYN, DRUG OVERDOSE, SEPSIS, or other symptom-specific CPGs, as needed.
6. **Norepinephrine** Infusion (Drip) Guide:
   - Consider requesting EMS Field Supervisor for IV pump, however, do NOT delay initiation of infusion.
   - Mix **4 mg Norepinephrine** in **500 mL Normal Saline** (NOT Lactated Ringer's) to make 8 mcg/mL concentration
   - Use a 60 drop/mL drip set
   - The following chart can be used to titrate the infusion:

Dose (mcg/min)	Rate (gtt/min)
1	8
2	15
3	23
4	30
5	38
6	45
7	53
8	60
9	68
10	75

SHOCK / HYPOTENSION (PEDIATRIC)

Inclusion Criteria: Patients <14 years old with clinical signs of shock[1] or SBP below normal range for age[2]
Exclusion Criteria: For patients ≥14 years old, refer to SHOCK / HYPOTENSION (ADULT) CPG

Patient with signs of shock[1] or SBP below normal range for age[2]

- Assess and manage ABCs per UNIVERSAL CARE (PEDIATRIC) CPG
- Initiate continuous ECG, SpO2, and ETCO2 monitoring
- Establish IV/IO access
- Obtain 12-lead ECG for undifferentiated shock

What is the apparent underlying cause?

TRAUMATIC/ HEMORRHAGIC

- Refer to TRAUMA and HEMORRHAGE CPGs
- Refer to HEAD INJURY / TBI CPG, as indicated
- Administer **Isotonic Fluid 20mL/kg IV/IO** (Max: 500 mL)
  - § Repeat as indicated and titrate age-appropriate normal range blood pressure[2]
- Manage tension pneumothorax[3] per THORACOSTOMY (NEEDLE) PROCEDURE, as indicated

CARDIOGENIC

- Contact a BioTel medical control physician for guidance[4]
- Consider **Isotonic Fluid 5 mL/kg IV/IO** (Max: 250 mL)
  - § Closely evaluate response to fluids, if administered
  - § Discontinue if signs of developing fluid overload[5]

GENERAL MEDICAL

- Administer **Isotonic Fluid 20 mL/kg IV/IO** (Max: 1 L)
  - § Assess for response, and repeat as needed
- Refer to symptom-specific CPGs, as indicated[6]

DYSRHYTHMIA

- Refer to BRADYCARDIA (PEDIATRIC) CPG and TRANSCUTANEOUS PACING PROCEDURE, as indicated
- Refer to TACHYCARDIA – UNSTABLE CPG for guidance on synchronized cardioversion, as indicated

- If inadequate response to treatment, administer vasopressor:
  - § PUSH DOSE EPINEPHRINE per PROCEDURE
  - **OR**
  - § **Norepinephrine 0.1 mcg/kg/min IV/IO Infusion** (Max: 10 mcg/min)[7]
    - § Titrate vasopressor every 2-5 min until hypotension resolves/perfusion improves
  - § Contact a BioTel medical control physician for guidance if insufficient response to medications or treatments

- Transport to closest appropriate ED

SHOCK / HYPOTENSION (PEDIATRIC)

Special Considerations:

1. Signs of shock include: pale skin, decreased capillary refill (>2 s), dry mucosae, impaired mental status
2. Pediatric Blood Pressure Ranges (in mmHg):
   - 0-28 days old (newborn): >60
   - 1 month – 1 year (infant): >70
   - 1-10 y/o (child): >70 + (2 x age in years)
   - 10-13 y/o (adolescent): >90
3. Signs of Tension Pneumothorax: respiratory distress, hypoxia, JVD, diminished breath sounds on one side.
4. Pediatric heart failure is more complex and has different pathophysiology than in adults. If suspecting cardiogenic shock in pediatric patients, contact BioTel early for medical control physician consultation.
5. Signs of fluid overload include: pulmonary edema, shortness of breath, JVD, worsening hypotension
6. For shock falling under the 'General Medical' branch of the flowchart, refer to the ALLERGIC REACTION, OB/GYN, DRUG OVERDOSE, SEPSIS, and other symptom-specific CPGs, as indicated.
7. **Norepinephrine** Infusion (Drip) Guide:
   - Consider requesting EMS Field Supervisor for IV pump, however, do NOT delay initiation of infusion.
   - Mix **4 mg Norepinephrine** in **500 mL Normal Saline** (NOT Lactated Ringer's) to make 8 mcg/mL concentration
   - Use a 60 drop/mL drip set
   - The following chart can be used to titrate the infusion:

Dose (mcg/min)	Rate (gtt/min)
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7	53
8	60
9	68
10	75

SPINAL MOTION RESTRICTION (ALL AGES)

Inclusion Criteria: Patients with blunt[1] trauma with potential for spinal injury (e.g., head, neck, back, torso)
Exclusion Criteria: Patients with ISOLATED penetrating trauma; Patients with non-trauma emergencies

Patient with potential for traumatic spinal injury[2]

- Assess and manage per UNIVERSAL CARE and TRAUMA – GENERAL CPG
- Manually stabilize spine in neutral position
- See HELMET REMOVAL PROCEDURE for sports-related trauma requiring spinal motion restriction (SMR).

Meets Clinical Criteria? (see box)

YES → Initiate GENERAL or SELECTIVE SMR per procedure(s) **on the next page**

NO

- Palpate midline spine from base of skull to lumbar spine

Midline tenderness on palpation?

YES → Initiate GENERAL or SELECTIVE SMR per procedure(s) **on the next page**

NO

- Assess BILATERAL motor & sensory function:
  - § Grip strength (squeeze hand)
  - § Wrist extension (stop traffic)
  - § Foot plantarflexion (gas pedal)
  - § Foot dorsiflexion (raise toes to nose)
  - § Sensation to light touch in all 4 extremities

Weakness or sensory deficit?

YES → Initiate GENERAL or SELECTIVE SMR per procedure(s) **on the next page**

NO

- Assess cervical spine range of motion. Ask patient:
  - § Tilt head forward/backward (chin to chest/sky)
  - § Rotate head 45° left & right

Pain, numbness, or tingling?

YES → Initiate GENERAL or SELECTIVE SMR per procedure(s) **on the next page**

NO → SMR not required

CLINICAL CRITERIA

- v Age <8 y/o OR >65 y/o
- v Focal neurologic deficit (e.g., weakness, sensory loss)
- v GCS <15 or confusion
- v Intoxication
- v Language barrier
- v Impaired communication for any reason
- v Torticollis (fixed head rotation) in a pediatric patient
- v Distracting injury (e.g., long bone fracture, crush injury, severe burns)
- v Dangerous mechanism:
  - Fall >3 ft (or ≥5 stairs)
  - High speed MVC / rollover / ejection
  - Bicycle crash
  - Motorized recreational vehicle crash (e.g., ATV)

SPINAL MOTION RESTRICTION (ALL AGES), cont.

GENERAL SMR PROCEDURE

1. Maintain manual stabilization of cervical spine in neutral position.
2. Place properly sized cervical collar (C-collar).
3. Use extrication device to move the patient to the stretcher (e.g., long spine board, vacuum splint, scoop stretcher)
4. Remove extrication device, using log roll technique to maintain in-line stabilization of entire spine.
5. Secure patient in SUPINE position to the stretcher.

SELECTIVE SMR PROCEDURE

Selective SMR measures may be utilized for patients who need SMR but also meet ALL the following requirements:

- Normal mental status (GCS 15) without evidence of intoxication
- Extricated self from trauma situation
- Ambulatory without assistance
- No focal neurological deficit (motor or sensory)
- No thoracic or lumbar spine midline tenderness

1. Maintain manual stabilization of cervical spine in neutral position.
2. Place properly sized cervical collar (C-collar).
3. Allow patient to self-transfer to the stretcher
4. Secure patient to the stretcher in a position of comfort.

Special Considerations:

1. ISOLATED penetrating trauma to the neck does not require SMR unless the patient has obvious signs of spinal injury.
2. In situations of uncertainty regarding whether or not a patient requires spinal immobilization, err on the side of caution and apply SMR.
3. Closely monitor airway, breathing, and circulation when SMR are in place.
4. If a patient is unable to tolerate full SMR, maintain in-line stabilization to the extent possible using less restrictive means and DOCUMENT the rationale.
5. Pediatric patients have relatively larger heads and may require padding under the shoulders to maintain neutral spinal positioning.
6. An infant may be transported in an UNDAMAGED car seat with additional padding.

STROKE AND TIA (ALL AGES)

Inclusion Criteria: Patients of all ages with suspected acute stroke or transient ischemic attack (TIA)
Exclusion Criteria: Patients with hypoglycemia or traumatic brain injury (TBI)

Patient with sudden onset of signs & symptoms[1] concerning for acute stroke or TIA[2]

- Assess/manage ABCs and monitor per UNIVERSAL CARE CPGs
- Obtain & interpret 12-lead ECG and referring to dysrhythmia CPGs as needed (e.g., TACHYCARDIA)
- Determine patient's "Last Known Normal" time[3]
- Obtain point-of-care glucose measurement

Abnormal glucose?

YES →
- Treat per DIABETIC EMERGENCY CPG

NO ↓

- Perform a PRIMARY STROKE SCREEN using the CPSS tool:[4]
  1. Does patient have facial droop or asymmetric facial movement?
  2. Patient's arm drifts with both arms straight out and palms up?
  3. Patient slurs words, uses incorrect words, or can't talk at all?

Symptoms resolved?

NO ←

YES →

Is PRIMARY SCREEN positive? ("Yes" to 1 or more of questions)

NO →

YES ↓

Patient <18 years old?

YES ←
- Transport to PEDIATRIC Stroke Center
- Pre-arrival notification ("Stroke Alert")

NO ↓

- Transport to closest appropriate ED

- Perform a SECONDARY STROKE SCREEN using the C-STAT:[6]

Does patient have normal left & right eye movement?	If NO: +2 points
Does patient know their age & the current month? **AND** Can patient follow 2 simple commands (close eyes, open/close hand)?	If NO to BOTH: +1 point
Can patient hold arms out (palms up) for 10 seconds without right or left arm falling?	If NO: +1 point

C-STAT positive? (score of 2 or more)

NO ←

YES ↓

Is Comprehensive Stroke Center >30 min FARTHER than closest Primary Stroke Center?

YES ←

NO →

- Transport to CLOSEST Stroke Center[8]
- Provide pre-arrival notification ("Stroke Alert")

- Transport to COMPREHENSIVE Stroke Center[8]
- Provide pre-arrival notification ("Stroke Alert")

STROKE AND TIA (ALL AGES), cont.

Special Considerations:

1. Sudden onset of the following signs & symptoms may suggest acute stroke:
   - Numbness or weakness of face/arm/leg, trouble walking, trouble speaking, or trouble understanding language may suggest a stroke in the left or right hemisphere (or basal ganglia)
   - Dizziness, trouble walking, ataxia, or visual disturbance may suggest stroke in the POSTERIOR CIRCULATION
2. Patients whose symptoms resolve before or during EMS care may have experienced a Transient Ischemic Attack (TIA) and should STILL be transported to a hospital ED for evaluation.
3. "Last Known Normal" Time:
   - This is the time patient was last seen at his/her baseline (e.g., when current symptoms began).
   - For patients who wake up with symptoms, the time they WENT TO SLEEP is the Last Known Normal.
4. PRIMARY Stroke Screen (Cincinnati Prehospital Stroke Screen):

CPSS Screen is positive if *at least one* of the three elements is abnormal
FACIAL DROOP (Have patient show teeth or smile)
○ NORMAL: Both sides of face move equally
○ ABNORMAL: One side of face does not move as well as the other side
ARM DRIFT (Patient closes eyes and holds both arms straight out, with palms up, for 10 seconds)
○ NORMAL: Both arms move the same, *or* both arms do not move at all
○ ABNORMAL: One arm does not move, *or* one arm drifts down, compared with the other
ABNORMAL SPEECH (Have the patient say "You can't teach an old dog new tricks")
○ NORMAL: Patient uses correct words with no slurring
○ ABNORMAL: Patient slurs words, uses wrong words, ***or*** is unable to speak

5. Prompt recognition and transport to an appropriate ED for acute strokes with onset <4.5 hours prior to evaluation is crucial. These patients may be eligible for thrombolytic therapy (tPA) in the ED
6. SECONDARY Stroke Screen (Cincinnati Stroke Triage Assessment Tool):

C-STAT is positive if score is at least 2 points*	
GAZE: Normal left and right eye movement?	If NO: +2 points
LANGUAGE: • Provides correct age and month? **AND** • Follows 2 simple commands (close eyes, open /close hand)?	If BOTH are NO: +1 point
ARMS: Holds arms out (palms up) for 10 seconds without right or left arm falling to bed or stretcher?	If NO: +1 point

7. Patients with C-STAT of 2 or more may have a Large Vessel Occlusion (LVO) stroke and should be transported to a Comprehensive Stroke Center IF onset of symptoms was <24 hours prior AND transport time is not >30 min more than to the closest stroke center.
8. Time from first patient contact until EMS personnel initiate transport should NOT exceed 15 min.

SYNCOPE (ALL AGES)

Inclusion Criteria: Patients of all ages with loss of consciousness AND sudden collapse WITH rapid, spontaneous return to baseline consciousness; Patients with near / pre-syncope.
Exclusion Criteria: Patients with traumatic loss of consciousness (see TRAUMA – GENERAL CPG); Persistently altered or comatose patients (see ALTERED MENTAL STATUS CPG); Ongoing seizures (see SEIZURE CPG)

- Assess and manage ABCs per UNIVERSAL CARE CPGs

- Initiate continuous ECG, SpO2, and ETCO2 monitoring
- Obtain and interpret 12-lead ECG
- Obtain point-of-care glucose measurement and treat abnormal values per DIABETIC EMERGENCY CPG

Dysrhythmia present?

YES

- Establish IV/IO access
- Refer to appropriate CPGs (e.g., BRADYCARDIA, TACHYCARDIA - UNSTABLE)

NO

Hypotension or other signs of shock?

YES

- Establish IV/IO access
- Place patient in supine position
- Refer to SHOCK / HYPOTENSION CPGs

NO

- Obtain focused history of the syncopal event, including:
  - Duration of symptoms[1]
  - Preceding symptoms (e.g., chest pain, shortness of breath, palpitations)
  - Onset of symptoms (e.g., during exercise[2], while changing position, while using bathroom)
  - Seizure-like-activity and timing (before or after syncope)
  - Known history of heart disease, lung disease, seizure, or pregnancy[3]

Exam shows dehydration WITHOUT signs of pulmonary edema or CHF?

NO

YES

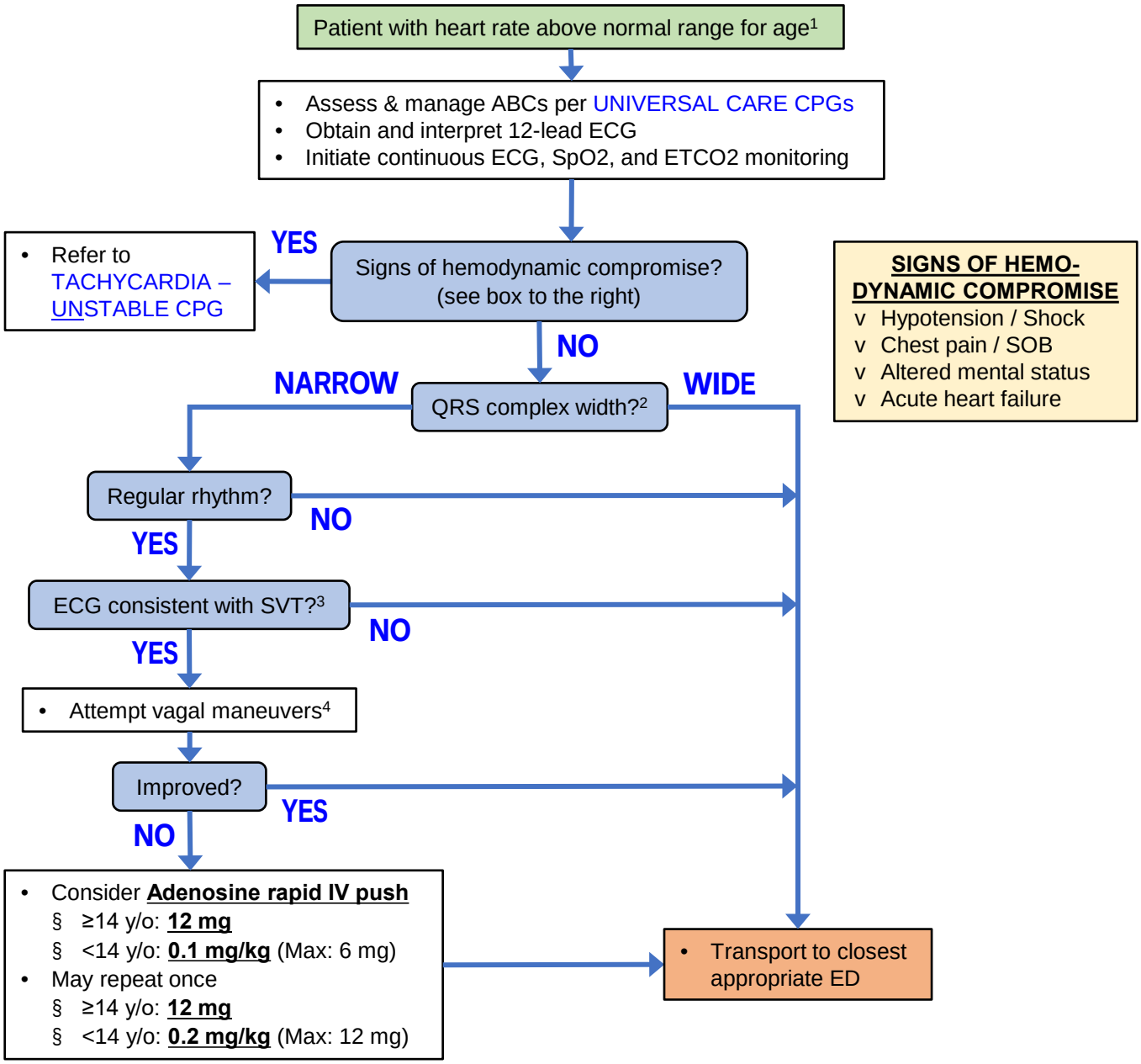
- Consider **Isotonic Fluid IV/IO bolus**
  - ≥14 y/o: **1 L**
  - <14 y/o: **20 mg/kg** (Max: 1 L)

- Transport to closest appropriate ED

Special Considerations:
1. Bystander estimates of the duration of unconsciousness or seizure-like activity are often unreliable. Obtaining history of TIMING of seizure-like-activity (e.g., before collapse, during, or after collapse) and timing of any head trauma (e.g., before or after collapse) are more useful for further patient management.
2. Syncope that occurs during exercise or exertion is especially high risk.
3. Consider ruptured ectopic pregnancy (a surgical emergency) in any female patient of childbearing age and transport to an appropriate receiving ED with obstetrical capabilities.

TACHYCARDIA – STABLE (ALL AGES)

Inclusion Criteria: Patients of all ages with an abnormally fast heart rate for their age WITHOUT evidence of hemodynamic compromise or poor perfusion
Exclusion Criteria: Patients with tachycardia and signs of hemodynamic compromise or poor perfusion



Special Considerations:
1. See the BioTel PEDI-Guide or another pediatric reference for age-appropriate pediatric heart rates.
2. The width of the QRS segment determines whether a rhythm is narrow or wide complex:
   - ≥14 y/o: QRS ≥0.12 ms (3 boxes) à WIDE complex rhythm. Otherwise, it is NARROW complex.
   - <14 y/o: QRS is ≥0.9 ms (2.5 boxes) à WIDE complex rhythm. Otherwise, it is NARROW complex.
3. SVT is a regular rhythm without P waves and usually has a rate of >180 bpm (>220 bpm in infants).
4. The modified Valsalva maneuver is an effective vagal maneuver. Have the patient blow into a syringe (hard enough to try to move the plunger) for 15 seconds while sitting up. Immediately afterward, lay the patient flat and lift their legs at a 45-degree angle. Hold the legs up for 15 more seconds.

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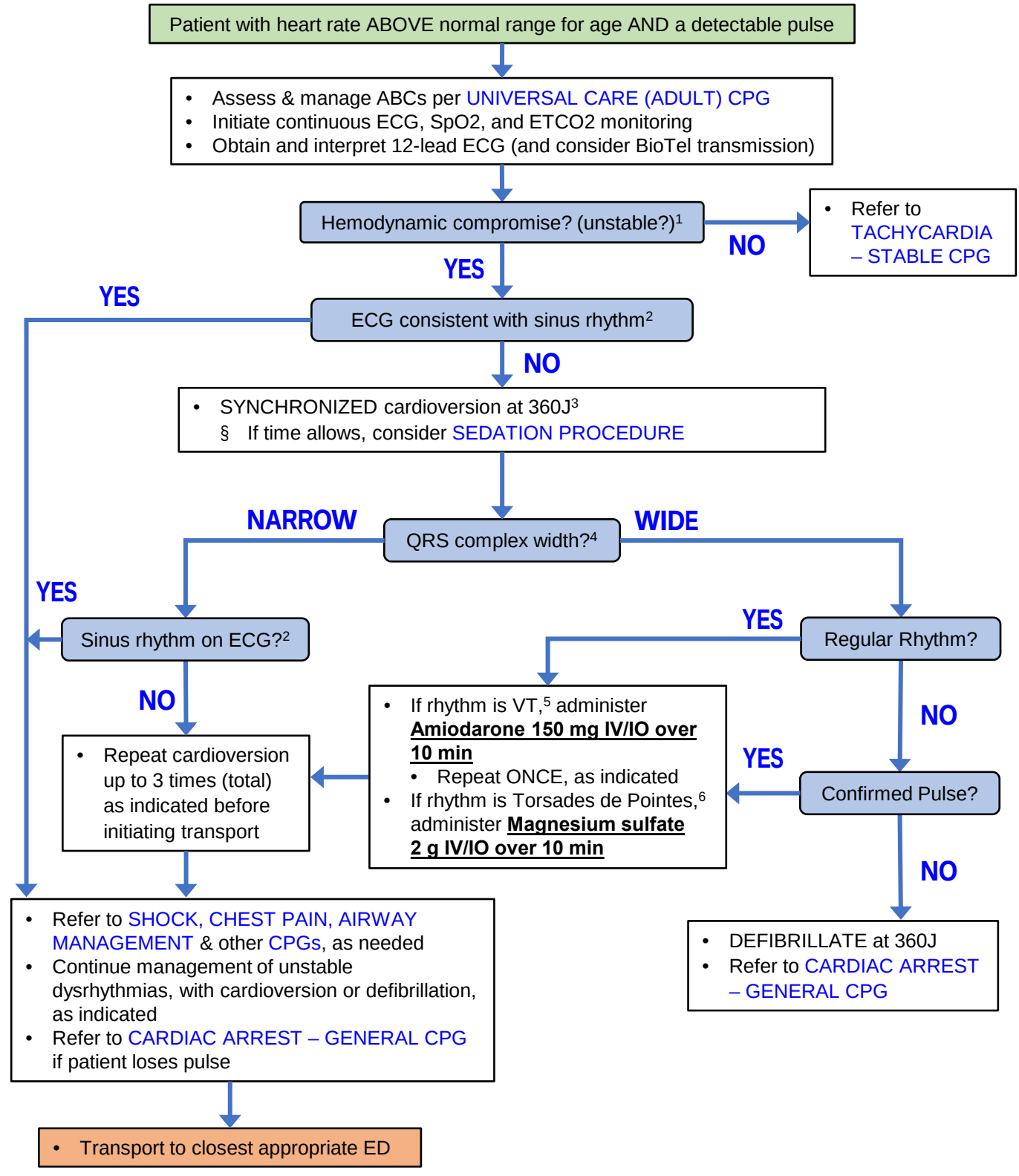
TACHYCARDIA – UNSTABLE (ADULT)

Inclusion Criteria: Patients ≥14 y/o with an abnormally fast heart rate AND evidence of hemodynamic compromise or poor perfusion AND a detectable pulse

Exclusion Criteria: Patients <14 y/o; Patients WITHOUT signs of hemodynamic compromise or poor perfusion (see TACHYCARDIA – STABLE CPG); Patients in CARDIAC ARREST (see CPGs)



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TACHYCARDIA – UNSTABLE (ADULT), cont.

Special Considerations:

1. Evidence of hemodynamic compromise includes:
   - Hypotension / shock
   - Altered mental status
   - Chest pain / shortness of breath
   - Signs of acute heart failure
2. Sinus rhythm is a NARROW complex rhythm with uniform P waves preceding every QRS complex.
3. Performing the first shock for cardioversion or defibrillation at the maximum energy available on the monitor/defibrillator device (360 J on LifePak 15) maximizes the chance of terminating the dysrhythmia.
4. The width of the QRS segment (**Figure 1**) determines whether a rhythm is narrow or wide complex:
   - If the QRS is ≤0.12 ms (3 ECG boxes) in width, it is a NARROW complex rhythm
   - If the QRS is >0.12 ms (3 ECG boxes) in width, it is a WIDE complex rhythm

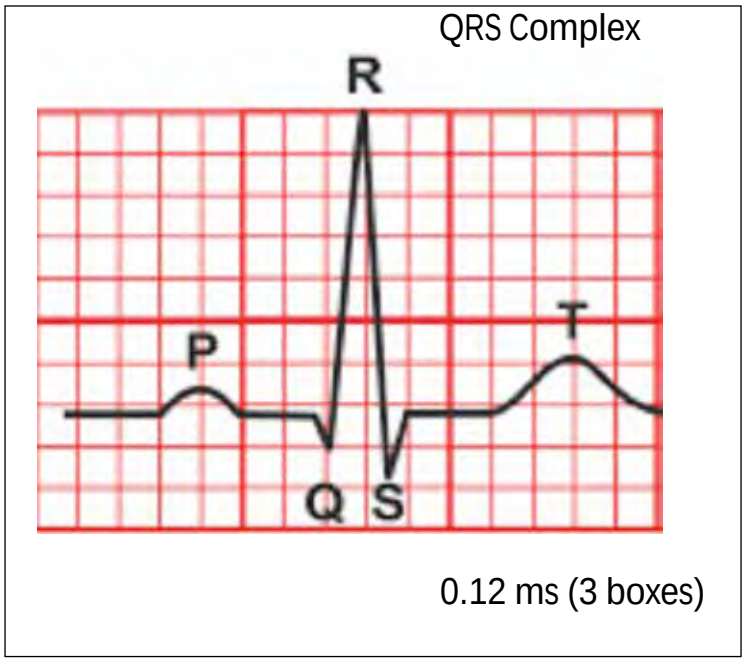


Figure 1
Adapted from: medicplusclinic.co.uk

5. Not all wide complex tachycardia is Ventricular Fibrillation. Atral fibrillation with Wolff-Parkinson White (WPW) is a rare but notable cause of unstable, IRREGULAR, wide-complex tachycardia.
   - Features include a very high heart rate (up to 300 bpm), IRREGULAR rhythm, wide QRS complex, variable QRS morphology, & known history of WPW syndrome.
   - Do NOT administer Amiodarone if this rhythm is suspected.
   - If cardioversion fails, consult a BioTel medical control physician.
6. Torsades de Pointes (TdP) is a polymorphic, irregular VT with oscillating changes in QRS complex height.
   - TdP is treated with synchronized cardioversion (if unstable) and Magnesium sulfate.

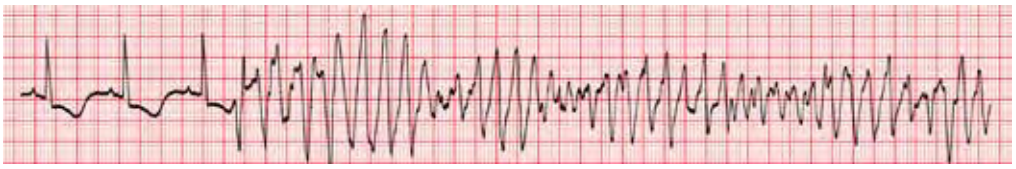
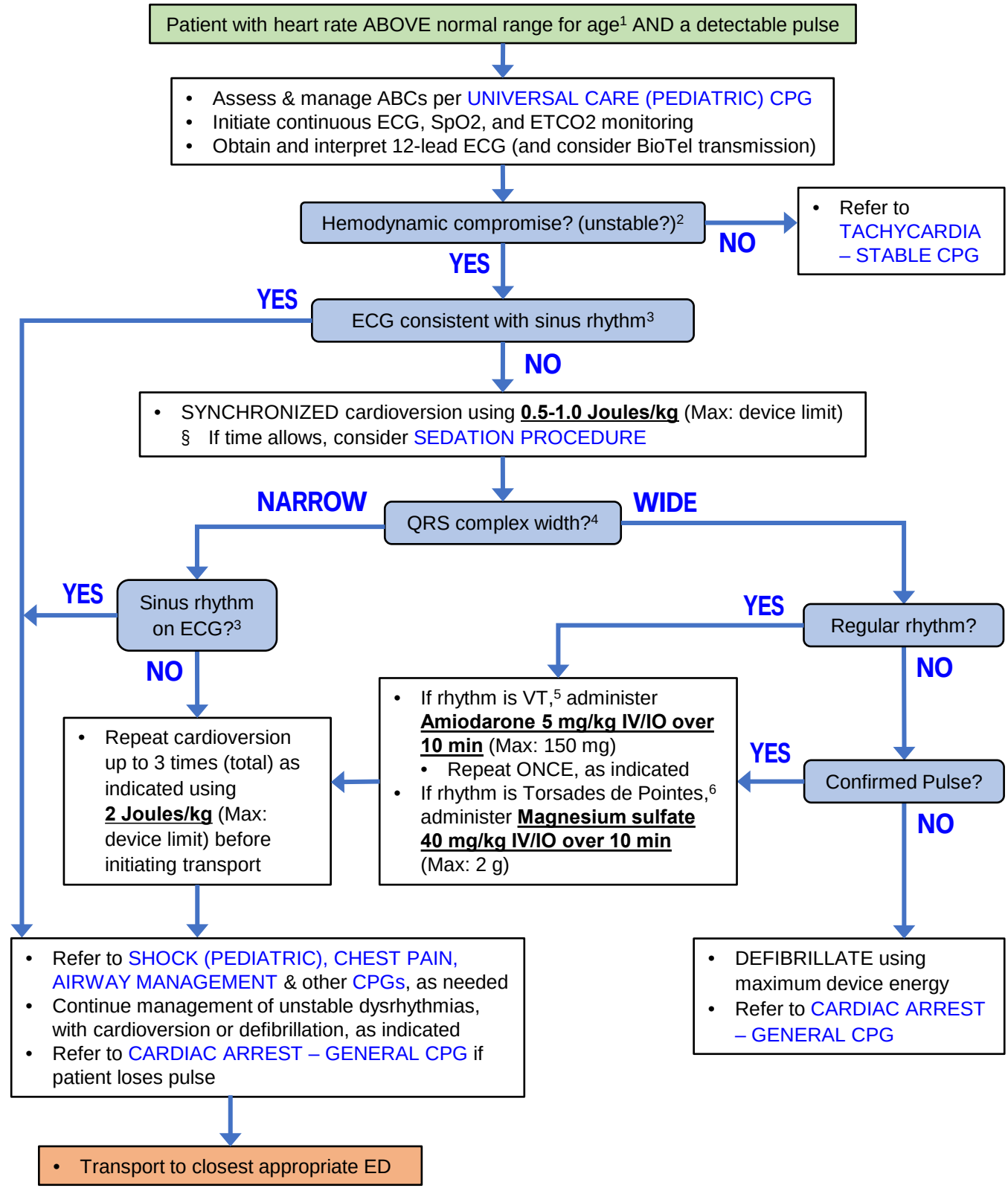


Figure 2. Torsades de Pointes
Adapted from: cardio-fr.com

TACHYCARDIA – UNSTABLE (PEDIATRIC)

Inclusion Criteria: Patients <14 y/o with an abnormally fast heart rate[1] AND evidence of hemodynamic compromise or poor perfusion AND a detectable pulse
Exclusion Criteria: Patients ≥14 y/o; Patients WITHOUT signs of hemodynamic compromise or poor perfusion (see TACHYCARDIA – STABLE CPG); Patients in CARDIAC ARREST (see CPGs)



TACHYCARDIA – UNSTABLE (PEDIATRIC), cont.

Special Considerations:

1. Refer to the BioTel PEDI-Guide or another pediatric reference (e.g., Broselow tape, Pedi-STAT) for age-appropriate pediatric heart rates.
2. Evidence of hemodynamic compromise includes:
   - Hypotension / shock
   - Altered mental status
   - Chest pain / shortness of breath
   - Signs of acute heart failure
3. Sinus rhythm is a NARROW complex rhythm with uniform P waves preceding every QRS complex.
4. The width of the QRS segment (**Figure 1**) determines whether a rhythm is narrow or wide complex:
   - If the QRS is ≤0.09 ms (2.5 ECG boxes) in width, it is a NARROW complex rhythm
   - If the QRS is >0.09 ms (2.5 ECG boxes) in width, it is a WIDE complex rhythm

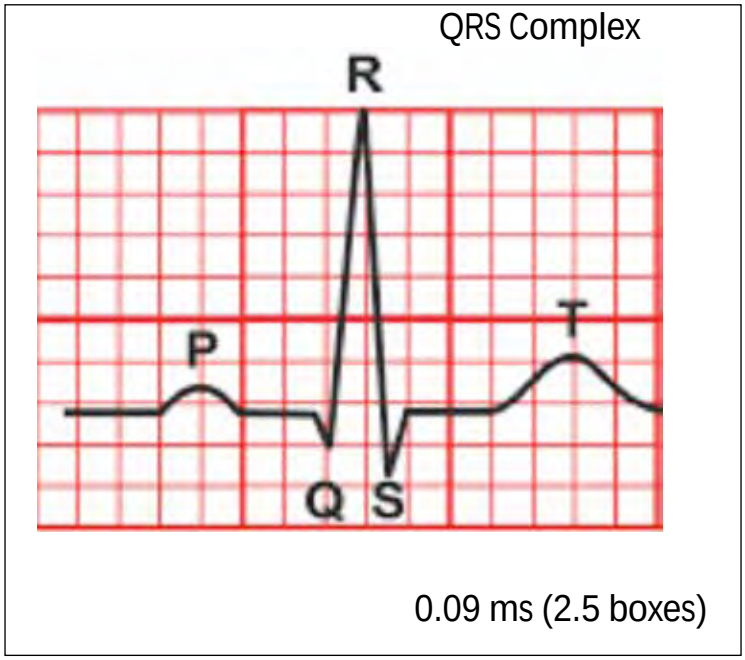


Figure 1
Adapted from: medicplusclinic.co.uk

5. Not all wide complex tachycardia is Ventricular Fibrillation. Atral fibrillation with Wolff-Parkinson White (WPW) is a rare but notable cause of unstable, IRREGULAR, wide-complex tachycardia.
   - Features include a very high heart rate (up to 300 bpm), IRREGULAR rhythm, wide QRS complex, variable QRS morphology, & known history of WPW syndrome.
   - Do NOT administer Amiodarone if this rhythm is suspected.
   - If cardioversion fails, consult a BioTel medical control physician.
6. Torsades de Pointes (TdP) is a polymorphic, irregular VT with oscillating changes in QRS complex height.
   - TdP is treated with synchronized cardioversion (if unstable) and Magnesium sulfate.

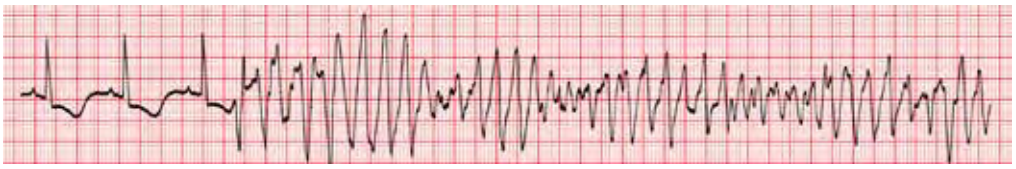


Figure 2. Torsades de Pointes
Adapted from: cardio-fr.com

TASER BARB REMOVAL PROCEDURE

Inclusion Criteria: Patients with a barb from a TASER (or similar device) lodged in their skin.
Exclusion Criteria: Taser 7 probes

BACKGROUND

- TASERs are often used on patients who are subsequently detained or arrested by law enforcement. Refer to the CUSTODY and CONSENT POLICIES for guidance on these patients.
- TASER deployment may cause falls with secondary trauma. Deployment should NOT cause ALTERED MENTAL STATUS. Refer to the TRAUMA – GENERAL and HEAD INJURY / TBI CPGs if secondary trauma is suspected.

GENERAL PROCEDURE

1. Confirm the TASER device has been deactivated and the barb cartridge has been disconnected.
2. Assess patient according to the UNIVERSAL CARE CPGs.
3. Treat co-existing medical conditions per indicated CPGs before attempting barb removal.
4. Identify the anatomical location of the barb puncture:
    - If the barb is lodged in any of the following locations, do NOT attempt removal in the field:
        - § Face, scalp, or neck (above clavicle)
        - § Genitals or perineum
        - § Breast, areola, or nipple
        - § Hands, feet, or joint
        - § Blood vessel
        - § Any location that is expected to require excessive force to remove the barb
5. Confirm TASER device model
    1. If TASER 7, request LEO use their TASER 7 Cartridge safety clip (**Figure 1**). If no tool available or LEO not willing to remove, contact BioTel for a DFR Medical Director.
    2. All other models follow procedure below.
6. Ensure Body Substance Isolation (BSI) and appropriate PPE are in place.
7. Stabilize the skin surrounding the barb while observing needlestick precautions.
8. Use forceps to grasp the barb at the skin and remove it with a smooth, firm pull.
9. Examine the barb to ensure the tip is intact (**Figure 2**). If not, transport patient to a hospital ED.
10. Cleanse the barb removal site with antiseptic and apply an adhesive bandage.
11. If the patient is being released to LEO custody and not transported to an ED (per CUSTODY & EVALUATION AND TRANSPORT POLICIES), discuss wound care instructions and advise the patient to seek medical care for signs of infection (e.g., redness, swelling, drainage, fever).
    - Also advise the patient to obtain tetanus immunization if their last dose was >5 years ago.

Figure 1. TASER 7 Cartridge safety clip ("removal tool")
(Adapted from: Monroe-Livingston Regional EMS Council (MLREMS))

Figure 2. Examples of intact TASER barbs
(Adapted from: Management of Controlled Energy Device (Taser) Attendances, Royal College of EM, Nov. 2021)

THORACOSTOMY (NEEDLE) PROCEDURE

Inclusion Criteria: Patients with clinical evidence of TENSION pneumothorax and signs of poor ventilation or perfusion
Exclusion Criteria: Hemodynamically stable patients with evidence of SIMPLE pneumothorax

SITUATIONS TO CONSIDER POSSIBLE TENSION PNEUMOTHORAX

- Trauma (especially thoracic trauma or blast injury)
- Traumatic cardiac arrest
- Medical cardiac arrest (one of the H's & T's for PEA or Asystole)
- Asthma, COPD, or underlying chronic lung disease
- Patients ventilated by BVM (mask, SGA, or ETT) who are becoming increasingly difficult to bag

INDICATIONS

- The following signs/symptoms may suggest TENSION pneumothorax:
  - § Severe respiratory distress
  - § Shock / Hypotension
  - § Unilateral absent/decreased breath sounds
  - § Unilateral poor chest wall movement
  - § Hypoxia
  - § Increased resistance to bagging
  - § Distended neck veins / JVD
  - § Pallor or cyanosis
- NO ONE SIGN ALONE guarantees tension pneumothorax (for example, decreased breath sounds alone).
- Consider the situation and the ENTIRE patient assessment including exam and vital signs.

PROCEDURE (≥14 Y/O, "ADULT")

1. Prepare a 14 G IV catheter (at least 3 in. long) OR a similar commercial thoracostomy device.
2. Position the patient supine with their arm (on affected side) secured in place above their head.
3. Identify anatomical landmarks for the insertion site:
   - 4th or 5th intercostal space at the ANTERIOR AXILLARY LINE (**Figure 1**), no lower than nipple or inframammary crease
     - § This is the PREFERRED site for needle decompression
   - 2nd intercostal space at the MID-CLAVICULAR LINE (**Figure 2**)
     - § This is an ALTERNATE site if the 4th/5th intercostal spaces cannot be used
4. Prep the insertion site with antiseptic, if time permits.
5. Insert the 14 G IV catheter perpendicular to the chest wall OVER the lower rib of the intercostal space targeted, advance, and stop when a rush of air is heard OR if the needle reaches its hub.
6. Remove the needle, leaving catheter in place and open to air.
7. Assess and document the patient's clinical response (symptoms, VS changes, breath sounds)[1]
8. Monitor for deterioration. Tension pneumothorax can re-occur if the catheter kinks or dislodges.[2]

PROCEDURE (<14 Y/O, "PEDIATRIC")

1. Prepare an 18 G IV catheter (longest available) OR a similar commercial thoracostomy device.
   - If available, a 16 G IV catheter can be used in patients >20 kg
2. Position the patient supine with their arm (on affected side) secured in place above their head.
3. Identify the insertion site at the 2nd intercostal space at the MID-CLAVICULAR LINE (**Figure 2**)
4. Follow Steps 4-8 from the **≥**14 Y/O "ADULT" section above.

THORACOSTOMY (NEEDLE) PROCEDURE, cont.

Special Considerations:

1. Needle thoracostomy may not be successful in relieving tension pneumothorax. Up to 50% of needle thoracostomies performed in the 2nd intercostal space are unsuccessful or fail.
2. If signs suggest tension pneumothorax has reoccurred, perform a second needle thoracostomy ½ inch to 1 inch LATERAL to the insertion site of the first needle.
   - ≥14 y/o ONLY: If the PREFERRED site was used, may re-attempt at the ALTERNATE site.

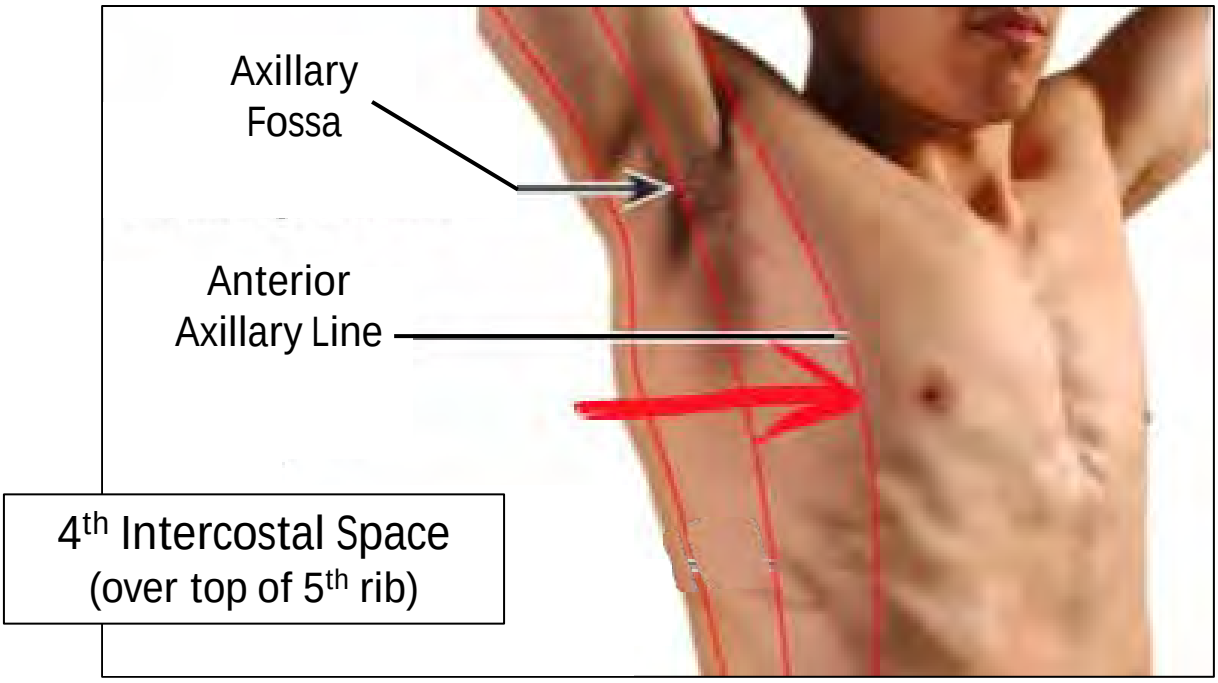


Figure 1. The 4th Intercostal Space at the Anterior Axillary Line
(Adapted from: https://www.traumamonkeys.com/blog/needled)

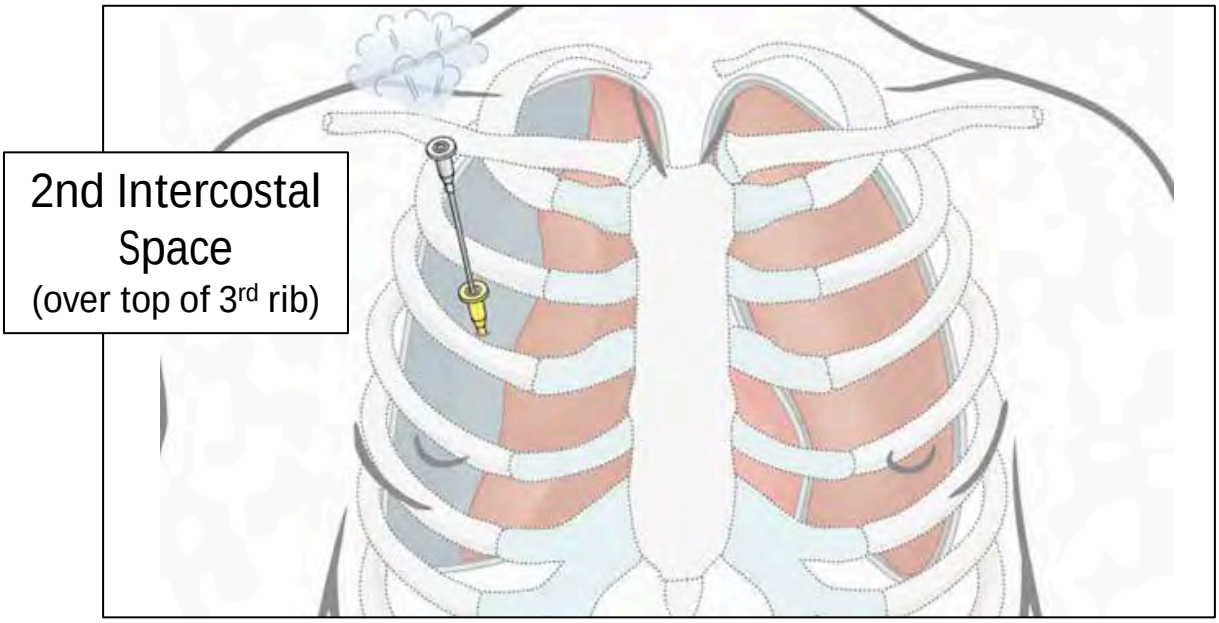


Figure 2. The 2nd Intercostal Space at the Mid-Clavicular Line
(Adapted from: https://surgeryreference.aofoundation.org)

TOXIC CHEMICAL EXPOSURE (ALL AGES)

Inclusion Criteria: Individuals with confirmed or suspected exposure to toxic substances including industrial chemicals, pharmaceuticals, illicit substances, or chemical warfare/terror agents
Exclusion Criteria: No specific exclusions
****NOTE: This CPG is not intended to replace agency-specific HAZMAT SOPs****

Patient with confirmed or suspected chemical exposure

- Ensure scene is safe
- Don appropriate PPE for suspected exposure
- Remove patient from toxic environment when safe to do so
- Attempt to identify the involved chemical using scene clues (e.g., containers, Material Safety Data Sheets)

- Assess/manage ABCs and initiate ECG & SpO2 monitoring per UNIVERSAL CARE CPGs

- Assess for signs and symptoms of specific toxin exposure (or of general toxin classes):
  - v CARBON MONOXIDE / CYANIDE
    - Refer to CARBON MONOXIDE / CYANIDE EXPOSURE CPG
  - v OPIOIDS / NARCOTICS
    - Refer to DRUG OVERDOSE OR INTOXICATION CPG
  - v RIOT CONTROL AGENTS (e.g., tear gas, pepper spray)
    - Refer to EYE INJURY and RESPIRATORY DISTRESS CPGs
  - v RESPIRATORY IRRITANTS (e.g., ammonia, sulfur dioxide, chlorine, phosgene)
    - Refer to RESPIRATORY DISTRESS and AIRWAY MANAGEMENT CPGs, as needed
    - Apply 100% supplemental O2 to maintain SpO2 >94%
    - Suction secretions, as needed
    - Consider **Nebulized Albuterol 5 mg** (with or without **Ipratropium**) for bronchospasm
  - v NERVE AGENTS (e.g., organophosphate pesticides, sarin, VX)
    - Evaluate for signs of CHOLINERGIC toxicity,[1] which can be recognized by the "DUMBBELS" and "Days of the Week" toxidromes[2,3]
    - If available, administer **Pralidoxime/Atropine auto-injector** (**IF AVAILABE**) every 3-5 min (up to 3 total doses) until DUMBBELS symptoms / secretions improve
    - If Pralidoxime/Atropine autoinjector is NOT available, administer **Atropine IV/IO/IM** every 3-5 min until DUMBBELS symptoms / secretions improve:
      - § ≥14 y/o: **2 mg**
      - § <14 y/o: **0.05 mg/kg** (Max single dose: 2 mg)[4]
    - Manage seizures with **Midazolam IM/IV** per SEIZURE CPG
      - § For patients ≥14 y/o ONLY, Diazepam from a governmental stockpile (e.g., CHEMPACK) may be administered instead of Midazolam per guidance in the Special Considerations section below[5]
    - Manage respiratory distress per RESPIRATORY DISTRESS and AIRWAY MANAGEMENT CPGs

- Decontaminate patient to the extent possible, according to agency HAZMAT SOPs
- Consult the North Texas Poison Control Center **(1-800-222-1222)** for further guidance.

- Transport to closest appropriate ED

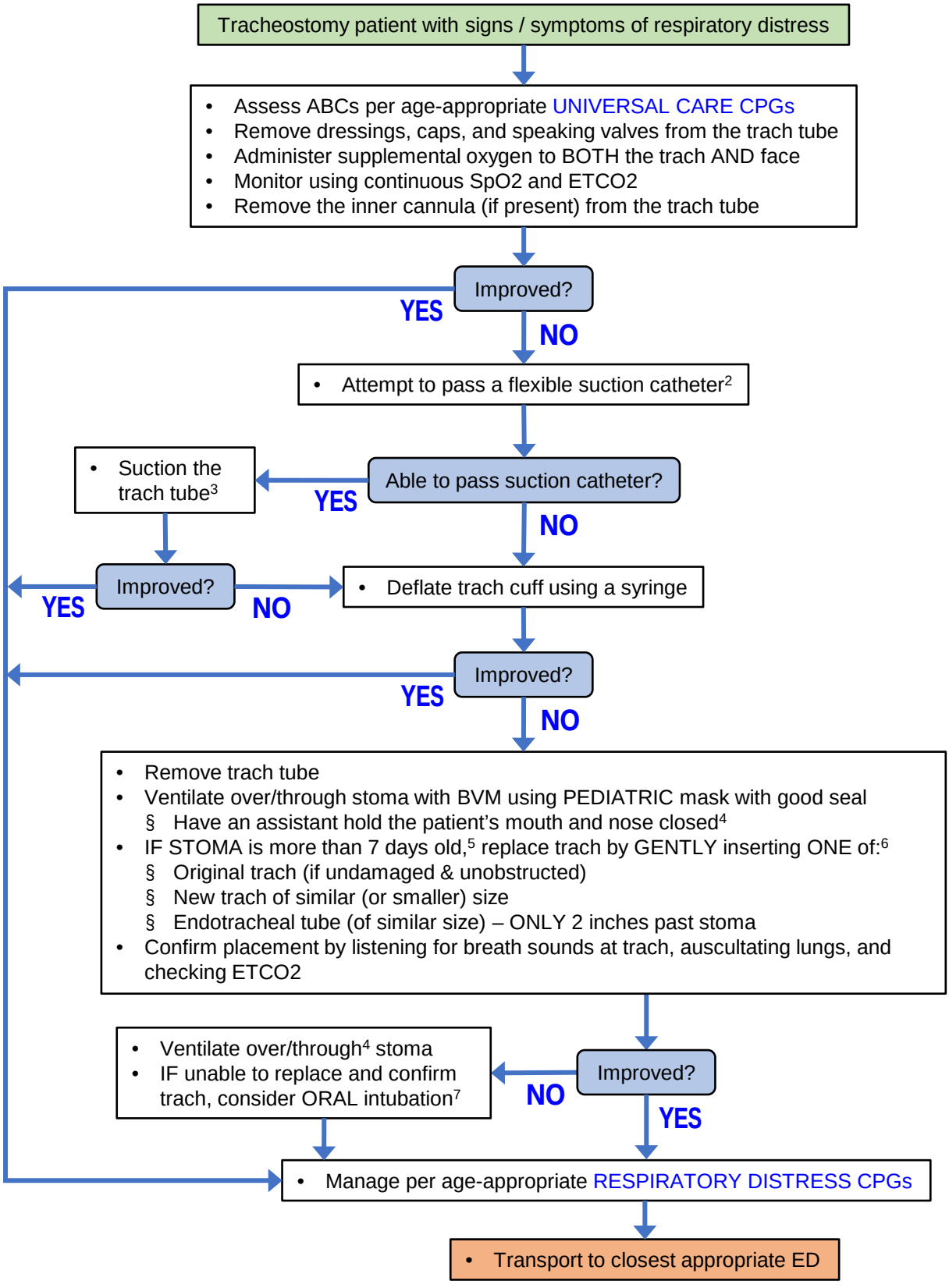
TOXIC CHEMICAL EXPOSURE (ALL AGES), cont.

Special Considerations:

1. Patients with CHOLINERGIC toxicity may present with either the DUMBBELS or "Days of the Week" toxidromes OR a combination of both toxidromes.
2. DUMBBELS Toxidrome – signs of muscarinic cholinergic toxicity
   - Diarrhea
   - Urination
   - Miosis (pinpoint pupils)
   - Bronchorrhea (airway secretions) / Bronchospasm (lower airway constriction/wheezing)
   - Bradycardia
   - Emesis (vomiting)
   - Lacrimation (watery eyes)
   - Salivation
3. "Days of the Week" Toxidrome – signs of nicotinic cholinergic toxicity
   - Mydriasis (dilated pupils)
   - Tachycardia
   - Weakness
   - Hypertension
   - Fasciculations
4. ****NOTE**:** The adult & pediatric doses of **Atropine** for muscarinic cholinergic toxicity are higher than those used for treatment of symptomatic bradycardia per CPGs and ACLS/PALS guidelines.
5. In the event of a mass exposure of multiple patients to nerve agents, antidotes may be sourced from a governmental stockpile (e.g., CHEMPACK).
   - Both Pralidoxime and Atropine from the stockpile should be administered per the guidance above.
   - Diazepam is NOT carried on BioTel ambulances but may be found in a governmental stockpile.
     - § For patients ≥14 y/o ONLY, Diazepam 10 mg IV/IO/IM may be substituted for each dose of Midazolam when treating seizures from nerve agent toxicity.
     - § Guidance for the treatment of seizures should otherwise proceed per the SEIZURE CPG.

TRACHEOSTOMY CARE (ALL AGES)

Inclusion Criteria: Patients of all ages with a tracheostomy tube (or laryngectomy stoma)[1]
Exclusion Criteria: No specific exclusions



TRACHEOSTOMY CARE (ALL AGES), cont.

Special Considerations:

1. Definitions:
   - **Tracheostomy stoma ("trach stoma")** – A surgical opening in the anterior neck into the trachea through which a patient breathes. Trach stomas are usually created in patients with significant upper airway obstruction, but most patients have SOME connection between the oral cavity and the trachea.
   - **Tracheostomy tube ("trach tube")** – An artificial airway inserted through a trach stoma.
   - **Laryngectomy** – Surgical removal of the larynx. These patients have NO CONNECTION between the upper airway (oral cavity) and lungs. They are fully dependent on their trach stoma/tube to breathe.

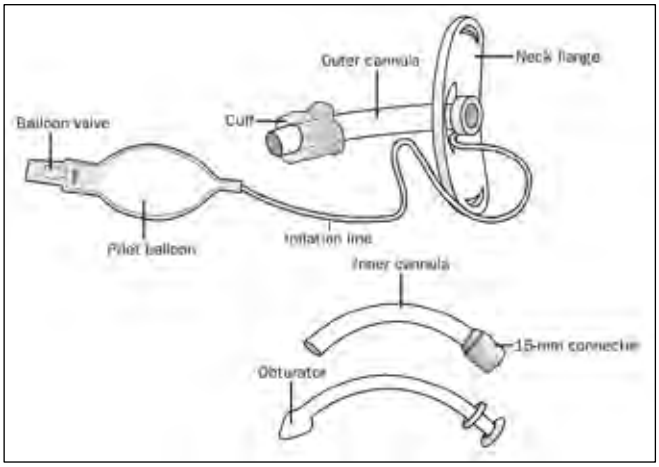


Figure 1. Parts of a Trach Tube
(adapted from trachresource.com)

Figure 2. Trach suctioning technique

2. To select a suction catheter, divide the trach tube size by 2, then multiply by 3 for the suction catheter size.
   - Example for a size 4 trach: 4 ÷ 2 x 3 = 6 à use a 6 French catheter (or closest available size)
3. Trach Suctioning Technique (**Figure 2**):
   - Instill 2-3 mL of **Normal Saline** from a flush into the trach tube to loosen secretions.
   - Insert the suction catheter approximately 3.5 inches (9 cm) WITHOUT suctioning during insertion.
   - When inserted, cover the suction port for 3-5 seconds and withdraw while rotating in a circular motion.
   - Monitor for bradycardia (especially in infants/children) and stop suctioning immediately if it occurs.
4. When ventilating over/through the stoma with a BVM, an assistant should hold the patient's mouth and nose closed to ensure air passes into the lungs.
5. EMS personnel should NOT insert trach tubes through a stoma that was created less than 7 days before.
6. Notes for Trach Tube Replacement:
   - NEVER force a trach tube (or ET tube) into a stoma. If unable to pass a trach tube, ventilate over/through the stoma with BVM and divert to the nearest appropriate ED.
   - When re-inserting a trach tube, the obturator should be placed in the lumen of the trach tube. Remove the obturator after insertion and before ventilation.
   - If the trach tube won't pass, try inserting a flexible suction catheter into the stoma to use as a guide. Remove the obturator and GENTLY pass the trach tube over the suction catheter.
7. Notes for Oral Intubation:
   - Intubation from above is not possible in patients with a laryngectomy.
   - If intubating through the oral cavity, the ET tube cuff should be inflated BELOW the trach stoma.
8. For patients with MASSIVE bleeding from a trach:
   - Over-inflate the cuff with 30-50 mL of air.
   - Divert to the closest appropriate ED.
   - If over-inflating the cuff does not help in a patient who with massive hemorrhage from the trach, place a finger through the stoma and apply direct pressure to any pulsatile bleeding site.

TRANSCUTANEOUS PACING PROCEDURE

Inclusion Criteria: Patients of all ages with unstable bradycardia with hemodynamic compromise (per BRADYCARDIA CPGs for Adult and Pediatric patients)
Exclusion Criteria: Patients with STABLE bradycardia; Cardiac arrest patients in PEA or Asystole

GENERAL PROCEDURE

1. Prepare necessary equipment:
   - Cardiac monitor with pacing capability
   - Pacing pads (defibrillation pads)
   - Limb leads for 4-lead continuous ECG (required for pacing functionality)
2. Establish IV/IO access
3. Apply ECG leads and pacing pads (anterior-posterior orientation, when possible) to the patient (**Figure 1**).
4. IF TIME PERMITS, administer SEDATION per PROCEDURE.
5. Select and activate the pacing function on the monitor.
6. Set the initial pacing rate as follows:
   - <3 y/o: 120 bpm
   - 3-13 y/o: 100 bpm
   - ≥14 y/o: 80 bpm
7. Start output at 80 mA, increase the output current in 10 mA increments until ELECTRICAL capture is achieved[1] (**Figure 2**) or the maximum output (200 mA) is reached.
8. Verify MECHANICAL capture by palpating the patient's pulses at multiple sites
   - If capture is not achieved at maximum output, discontinue pacing and see Step 10 below.
   - Verifying the SpO2 waveform matches the pacer rate may be used as an adjunct for mechanical capture confirmation
9. Observe for signs of clinical improvement (e.g., improved blood pressure, perfusion, alertness).
10. If pacing is unsuccessful, refer to other CPGs (e.g., ALTERED MENTAL STATUS, CHEST PAIN, SHOCK / HYPOTENSION) for guidance.[2]

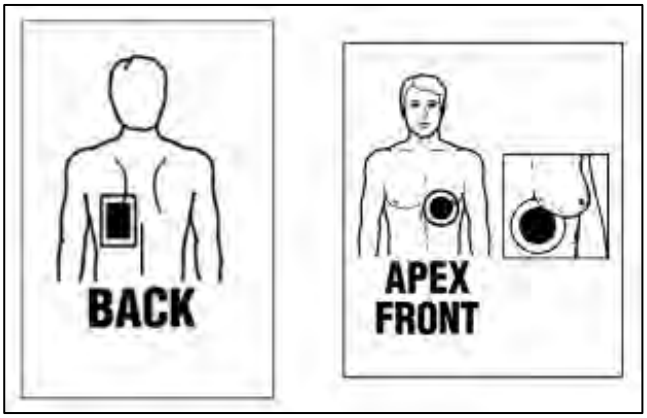


Figure 1. Anterior-Posterior Pad Placement

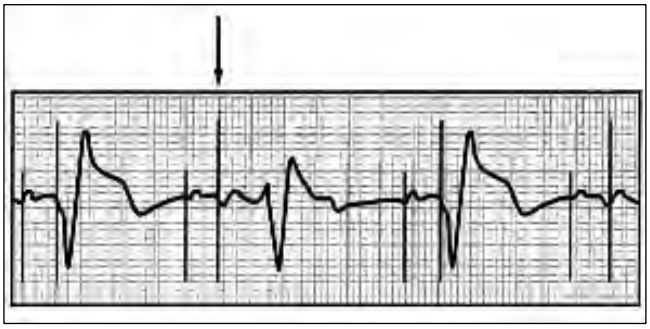


Figure 2. Monitor strip showing electrical capture (pacer spike before every wide, slurred QRS complex)

Special Considerations:

1. Most adults achieve electrical capture between 60 and 100 mA.
2. If pacing is unsuccessful, consider discussing options with a BioTel medical control physician.

TRAUMA – GENERAL (ALL AGES)

Inclusion Criteria: Patients with injuries due to blunt and/or penetrating trauma
Exclusion Criteria: Cases of traumatic cardiac arrest (see CARDIAC ARREST – TRAUMATIC CAUSE CPG)

****NOTE: Scene safety is the #1 priority.****

Patient with confirmed or suspected traumatic injuries → **IF PULSELESS** → CARDIAC ARREST – TRAUMATIC CAUSE CPG

- Initiate management and monitoring per UNIVERSAL CARE CPGs
- For major trauma, the MARCH[1] algorithm replaces the ABCDE algorithm for primary assessment
- Obtain full exposure, as indicated, to identify injuries (then cover)
- Stabilize spine per SPINAL MOTION RESTRICTION (SMR) CPG, as indicated

MASSIVE HEMORRHAGE
- Visually inspect for evidence of life-threatening bleeding
- Refer to HEMORRHAGE / BLEEDING CPG and TRAUMA – AMPUTATED BODY PART CPG, as indicated

AIRWAY
- Assess airway patency, then manage with escalating interventions per AIRWAY MANAGEMENT CPGs
- Refer to AIRWAY OBSTRUCTION CPG and CRICOTHYROTOMY PROCEDURES, as indicated

RESPIRATION (BREATHING)
- Administer supplemental oxygen to maintain SpO2 ≥94%
- Manage sucking chest wound with a vented chest seal or an occlusive dressing (taped on ALL 4 sides)
- If evidence of tension pneumothorax, perform THORACOSTOMY (NEEDLE) per PROCEDURE

If critically injured/unstable, initiate transport and perform interventions concurrently. Otherwise, interventions may be performed prior to transport.

CIRCULATION
- Establish IV or IO access as indicated
  - TWO sites of access preferred for major trauma
  - Large-bore IVs preferred – 18g or larger for ≥14 y/o, largest size feasible for ages <14 y/o
- Manage SHOCK / HYPOTENSION per CPG, as well as above interventions
- If pelvic injury[2] suspected in a hypotensive patient (by mechanism/exam), consider commercial pelvic binder (If available) or binding pelvis with sheet[3].

HEAD INJURY & HYPOTHERMIA
- Assess / document Glasgow Coma Scale (GCS), monitor for deterioration
- Refer to HEAD INJURY / TBI CPG and AGGRESSIVELY manage hypotension using adjusted BP targets[6]
- Keep patient covered and warm patient compartment to prevent hypothermia and clotting problems

- Perform secondary survey and manage additional anatomical injuries, as follows:
  - Eye injury: Refer to EYE INJURY CPG
  - Abdomen / Pelvis: Cover eviscerated organs with **Isotonic Fluid**-soaked gauze, then plastic sheeting
  - Extremities: Splint injured extremities as they lie UNLESS manipulation is needed to restore distal pulses
  - Impaled object: Do NOT attempt to remove the object(s). Stabilize and pad IN PLACE, as able.

- Transport to Level I/II Trauma Center if indicated,[3,4] or closest appropriate ED per DESTINATION POLICY

TRAUMA – GENERAL (ALL AGES), cont.

Special Considerations:

1. For patients with traumatic injuries, the MARCH algorithm is used to assess the ABCs:
   - Massive hemorrhage, Airway, Respiration, Circulation, Head Injury & Hypothermia
2. Suspect pelvic injury in a patient with a high-risk traumatic mechanism AND concerning signs/symptoms:
   - High-risk mechanisms include: high-energy MVC, falls, pelvic crush injury, auto vs. ped
   - Signs/symptoms include: HYPOTENSION, pelvic instability, pelvic / low back / groin pain
3. A commercial pelvic binder (if available) or bedsheet should be placed at the level of the pubic symphysis and HIPS (around the greater trochanters of the femurs) NOT at the waist/iliac crest level. See **Figure 1**.
   - If bedsheet used, ensure it is folded, placed at level described above, pulled to tighten and then tied.

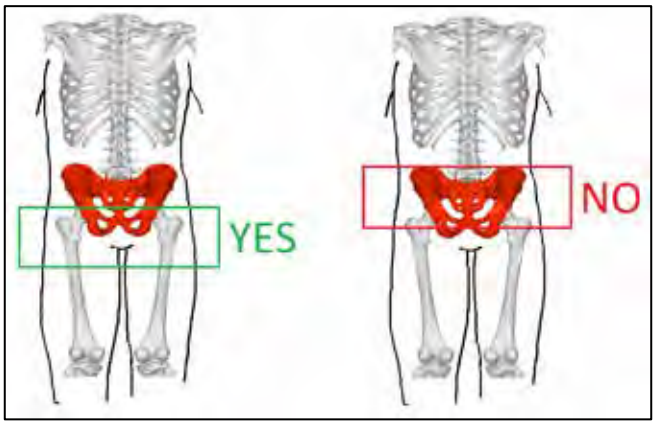


Figure 1. Correct placement of sheet or commercial pelvic binder

4. The following Prehospital Trauma Center Triage Criteria **require** transport to a **Level I/II Trauma Center**:

INJURY PATTERNS	ABNORMAL MENTAL STATUS / VITAL SIGNS
Penetrating injury to head, neck torso	Unable to follow commands (motor GCS <6)
Penetrating injury to extremity above elbow or knee	Respiratory rate <10 or >29
Skull deformity	Respiratory distress
Head injury with anticoagulant (blood thinner) use	Need for respiratory support
Spinal injury with motor or sensory loss	Room air pulse oximetry <90%
Chest wall instability or deformity (e.g., flail chest)	Systolic blood pressure below: • <10 y/o: 70 mmHg + (2 x age) • 10-64 y/o: 90 mmHg • ≥ 65 y/o: 110 mmHg
Pelvic fracture	
Fracture of 2 or more long bones	
Crushed, degloved, mangles, or pulseless extremity	
Amputation above wrist or ankle	HR > Systolic BP (in patients ≥ 10 y/o)
Active bleeding requiring tourniquet or packing	

5. **CONSIDER** a **Level I/II** Trauma Center for the following Prehospital Trauma Center Triage Criteria:

MECHANISM OF INJURY	EMS JUDGEMENT
High risk auto crash: • Ejection • Significant intrusion • Death in passenger compartment • Unrestrained child <10 y/o	Falls in children ≤ 5 y/o or adults ≥ 65 y/o with head injury
	Anticoagulant (blood thinner) use
	Suspected child (or elder) abuse
	Patients with complex healthcare needs
Rider separated from vehicle after impact	Pregnancy >20 weeks
Pedestrian/bicyclist thrown or run over after impact	Burns in conjunction with trauma
Fall from >20 ft	Falls from >10 ft

(Continued on the next page)

TRAUMA – GENERAL (ALL AGES), cont.

Special Considerations (cont.):

6. Moderate to severe head injury
   - Blood pressure goals for patients with moderate to severe head injury are higher than those for hypotensive patients with general trauma.
   - Patient with isolated head injury OR head injury plus multisystem trauma, should be treated according to the blood pressure guidelines in the HEAD INJURY / TBI CPG.
   - Hypoxemia should be aggressively managed in these patients per the HEAD INJURY / TBI CPG using high-flow oxygen via non-rebreather mask.
7. Carefully monitor respiratory and mental status in all patients receiving opioids for PAIN MANAGEMENT (per CPG).
8. For pregnant patients with a gravid uterus and traumatic injuries, manual displacement of the uterus to the LEFT improves venous return (**Figure 2**) during resuscitation. Elevating the RIGHT side of a backboard achieve 15-20° LEFTward tilt is an acceptable alternate method (**Figure 3**).

Figure 2

Figure 3

(Figures adapted from American Heart Association materials)

TRAUMA – AMPUTATED BODY PART (ALL AGES)

Inclusion Criteria: Patients with amputation of 1 or more extremities (including a finger or toe)
Exclusion Criteria: No specific exclusions

- Assess and manage ABCs per UNIVERSAL CARE and TRAUMA – GENERAL CPGs

↓

- Manage hemorrhage from the stump wound per HEMORRHAGE / BLEEDING CPG using a tourniquet[1,2] when possible as well as direct pressure with regular or hemostatic gauze.
- Manage SHOCK / HYPOTENSION per CPGs
- Treat pain according to PAIN MANAGEMENT CPG

↓

- Recover the amputated body part, if possible
- Prepare the amputated body part for transport as follows:[3,4]
  1. Remove gross contamination by rinsing with **Isotonic Fluid**
  2. Wrap damaged tissue in gauze moistened (NOT soaked) with **Isotonic Fluid**
  3. Wrap moistened gauze with additional dry gauze
  4. Place body part in a watertight plastic container
  5. Place plastic container on ice, if available

↓

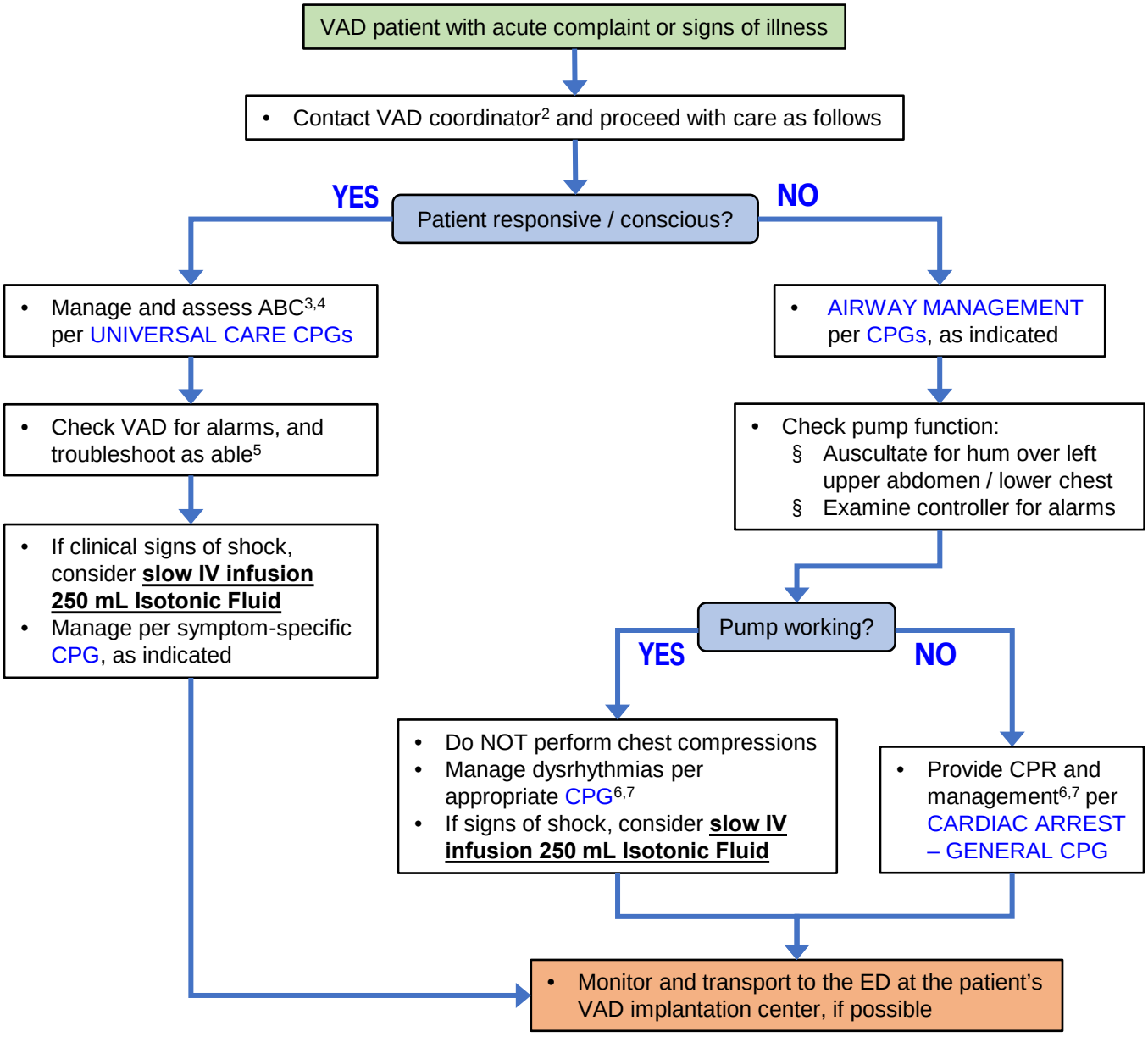
- Transport the amputated body part along with the patient to the closest appropriate hospital
  - § In most cases, this will be a Level I or Level II Trauma Center (see criteria in the TRAUMA – GENERAL CPG)

Special Considerations:

1. Direct pressure alone is unlikely to control bleeding from an amputated stump above the wrist or elbow. These wounds should be managed with a tourniquet (see HEMORRHAGE / BLEEDING / TOURNIQUET USE CPG for application instructions).
2. If a single tourniquet does not control the bleeding, adding a second tourniquet side-by-side to the first tourniquet should be considered.
3. Do not soak the amputated body part in water.
4. Do not place the body part in direct contact with ice or allow the body part to freeze.

VENTRICULAR ASSIST DEVICE (ALL AGES)

Inclusion Criteria: Patients with implantable ventricular assist devices (VADs)[1]
Exclusion Criteria: Patients without VADs



Special Considerations:

1. A guide document for EMS professionals on various VAD models is available at www.mylvad.com.
2. The phone number for the patient's VAD coordinator can usually be found with their spare VAD equipment.
3. Many VAD patients do not have palpable pulses, even at baseline when the VADs is functioning properly.
4. Pulse oximetry may not be accurate in VAD patients without a palpable pulse.
5. VAD patients should have a spare VAD controller, spare battery, and AC charging cable available. Use these resources to troubleshoot a nonfunctioning controller or low/dead battery.
6. Cardioversion and defibrillation ARE allowed in VAD patients if needed and will not damage the device.
   - Place the anterior pad BELOW the patient's implanted defibrillator (ICD) and ABOVE their VAD device.
7. Patients may live with a dysrhythmia at baseline. Treat the patient based on clinical signs and symptoms.

Policies

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ADVERSE INCIDENT SELF REPORTING

Purpose: To guide BioTel EMS personnel on the process for mandatory reporting of adverse incidents involving patients or bystanders in order to improve quality of care and decrease risk
Inclusion Criteria: Any incident involving patients or bystanders with confirmed or suspected adverse consequences, including "near miss" events
Exclusion Criteria: No specific exclusions

I. Background and Overview
   A. Reporting an adverse incident can serve as a learning opportunity and lead to implementation of safer practices and procedures.
      1. Even a "near miss" incident (such as a stretcher collapsing) should be reported even if there is no obvious injury or adverse outcome.
   B. Reporting is not intended to be a punishment for EMS personnel.
   C. EMS agency leadership will review each self-reported incident to understand factors involved.
   D. Agency leadership (and the Medical Director, as needed) will determine whether the incident requires an action plan to decrease the likelihood of a similar future event.
   E. A post-incident action plan may include education, training, or changes to policies and procedures.
   F. Self-reporting is regarded favorably during incident investigation and development of an action plan.

II. Adverse Incident Self-Reporting Process
   A. When an EMS professional recognizes that they have committed a medical error OR when there has been an accidental injury or "near injury" to a patient or bystander, that EMS professional shall do the following:
      1. Immediately report the incident to EMS Field Supervisor once it is safe and appropriate to do so.
      2. For incidents involving a CURRENT patient under EMS care, a detailed physical examination shall be performed.
      3. If the patient is transported, notify the receiving hospital staff of pertinent incident details and any physical exam findings at time of handoff.
      4. A brief description of the adverse incident, the results of the new patient examination, steps taken to address the incident, and, if applicable, that receiving hospital staff were notified, shall be documented in the electronic patient care record (ePCR).
      5. If the incident involves a BYSTANDER, then this person becomes a PATIENT (per DEFINITION OF A PATIENT POLICY) and a new ePCR record should be created for this individual.
         a. All requirements listed in **Sections II.A.2** and **II.A.4s** now apply to this patient.
   B. The EMS Field Supervisor (or designee) receiving the report shall do the following:
      1. Provide positive support to the member(s) for reporting the adverse incident.
      2. Document any additional actions or resolution taken after notification.
      3. Forward all related information to the Dallas Fire-Rescue Office of the Medical Quality Management Division, Medical Director, and DFR Quality Management Lieutenant.
      4. Determine if the adverse incident should be reported by phone to the on-call DFR Medical Director. If in doubt, an adverse incident should be reported.
   C. If indicated, agency leadership (and the Medical Director) will conduct an incident investigation.
      1. This investigation may include interviews with the EMS personnel involved, interviews with witnesses, examination of supplies and equipment, and any other actions necessary to determine the nature, severity, and agency- or system-wide implications of the incident.

III. Adverse Incidents or Medical Errors Reported by Individuals Other than BioTel EMS Personnel
   A. Adverse incidents or medical errors that have been alleged by the public, patients, patients' family members, medical staff, outside EMS personnel, or others shall be forwarded IMMEDIATELY to the agency's EMS Supervisor (or designee). The EMS Supervisor shall then follow the process outlined in **Section II.B**.

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CONSENT

Purpose: To guide UTSW/Parkland BioTel EMS personnel regarding requirements for patient consent for evaluation, treatment, and transport in a variety of circumstances
Inclusion Criteria: As above
Exclusion Criteria: No specific exclusions

I. Background and Overview
   A. EMS personnel often encounter situations in which medical-legal advice should be sought prior to decision-making about treatment or transport.
   B. If an EMS professional believes a person needs emergency medical evaluation and treatment, that EMS professional has the duty to approach that person and attempt to obtain consent for evaluation and treatment.
   C. EMS personnel shall make every effort to persuade a patient to voluntarily consent to evaluation, treatment, and transport (as indicated). This includes contacting BioTel for assistance.

II. Conscious Adult Patients, WITHOUT Signs or Symptoms of Alcohol or Drug Intoxication, NOT in Custody
   A. EMS personnel do NOT have the legal right to evaluate or treat the patient against their will.
   B. If the patient does not appear to have a serious, life- or limb-threatening complaint or injury, EMS personnel shall explain to the patient the potential risks of refusing care, treatment, or transport.
      1. Both this explanation and the refusal must be documented in the electronic patient care record (ePCR).
      2. A witnessed, signed refusal shall be obtained (including witness contact information).
   C. If EMS personnel believe a patient's refusal places the patient at significant risk, BioTel should be contacted for assistance.

III. Unconscious Patients
   A. Any patient who is unconscious may be evaluated, treated, and transported under the doctrine of "Implied Consent."
   B. If a patient ever becomes unresponsive during interaction with EMS, immediately begin treatment under the concept of "Implied Consent," regardless of prior statements/or wishes of the patient.

IV. Patients in Law Enforcement Custody
   A. A patient in custody MAY refuse evaluation or treatment by EMS in non-emergent situations.
   B. If a patient with signs or symptoms of a potentially life-threatening condition attempts to refuse care, contact a BioTel medical control physician for guidance.
   C. If EMS personnel are concerned a patient is UNABLE TO MAKE AN INFORMED DECISION TO REFUSE CARE, contact a BioTel medical control physician for assistance.
   D. If a patient has obvious evidence of a life-threatening condition, EMS personnel should administer care per the BioTel CPGs to the extent that is safely possible.
   E. Patients in law enforcement custody may NOT refuse transport to a hospital ED if either law enforcement or EMS personnel believe it is in the patient's best interest.

V. Patients at Risk of Harming Themselves or Others
   A. Patients who are at risk of harming themselves or others (e.g., who have suicidal or homicidal ideation) MAY refuse immediate evaluation or treatment by EMS.
   B. If such a patient refuses evaluation and/or transport, EMS shall contact a law enforcement officer immediately for evaluation for possible emergency detention (see CUSTODY POLICY for guidance).
   C. If law enforcement will not assist in obtaining permission to treat or transport the patient, contact a BioTel medical control physician for guidance.

CONSENT, cont.

VI. Intoxicated or Possibly Impaired Patients
- A. A patient with signs or symptoms of intoxication (with alcohol or another illicit substance) or whose medical condition appears to significantly impair their judgment may be “alert and oriented times four” but may lack sufficient decision-making capacity to effectively communicate their understanding of voluntary consent for treatment or transport.
- B. EMS personnel should contact BioTel for assistance if there are concerns about the patient’s decision-making capacity.

VII. Minor Patients
- A. For medical-legal purposes, a minor is defined as a person younger than 18 years old.
- B. In general, minors cannot consent for their own treatment or transport, UNLESS:
  1. The patient is legally married AND produces a certificate of marriage for inspection.
  2. The patient is unmarried AND pregnant AND consents to pregnancy-related treatment.
  3. The patient is seeking care for drug or chemical addition, dependency, or abuse.
  4. The patient is on active duty in the U.S. Armed Forces.
  5. The patient is 16 years of age or older, lives separate or apart from the parent(s) or legal guardian(s), and produced a copy of a court order permitting them decision-making authority.
  6. The patient suffers from an infectious, contagious, or communicable disease.
  7. The child is 16 years of age or older and seeks treatment in a mental health facility.
  8. The patient consents to counseling related to suicidal ideation, abuse (sexual, physical, or emotional) in the absence of a court order prohibiting such counseling.
  9. The minor appears to be suffering from abuse or neglect and requests treatment.
- C. For minor patients who do NOT meet any of the criteria in **Section VII.B**, the following adults (≥18 y/o) may provide consent for the patient:
  1. The patient’s parent, grandparent, adult brother, adult sister, aunt, or uncle
  2. An educational institution that can provide EMS professionals with written authorization from an authorized person to consent for the patient.
  3. The patient’s legal or court-appointment adult guardian who provides a court order to that effect.
  4. A law enforcement officer who has lawfully taken custody of the patient
- D. Emancipation
  1. An emancipated minor has had the “disabilities of minority” removed by court order.
  2. An emancipated minor may consent to or refuse treatment (in the same manner as an adult) UNLESS they are in law enforcement custody.
  3. To consent or refuse treatment, an emancipated minor MUST be able to produce a copy of the court order confirming their emancipated status.
  4. BioTel should be contacted for further guidance if an emancipated minor attempts to refuse care.
- E. In the absence of or inability to communicate with a parent, adult relative or other qualified adult, a minor patient shall be treated and transported under the doctrine of “Implied Consent.”
- F. Parent/Guardian Refusal
  1. If no special circumstances apply enabling a minor to consent to their own treatment or transport, consent MUST be obtained from the patient’s parent or legal guardian unless abuse or neglect is observed or communicated.
  2. If the parent/legal guardian REFUSES consent for treatment or transportation and EMS personnel believe the life of the child may be in immediate danger, contact BioTel for assistance.
  3. If the parent/legal guardian is NOT PRESENT on scene, an adult relative (e.g., grandparent, aunt/uncle, or sibling ≥18 years of age) OR an appropriate surrogate with WRITTEN DOCUMENTATION allowing them to make medical decisions for the patient in the absence of the parent/legal guardian (e.g., a school official) may provide consent for treatment/ transport.

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CREDENTIALING

Purpose: To set forth requirements for and ensure a consistent process for credentialing (and re-credentialing) of DFR EMS professionals
Inclusion Criteria: All DFR members who serve as EMS professionals caring for patients
Exclusion Criteria: EMS professionals seeking to RETURN TO DUTY AFTER EXTENDED ABSENCE of >6 months (see separate POLICY)

I. Background and Overview
   A. Credentialing is the process by which EMS personnel obtain authorization by the Dallas Fire-Rescue Chief Medical Officer/Medical Director (hence forth all references abbreviated to Medical Director) to provide medical care as a member of the Dallas Fire-Rescue Department.
   B. All DFR paramedics and EMTs must comply with Texas Department of State Health Services (DSHS) licensure rules as well as all agency-specific policies to obtain or maintain credentialing in the BioTel System and Dallas Fire-Rescue.
   C. A credential to work as a DFR EMS professional shall ONLY be granted by the Medical Director.
   D. The ultimate authority regarding credentialing of a DFR EMS professional to care for patients lies with the Medical Director.

II. Initial Credentialing
   A. Existing EMS personnel employed by and in good standing with DFR and currently credentialed by the Medical Director at the time of adoption of this policy shall be considered credentialed.
   B. Newly hired DFR EMS personnel shall be credentialed after confirmation all the following:
      1. Valid licensure or certification as a paramedic by the State of Texas
      2. Successful completion of the DFR EMS Bootcamp in entirety
      3. Successfully passing the DFR Clinical Practice Guidelines (CPG) Exam
      4. Interview or final review during DFR EMS Bootcamp with the Medical Director

III. Re-Credentialing (Biennial)
   A. Beginning in 2025, all DFR EMS personnel shall be required to undergo re-credentialing every two (2) years.
   B. ALL of the following criteria must be met for re-credentialing:
      1. Continued employment in good standing with DFR
      2. Recommendation for re-credentialing by the DFR EMS Operations leadership
      3. Successfully passing of the DFR CPG Exam
      4. Demonstration of competency with selected patient care skills
      5. (IF APPLICABLE) Documentation of completion of any refresher or remedial training required by the DFR Office of the Medical Director since the last credentialing approval.

IV. Restriction of a Credential
   A. Suspension
      1. The Medical Director may suspend the credential of a DFR EMS professional at any time if there is concern an individual is unable to safely and/or effectively care for patients.
      2. The Medical Director shall inform the DFR EMS professional and DFR operations leadership of the credential suspension and the reasons this action was taken.
      3. The Medical Director shall specify the requirements for reinstatement of the credential on either probationary or unrestricted status.
   B. Probation
      1. The Medical Director may place an existing credential on probationary status if a clinical performance issue is identified.

CREDENTIALING, cont.

2. The Medical Director shall inform the EMS professional and DFR operations leadership that a credential has been placed on probation and the reasons this action was taken.
3. The Medical Director shall specify the time period of the probationary status as well as performance improvement actions that must be completed in order to end the probationary period.

C. Revocation
1. The Medical Director may revoke the credential of a DFR EMS professional at any time if they believe an individual is no longer qualified to safely and/or effectively care for patients.
2. The Medical Director shall inform the DFR EMS professional and DFR leadership of the credential revocation and the reasons this action was taken.
3. If the Medical Director believes reinstatement is a possibility, they shall specify the requirements for potential reinstatement on probationary status.

D. Appeal
1. An EMS professional whose credential has been suspended or placed on probation may request a review of this decision by a Credential Review Panel (see **Section V**).

V. Credential Review Panel
A. On an as-needed basis, the Medical Director shall convene a voluntary panel of three (3) EMS physicians who are not directly or indirectly involved in medical direction for DFR.
B. The Panel shall review any credentialing issue requested either by an EMS professional or by the DFR Medical Director.
C. After reviewing a credentialing issue, the Panel will recommend to the DFR Medical Director whether to uphold or change the restricted status of an EMS professional's credential.

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CUSTODY

Purpose: To provide guidance on evaluating and managing patients in law enforcement custody
Inclusion Criteria: Patients detained by or in custody of law enforcement or peace officers
Exclusion Criteria: Patients who are not detained or in custody

I. Background and Overview
   A. For the purposes of EMS, "custody" most frequently involves individuals who are "under arrest," incarcerated in a jail or other law enforcement facility, or under "emergency detention" by a law enforcement or peace officer ("LEO").
   B. Contact BioTel for questions regarding Custody that are not addressed by this policy.

II. Definitions
   A. Court Order – An order issued by a judge whereby a person is ordered by the Court to do (or not do) something. For EMS, the only Court of record is a District Court (a State judicial office). The judge may have criminal and/or civil jurisdiction.
   B. Custody – The status of a person who has been arrested or detained by an LEO.
   C. Detained – The status of a person for whom freedom of movement has been restricted by an LEO for a limited time and under limited circumstances. A detained person is NOT under arrest. Detained status sometimes includes asking a person to wait while an LEO checks for outstanding warrants or wanted status or to verify a specific account given by that person.
   D. Emergency Detention – An action taken by an LEO who has probable cause to believe that the person being detailed is an immediate threat to themselves or others AND requires a medical evaluation. This was formerly known as "Apprehension by a Peace Officer Without a Warrant (APOWW)."
   E. Under Arrest – The status of a person after action by an LEO, either on scene or pursuant to a warrant issued by a judge, whereby that person is taken into physical restraint with the intent to transport to jail or another area of confinement as authorized by law.

III. Evaluation and Management of Patients Who Are in Custody or Detained
   A. If an LEO requests evaluation by BioTel EMS personnel for a person who is in custody or detained, that person is a PATIENT (per the DEFINITION OF A PATIENT POLICY).
   B. Evaluation of a patient who is in custody or detained should proceed in a similar manner to any other patient, according to the UNIVERSAL CARE CPGs and EVALUATION & TRANSPORT POLICY.
      1. See these sections for the minimum required elements of assessment and documentation.
   C. Patients OF ANY AGE who are in custody or detained have the right to self-determination and MAY refuse ASSESSMENT or TREATMENT under certain circumstances (per CONSENT POLICY).
      1. EMS personnel shall not initiate treatment against a patient's will UNLESS failure to do so would likely result in imminent death or disability with notice to BioTel.
      2. If EMS personnel are concerned that a patient is UNABLE TO MAKE AN INFORMED DECISION TO REFUSE CARE, contact a BioTel medical control physician for assistance.
      3. The circumstances of any incomplete assessment or treatment must be thoroughly documented in the ePCR.
   D. Patients who are in custody (under arrest or formal EMERGENCY detention) do NOT have the right to refuse ambulance TRANSPORT.
      1. If an LEO requests the patient be transported to a hospital, BioTel EMS personnel shall transport the patient to the closest appropriate hospital ED (per DESTINATION DECISION-MAKING POLICY).
      2. If there is disagreement between an LEO and EMS personnel about whether a patient should be transported by ambulance, contact the BioTel communications center for assistance.

CUSTODY, cont.

E. Patients who are simply DETAINED but NOT in custody (under arrest or EMERGENCY DETENTION) DO have the right to refuse ambulance transport,
   1. Circumstances of any refusal must be properly documented in the ePCR.
F. Any patient in custody who is transported by BioTel EMS personnel must be accompanied by an LEO in the patient compartment of the ambulance.
G. If a patient in law enforcement custody requires restraints, refer to all requirements for evaluation, treatment, monitoring, and documentation in the RESTRAINT POLICY.
H. For patients exposed to pepper spray or mace, refer to the EYE INJURY CPG.
I. For patients who have been tased, refer to the TASER BARB REMOVAL PROCEDURE.

IV. Additional Considerations for Patients with Behavioral Health or Psychiatric Emergencies
   A. Any patient displaying signs of an acute behavioral emergency or disturbance shall be managed and monitored according to the BEHAVIORAL EMERGENCY CPG.
   B. Nearly all patients for whom 911 has been called for a behavioral health emergency require “medical clearance” by a physician in an ED before they can be evaluated by behavioral health specialists.
   C. These patients may NOT be transported directly to a primary psychiatric facility (e.g., Green Oaks, Timberlawn).
      1. The Parkland Psychiatric Emergency Service does not directly accept EMS transports. Patients transported to Parkland should be taken to the main ED.
   D. As described in **Section III**, patients in custody with signs or symptoms of a behavioral health emergency may still refuse ASSESSMENT or TREATMENT (with any refusal to be properly documented), but they may not refuse TRANSPORT.

V. Prohibition of “Medical Clearance” by EMS Personnel
   A. ONLY a physician in a hospital ED or a member of jail medical staff can provide “medical clearance” for a patient in custody.
   B. BioTel EMS personnel CANNOT provide “medical clearance” for a patient.
   C. Any patient meeting Mandatory BioTel Contact Criteria OR Mandatory Custody Transport Criteria in the EVALUATION & TRANSPORT POLICY must be transported by ambulance to a hospital ED.
   D. If a patient does not meet EITHER of these criteria and has no signs or symptoms of an emergency medical condition requiring transport to a hospital ED, BioTel EMS personnel may provide an assessment of this information to an LEO.
      1. In this situation, IF an LEO is comfortable transporting the patient to jail or to a hospital ED in their own law enforcement vehicle, the patient may be released to the LEO.
      2. If an LEO is NOT comfortable transporting a patient in a law enforcement vehicle, the patient shall be transported by ambulance to an appropriate ED (per DESTINATION DECISION-MAKING POLICY) and the LEO must ride in the patient compartment of the ambulance.
      3. Releasing a patient to an LEO does NOT represent “medical clearance.”
   E. Extreme caution should be exercised for patients who are detained or in custody for ‘public intoxication.’ Patients with SEIZURES, DIABETIC EMERGENCIES, HEAD INJURIES, STROKE/TIA, or other emergencies may incorrectly appear to be intoxicated with alcohol.

VI. Emergency Legal Assistance Program (ELAP)
   A. The BioTel EMERGENCY LEGAL ASSISTANCE PROGRAM is available to EMS personnel 24/7/365 for emergency legal consultation.
   B. For a possible ELAP activation, EMS personnel shall contact the BioTel communications center as soon as possible when consent or other issues arise during EMS responses.
   C. EMS personnel shall NOT directly contact the ELAP attorneys without going through BioTel.

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DECEASED PATIENT IN AN AMBULANCE

Purpose: To provide guidance on handling the body of a deceased patient that is in the back of a BioTel EMS agency ambulance
Inclusion Criteria: Patients who meet criteria for death or TOR in a BioTel EMS agency ambulance
Exclusion Criteria: Patients who meet criteria for death or TOR outside of an ambulance

I. Background and Overview
   A. In rare circumstances, a deceased patient is placed in the back of a BioTel EMS agency ambulance.
   B. The above situation may occur in the following scenarios:
      1. BioTel EMS personnel load a patient into an ambulance with the goal of treatment, but the patient is subsequently determined to meet criteria for death per the DETERMINATION OF DEATH POLICY.
      2. BioTel EMS personnel attempt cardiac arrest resuscitation for a patient in the back of an ambulance, but resuscitative efforts are subsequently terminated per criteria in the TERMINATION OF RESUSCITATION POLICY.
      3. BioTel EMS personnel believe it is unsafe to leave a deceased patient on scene, although BioTel guidelines and policies indicate resuscitative measures should not be initiated for the patient.
   C. Following determination or pronouncement of death at a location IN DALLAS COUNTY, the patient MAY be transported to the Dallas County Medical Examiner's Office if ALL the following criteria are met:
      1. EMS personnel have contacted the BioTel communications center to confirm assessment of death, report TOR per standing orders, or obtain pronouncement of death by a BioTel medical control physician.
      2. EMS personnel have contacted local law enforcement to report determination of death of termination of efforts for a patient in the ambulance and obtained an incident number.
      3. BioTel has contacted the Medical Examiner's Office and confirmed that the Medical Examiner's Office has adequate staff available to receive the deceased patient.

II. Process
   A. EMS personnel shall contact BioTel and relay all known patient information including at a minimum the patient's NAME, the LOCATION OF THE INCIDENT, and the CIRCUMSTANCES OF DEATH.
   B. BioTel staff shall VERIFY that the death occurred in Dallas County and communicate with the Medical Examiner's Office.
   C. If the Medical Examiner's Office reports they can receive the patient directly from the field, BioTel shall direct EMS personnel to proceed directly to the Dallas County Medical Examiner's Office located at **2355 North Stemmons Freeway, Dallas, TX 75207**.
   D. EMS personnel shall promptly complete their electronic Patient Care Record (ePCR) in order to provide a copy of the ePCR to the Medical Examiner's Office.
   E. Upon arrival at the Medical Examiner's Office, EMS personnel shall provide a verbal handoff report to Medical Examiner's Office staff and shall move the body into the facility as directed by Medical Examiner's Office staff.
   F. EMS personnel shall follow agency-specific guidelines regarding notifying their chain of command.
   G. If the Medical Examiner's Office is unable to accept the deceased patient, BioTel staff shall help EMS personnel identify an appropriate hospital ED to which the deceased patient should be transported. BioTel staff will facilitate the transfer of the deceased patient to ED staff.
   H. If there is disagreement between the Medical Examiner's Office staff and BioTel staff on whether a patient should be accepted for direct transport to the Medical Examiner's Office, BioTel staff shall escalate the discussion to a supervisor at the Medical Examiner's office for further discussion.

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DECEASED PATIENT IN AN AMBULANCE, cont.

III. Quality Management
   A. BioTel EMS agency quality management staff and BioTel leadership shall review ALL instances of transport of a deceased patient to the Medical Examiner's Office OR a hospital ED.
   B. Any recommendations resulting from these case reviews shall be forwarded to BioTel System leadership.

IV. Special Considerations
   A. This policy applies to Dallas County only. For patients who are determined to be death or have resuscitative efforts terminated in another county (e.g., Collin County), the deceased patient must be transported to a hospital ED.
   B. EMS personnel shall NOT remove a deceased patient from a crime scene.
   C. EMS personnel shall NOT transport a deceased patient anywhere except the Medical Examiner's Office or a hospital ED.

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DEFINITION OF A PATIENT

Purpose: To establish the definition of a patient in the UTSW/Parkland BioTel EMS System
Inclusion Criteria: See below
Exclusion Criteria: No specific exclusions

I. Any person encountered by BioTel EMS personnel during an emergency call who meets ANY of the following criteria is considered a PATIENT:
   A. A person who called 911 or contacted EMS personnel to request emergency medical care
   B. A person for whom another legally responsible individual (e.g., parent, guardian) has contacted 911 or EMS personnel
   C. A person for whom a third party has contacted 911 or EMS personnel based on a belief or rationale for medical concern
   D. A person for whom a law enforcement officer (LEO) has requested evaluation (see CUSTODY POLICY)
   E. An unaccompanied minor (<18 y/o) for whom EMS assessment has been requested
   F. A person with altered mental status
   G. A person with evidence of acute illness, injury, or trauma for which a prudent person would seek urgent medical care
   H. A person who meets BioTel Prehospital Trauma Center Triage Criteria (see DESTINATION DECISION-MAKING POLICY and TRAUMA – GENERAL CPG)
   I. A person who has expressed suicidal or homicidal thoughts
   J. A person for whom there is CONCERN for or evidence of intentional drug overdose or self-injury
   K. ANY person who has undergone physical assessment (beyond simple visual inspection) by BioTel EMS personnel
   L. ANY person who is NOT able to clearly state that they have no medical complaints or injuries AND do not want to be evaluated by EMS personnel

II. For any person determined to be a patient according to this policy:
   A. That person must be evaluated by EMS personnel according to the requirements outlined in the EVALUATION AND TRANSPORT POLICY.
   B. Refer to the DESTINATION DECISION-MAKING POLICY for guidance on appropriate transport destinations.

III. When a person is determined NOT to be a Patient (according to criteria in **Section I**), the person's full name, their date of birth, and an explanation of why they do not meet the definition of a patient shall be documented in an electronic format that can be accessed or reviewed at a later date.

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DESTINATION DECISION-MAKING

Purpose: To assist BioTel System EMS professionals with selection of an appropriate emergency department (ED) for patient transport
Inclusion Criteria: All patients treated by BioTel System EMS personnel
Exclusion Criteria: None

I. Background and Overview
   A. A patient's medical need is always the first consideration when selecting a transport destination.
   B. Preserving system capacity is a secondary consideration.
   C. The following situations ALWAYS go to the closest ED regardless of patient or family preference:
      1. Inability to establish a secure, patent airway
      2. Patients in status epilepticus
      3. CPR in progress for cardiac arrest due to a MEDICAL cause
         a. CPR in progress for TRAUMATIC cardiac arrest should be transported to the nearest Level I / II Trauma Center.
   D. If transported, patients with minor, non-emergent complaints should go to the closest appropriate ED.
   E. The patient's preferred destination may be honored IF the destination is within an agency's normal transport area AND the patient's condition does not require transport to a different destination per this policy.

II. The following situations require transport to specific destinations:
   A. Mass Casualty Incident (MCI)
      1. Transport destinations should be determined by the on-scene Incident Transport Officer.
      2. Contact the BioTel Communications Center for assistance determining appropriate destinations.
   B. Patients requiring specialized care from a DESIGNATED center:
      1. Trauma – Refer to the TRAUMA – GENERAL CPG and **Tables 1 & 2** for criteria requiring transport to a Level I / II Trauma Center or for which a Level I /II Trauma Center should be considered.
      2. STEMI – Transport to the closest hospital with 24/7 catheterization ("cath lab") capability.
      3. Stroke – Refer to the STROKE/TIA CPG for destination selection based upon time and clinical criteria.
      4. Burns – Transport patients ≥14 y/o who meet criteria in **Table 3** to Parkland or Medical City Plano.
         a. Burned patients also meeting criteria in **Tables 1 & 2** should go to a Level I / II Trauma Center.
         b. Refer to the BURNS CPG, as appropriate.
      5. Isolated Distal Amputation – Patients with amputation BELOW the wrist/ankle, of the penis, or of significant facial/lip/ear tissue who DO NOT MEET criteria in **Tables 1** or **2** should be transported to the closest ED with microsurgical (replantation) capability.
      6. Sexual Assault – Transport patients ≥17 y/o of any gender and females ≥14 y/o to the closest ED with 24/7 SANE nurse availability.

   C. Patients requiring continuity of care for a specific medical condition:
      1. Transport to the hospital where the patient RECEIVES REGULAR CARE.
      2. Examples include:
         a. Obstetrics

DESTINATION DECISION-MAKING, cont.

b. Cancer undergoing active treatment with chemotherapy or radiation therapy
c. Surgical procedure within last 90 days
d. Organ transplant
e. Heart failure with ventricular assist device (VAD) or medication pump

D. High-Risk Obstetric Patients
1. Transport to the closest hospital with obstetrical capabilities (Labor & Delivery and Neonatal ICU)
2. Examples (per OB/GYN – PREGNANCY COMPLICATIONS CPG) include:
a. Vaginal bleeding with shock
b. Impending delivery with breech or limb presentation
c. Umbilical cord prolapse
d. Active seizures or post-ictal state (suggestive of eclampsia)

E. Pediatric Patients (<18 y/o, unless otherwise specified)
1. Critical Medical Patient – Transport to Children's Dallas or Medical City Children's
2. Trauma (meeting criteria in **Table 1** or **Table 2** or in TRAUMA – GENERAL CPG) – Transport to the closest appropriate trauma center. Options for different age ranges are listed below.
a. <14 y/o – Children's Dallas ONLY
b. 14 y/o – Children's Dallas, BSW Grapevine, Medical City Plano, or Parkland
c. ≥15 y/o – Closest ADULT Level I or Level II Trauma Center
3. Stroke – Transport pediatric patients with signs of stroke or TIA to the closest dedicated pediatric hospital:
a. Children's Dallas
b. Medical City Children's
4. Burns (meeting criteria in **Table 3**) – Transport to the closest designated burn center:
a. Parkland – ANY patient <14 y/o
b. Medical City Plano – Patients <14 y/o WITHOUT facial/neck burns, WITHOUT airway involvement, AND with burns involving LESS THAN 15% Total Body Surface Area (TBSA).
c. When in doubt of eligibility for Medical City Plano, transport to Parkland.
5. Psychiatric Complaint
a. <13 y/o – Transport to Children's Dallas, Children's Plano, or Medical City Dallas Children's.
b. 13 y/o to 18th birthday – Transport to Children's Dallas, Texas Health Resources Plano, or Medical City Dallas Children's.
6. Sexual Assault – Transport female patients <14 y/o and male patients <17 y/o to Children's Dallas or Children's Plano.

F. Veteran's Administration (VA) patients
1. Trauma, stroke, and STEMI patients should NOT be transported to the VA and instead should go to the closest appropriate specialty center.
2. Otherwise, requests for transport to the VA may be honored.

III. Special Considerations
A. Call the BioTel Communications Center at any time for assistance with:
1. Identifying the need for a specialty center
2. Selecting an appropriate designated specialty center
B. If transport to an alternate destination is thought to be necessary AFTER arriving on the premises of a receiving hospital, call the BioTel Communications Center and refer to the EMTALA POLICY to discuss whether transporting to the alternate destination is appropriate.

DESTINATION DECISION-MAKING, cont.

Table 1. Criteria Requiring Transport to a Level I / II Trauma Center

INJURY PATTERNS	ABNORMAL MENTAL STATUS / VITAL SIGNS
Penetrating injury to head, neck torso	Unable to follow commands (motor GCS <6)
Penetrating injury to extremity above elbow or knee	Respiratory rate <10 or >29
Skull deformity	Respiratory distress
Head injury with anticoagulant (blood thinner) use	Need for respiratory support
Spinal injury with motor or sensory loss	Room air pulse oximetry <90%
Chest wall instability or deformity (e.g., flail chest)	Systolic blood pressure below: • <10 y/o: 70 mmHg + (2 x age) • 10-64 y/o: 90 mmHg • ≥ 65 y/o: 110 mmHg
Pelvic fracture	
Fracture of 2 or more long bones	
Crushed, degloved, mangles, or pulseless extremity	
Amputation above wrist or ankle	HR > Systolic BP (in patients ≥ 10 y/o)
Active bleeding requiring tourniquet or packing	

Table 2. Consider Transport to a Level I / II Trauma Center for These Criteria

MECHANISM OF INJURY	EMS JUDGEMENT
High risk auto crash: • Ejection • Significant intrusion • Death in passenger compartment • Unrestrained child <10 y/o	Falls in children ≤ 5 y/o or adults ≥ 65 y/o with head injury
	Anticoagulant (blood thinner) use
	Suspected child (or elder) abuse
	Patients with complex healthcare needs
Rider separated from vehicle after impact	Pregnancy >20 weeks
Pedestrian/bicyclist thrown or run over after impact	Burns in conjunction with trauma
Fall from >20 ft	Falls from >10 ft

Table 3. Criteria Requiring Transport to a Designated Burn Center

Total Body Surface Area (TBSA) of burn ≥10%
Signs of / concern for inhalation injury
Area of full thickness burn of ANY size
Burns involving the following body areas: v Face v Eyes v Ears v Hands v Feet v Genitalia / Perineum v Major joints
Electrical burns
Chemical burns

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DETERMINATION OF DEATH AND WITHHOLDING OF RESUSCITATION

Purpose: To provide EMS personnel with guidance on recognizing patients whose conditions are incompatible with life and for whom resuscitative efforts should not be initiated.
Inclusion Criteria: Patients of all ages who meet the criteria outlined below.
Exclusion Criteria: Mass Casualty Incident (MCI) patients to whom altered triage standards are applied.

I. Background
   A. EMS personnel do not PRONOUNCE death. Rather, they DETERMINE death based on clearly defined criteria. Only BioTel medical control physicians pronounce death.

II. Policy Specifics
   A. In situations where any possibility of life exists, EMS personnel shall make every reasonable effort resuscitate patients who are encountered in cardiac arrest.
   B. EMS personnel are not required to initiate resuscitative efforts if ANY of the following conditions apply:

Pulseless, Apneic, No signs of life[1] (Required for all of below)			
NO cardiac rhythm strip required if:	**Cardiac rhythm is asystole[2] with:**	**Blunt and/or penetrating traumatic arrest AND:**	**Any cardiac rhythm if:**
· Decomposition · Incineration · Complete decapitation · Complete transection of the torso, abdomen, and/or pelvis	· Rigor Mortis · Dependent lividity	· Cardiac rhythm is asystole[2] or · PEA <40 bpm with MASSIVE brain and/or heart trauma	· Presence of a valid out-of-hospital DNR order (per the OUT-OF-HOSPITAL DO NOT RESUSCITATE ORDER POLICY)

   C. If a patient in TRAUMATIC cardiac arrest has traumatic injuries incompatible with life that are not included above, or only part of the criteria is met in **Section II.B**, EMS personnel should initiate resuscitation and contact a BioTel medical control physician to discuss whether to continue resuscitation or withhold resuscitation.
   D. EMS personnel are not required to continue resuscitative efforts initiated by other non-medical/lay persons on scene if the patient meets criteria for death as outlined in **Sections II.B**.

III. Procedure After Death Has Been Determined
   A. Immediately notify the appropriate law enforcement agency and remain on scene until officers arrive.
   B. Do NOT place sheets or other coverings in direct contact with the body to avoid potential contamination with fibers or hairs.
   C. To the extent possible, set up visual barriers so that the public cannot view the body.
   D. Do not remove any property from the body or from the scene for any purpose.
   E. Leave the body at the scene in the care of the appropriate law enforcement agency.

[1]Signs of life include spontaneous/agonal respirations, spontaneous eye opening, motor response, palpable pulse.
[2]Asystole may be confirmed via cardiac monitor or via AED with ECG screen.

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DIALYSIS CENTER TRANSPORT

Purpose: This policy outlines the conditions under which BioTel EMS agencies may transport patients who require dialysis directly to an outpatient dialysis center instead of a hospital emergency department (ED).

Inclusion Criteria: Patients with medical conditions such as end-stage renal disease (ESRD) that require routine, outpatient dialysis treatment

Exclusion Criteria: Patients who do not require dialysis treatment

I. Background
   A. Effective September 13, 2022, Senate Bill 1876 from the 87th Texas Legislature has taken effect. This legislation governs emergency planning for continued treatment of dialysis patients during disaster situations.
   B. SB 1876 specifically requires EMS agencies to have procedures in place that allow dialysis patients to be transported directly to outpatient dialysis centers during declared disasters.

II. Scope of Policy
   A. When a Federal or State-level disaster has been declared in response to situations including but not limited to natural disasters, pandemics, or infrastructure failures, Texas state law requires EMS agencies to allow for transport of dialysis patients directly to outpatient dialysis centers.
   B. IF ALL OF the following conditions are met, a dialysis patient MAY qualify for transport directly to an outpatient dialysis center:
      1. A declared state of disaster exists,
         AND
      2. The patient does not have signs or symptoms BEYOND those typically they feel prior to dialysis (e.g., shortness of breath, leg swelling, weight gain, fatigue, nausea) or show other clinical signs of an emergent medical condition requiring treatment in a hospital ED (see DEFINITION OF A PATIENT and EVALUATION AND TRANSPORT POLICIES),
         AND
      3. The patient is unable to reach their dialysis center through their usual means of transport AS A RESULT of the circumstances that led to the declared disaster,
         AND
      4. The patient prefers transport to their outpatient dialysis center instead of a hospital ED.
   C. When the conditions in Section II apply, BioTel EMS agency personnel should contact BioTel and request medical control physician approval to transport a patient directly to an outpatient dialysis center instead of a hospital ED.
   D. For information about active declared disaster declarations, refer to the following resources:
      1. TX Department. of Emergency Management (TDEM): https://www.tdem.texas.gov/disasters
      2. Federal Emergency Management Agency (FEMA): https://www.fema.gov/disaster/current

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DURABLE MEDICAL EQUIPMENT (DME) TRANSPORT

Purpose: To outline the rationale and provide guidance for transport of patient DME
Inclusion Criteria: Patients with DME
Exclusion Criteria: No specific exclusions

I. Definition
   A. Durable Medical Equipment (DME) – Mobility equipment used by a patient including, but not limited to, canes, walkers, rollators, or wheelchairs.

II. Rationale for DME Transport
   A. Patients transported to a receiving hospital ED will require access to their DME to be safely discharged from the hospital.
   B. If a patient is transported without their DME, additional time, manpower, and money will be spent attempting to reunite the patient with their DME.
   C. Most insurance payors (including Medicare & Medicaid) will only replace a patient's DME after a certain time interval has passed (usually 5-10 years), or if a police report documents that the DME was stolen.
   D. If the patient is uninsured, the cost of new DME may be passed on to the patient or absorbed by the hospital. The latter case may lead to:
      1. Higher costs for taxpayers.
      2. Delays in discharge from the hospital, worsened ED crowding, and increased EMS wait times.

III. DME Transport Methods
   A. Transport DME in the ambulance with the patient when possible.
   B. Contact EMS Field Supervisor in real-time, and if possible, have EMS/FD personnel remain with DME until it is able to be transported.
      1. All EMS Field Supervisor vehicles are equipped with wheelchair transport equipment.
   C. If transport of DME is not possible by any means:
      1. Obtain contact information, if possible, for a family member or friend of the patient who is willing to retrieve the DME and keep it safe. Provide this information off to receiving ED staff.
      2. Make a reasonable attempt to leave the DME in a safe place where it can easily be located by hospital staff or the person tending to the DME.
      3. Upon arrival at the receiving hospital, notify ED staff while giving report that the patient uses DME and their DME could not be transported.
      4. Provide receiving ED staff with the location of the DME and/or contact information for the person tending to the DME.

IV. Special Considerations
   A. Even if DME is in poor condition, still make every attempt possible to transport it with the patient.
      1. It is often more cost-effective and faster to repair or clean DME than to replace it with a new device.
      2. DME may be covered by a warranty, and insurance payors will often pay for necessary repairs.
      3. Repairs often must be attempted before insurance will authorize purchase of a replacement.

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EMERGENCY LEGAL ASSISTANCE PROGRAM (ELAP)

Purpose: To guide BioTel EMS personnel in resolving any medical-legal issues arising in the field
Inclusion Criteria: As above
Exclusion Criteria: No specific exclusions

I. Background
   A. EMS personnel often encounter situations in which medical-legal advice should be sought prior to making decisions about treatment or transport. Examples include:
      1. Determination of whether a patient has decision-making capacity to refuse evaluation, treatment, or transport
      2. Questions about management of patients in custody
      3. Evaluation, treatment, and transport of minor patients (<18 years of age and not emancipated)
      4. EMTALA issues
      5. Situations where EMS personnel are presented with legal documents (e.g., a court order or Power of Attorney) or a legal situation governing medical outcome (e.g., an OUT-OF-HOSPITAL DNR ORDER form or device).
      6. Other unusual or complex situations where EMS personnel believe a potential legal issue exists
   B. The UTSW/Parkland BioTel EMS System has a longstanding relationship with a local law firm whose attorneys have EMS training and extensive experience regarding EMS medical-legal issues.
   C. At least one attorney is available 24 hours a day, 7 days a week for consultation.
   D. Both attorneys are able to respond to the scene, as needed, and can seek court orders for treatment and/or transport, as needed.

II. ELAP Activation Procedure
      1. When EMS personnel need assistance with potential medical-legal issues, they should contact the BioTel communications center.
      2. Once a report has been received, BioTel staff will take one of three actions:
         a. BioTel staff will provide direction to EMS personnel
         b. BioTel staff will consult a medical control physician who may request to speak directly to the EMS personnel or the patient
         c. BioTel staff will seek legal counsel by contacting the ELAP attorney(s)
      3. Once consulted for medical-legal advice, BioTel assumes responsibility for the incident.
      4. BioTel staff shall inform the EMS personnel seeking medical-legal advice when the ELAP has been formally activated.
      5. If there is disagreement between BioTel staff guidance and EMS personnel judgment regarding appropriate management of an incident, EMS personnel shall request to speak with the BioTel System Medical Director (or an approved designee).
      6. EMS personnel shall follow agency-specific guidelines for notifying their chain of command of the incident and ELAP activation.

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EMTALA

Purpose: To ensure all BioTel EMS personnel adhere to Federal EMTALA guidelines
Inclusion Criteria: All patients evaluated, treated, and transported by BioTel member EMS agencies
Exclusion Criteria: None

I. Background and Overview
   A. The Emergency Medical Treatment and Active Labor Act (EMTALA) was enacted by Congress in 1986. This Federal law requires that anyone who comes to an emergency department (ED) requesting emergency medical evaluation must be stabilized and treated, regardless of their insurance status or ability to pay. It is commonly referred to as the "anti-dumping" law. EMTALA was designed to prevent hospitals from transferring uninsured or Medicaid patients to public hospitals without, at a minimum, providing a medical screening exam and stabilizing treatment within the capability of the hospital.
   B. This statute is vigorously enforced by the Centers for Medicare and Medicaid Services (CMS) and the U.S. Department of Health & Human Services Office of the Inspector General (OIG).

II. Hospital Obligations Under EMTALA
   A. CMS defines a dedicated hospital ED as an area of the hospital meeting 1 of 3 tests:
      1. It is licensed by the state as an emergency department
      2. It holds itself to the public as providing emergency care
      3. In a calendar year, it treats at least one-third of its outpatient visits for an emergency condition
   B. Hospitals have 3 obligations under EMTALA:
      1. Any individual who comes to the hospital and requests examination or treatment must receive an appropriate, documented medical screening exam (MSE) within the capability of the hospital to determine whether an emergency medical condition exists.
         a. Examination and treatment cannot be delayed to inquire about insurance coverage or methods of payment.
         b. EDs must also post signs notifying patients of their rights under the EMTALA statute.
      2. If an emergency medical condition is determined to exist, the hospital must provide treatment within its capability until the condition is stabilized or resolved. If a hospital does not have capability to stabilize the condition, it must arrange an appropriate transfer of the patient to another hospital.
         a. Hospitals with specialized capabilities are obligated to accept transfers from hospitals unable to treat an unstable medical condition, even if the specialty center does not have an ED.
      3. Hospitals must report to CMS or to the state survey agency any time they believe they may have received a transferred patient from another hospital in violation of EMTALA requirements.

III. The Direct Impact of EMTALA on EMS Personnel
   A. Under EMTALA, a patient "comes to" a hospital when an ambulance that contains the patient crosses the threshold of the hospital's property. Once an ambulance "comes to" a receiving hospital, the patient may not be removed from that hospital by EMS personnel until the receiving hospital has complied with the minimum requirements of EMTALA (i.e., performed an MSE and provided stabilizing treatment), EVEN IF the patient requests that EMS personnel take them elsewhere.
   B. Once an ambulance transporting a patient has crossed the threshold of a hospital's property, that ambulance shall NOT leave the hospital with that patient (unless specifically authorized by a BioTel medical control physician after discussion of extenuating circumstances).
   C. Patients encountered at hospital-based outpatient clinics ON THAT HOSPITAL'S PROPERTY that are not equipped to handle the patient's medical emergency must be transported to the ED of the hospital with which they are affiliated, UNLESS the clinic treating physician has arranged acceptance at another ED.

EMTALA, cont.

1. In such cases, the clinic staff shall provide EMS Providers with a Memorandum of Transfer (MOT) document indicating that the patient has been accepted at the alternative hospital ED.
2. EMS personnel must deliver the MOT document to the receiving ED staff upon arrival.
3. EMS personnel shall NOT deviate from these transfer arrangements without first consulting BioTel.

D. Patients encountered at outpatient clinics that are NOT on the grounds of a particular hospital shall be transported to the closest appropriate hospital ED according to the BioTel DESTINATION DECISION-MAKING POLICY, UNLESS arrangements have already been made by clinic staff for patient acceptance at a particular hospital's ED.

E. Patients meeting BioTel Prehospital Trauma Center Triage Criteria (see TRAUMA – GENERAL CPG) who are encountered on the grounds of a hospital that is not a designated Trauma Center may be transported directly to a designated Trauma Center (rather than to original hospital's ED).

IV. Special Circumstances

A. Transport of Adult and Pediatric Patients in the Same Ambulance

1. Unless mandated by extenuating circumstances (such as a Mass Casualty Incident), adult and pediatric patients should be transported separately.
   a. This is recommended even when transporting to Parkland Hospital and Dallas Children's Medical Center (CMC Dallas), even though these facilities are very close to each other.
2. Any ambulance transporting both an adult and a pediatric patient to Parkland Hospital MUST off-load BOTH patients at Parkland for evaluation. If treating physicians determine the pediatric patient requires a higher level of care, Parkland staff will arrange patient transport to CMC Dallas.
3. Any ambulance transporting both an adult and a pediatric patient to CMC Dallas MUST off-load BOTH patients at CMC Dallas for evaluation. If treating physicians determine the pediatric patient requires a higher level of care, Parkland staff will arrange patient transport to Parkland or another appropriate facility.
4. Under NO circumstances shall EMS Providers off-load ONLY 1 of 2 patients at the first hospital and then continue to the other hospital with the second patient.
5. EMS Providers shall ALWAYS notify BioTel when transporting BOTH an adult patient AND a pediatric patient in the same ambulance.

B. Hospital Helipads

1. Hospital helipads are exempt from EMTALA requirements when used as "load/unload waypoints."
2. If EMS personnel meet a helicopter at a hospital helipad, the patient is NOT required to go to that hospital's ED if:
   a. The ultimate destination is a different hospital that is appropriate for that patient
   b. EMS personnel are meeting a helicopter at the helipad in the process of completing a pre-arranged transfer to a different nearby hospital

V. Reporting Procedure for Possible EMTALA Issues

A. EMS personnel should immediately report possible EMTALA issues directly to BioTel staff and their EMS supervisor for further assistance and guidance.

B. EMS personnel shall not engage in discussions or arguments with hospital or clinic personnel regarding any EMTALA issues. Instead, EMS personnel shall consult with and involve their EMS supervisor.

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EVALUATION AND TRANSPORT

Purpose: To set forth requirements for patient evaluation, documentation of patient encounters, and transport decision-making in the UTSW/Parkland BioTel EMS System
Inclusion Criteria: Anyone encountered by EMS personnel who meets DEFINITION OF A PATIENT
Exclusion Criteria: No specific exclusions

I. Requirements for Patient Assessment
   A. All individuals meeting the DEFINITION OF A PATIENT (per POLICY) shall be assessed in a manner consistent with standard practice for the EMS professional's level of training.
   B. Patient assessment shall include but is not limited to evaluating threats to the patient's airway, breathing, and circulation as well as other emergency medical conditions outlined in the UTSW/Parkland BioTel EMS System Clinical Practice Guidelines (CPGs).
   C. The following clinical data shall be collected on every patient:
      1. At least 2 full sets of vital signs obtained at least 5 minutes apart
      2. At least one Glasgow Coma Scale (GCS) score
      3. At least 1 point-of-care glucose analysis, if indicated by any symptom-specific CPG or patient condition
   D. The ONLY exception to the requirement for a full evaluation is if it is unsafe for EMS personnel to perform an assessment.
   E. If the patient's physical location is determined to be potentially unsafe, EMS personnel shall either:
      1. Move the prospective patient to another location that is considered safe and where EMS personnel can perform a full assessment and immediate life-saving interventions, as necessary
      2. Perform assessment to the extent that can be done safely and then expedite transport to a hospital ED, as indicated
   F. If the patient's condition or behavior make it unsafe to perform a routine physical assessment (e.g., Acute Behavioral Disturbance), EMS personnel shall perform the parts of an assessment that can be safely completed. To the extent possible, EMS personnel should monitor the patient's airway, breathing, and pulse while transporting the patient to the closest appropriate hospital ED.
      1. Notify BioTel of any incompletely assessed patient en route to a receiving hospital ED.
      2. The reasons for an incomplete assessment must be documented in the patient care record.

II. Requirements for Documentation of a Patient Encounter
   A. Anyone who is assessed and/or treated by EMS personnel in the BioTel system should have a report completed in the electronic patient care record (ePCR). The report should accurately reflect all patient care provided and all patient interactions.
   B. The following demographic information must be documented in the ePCR for every patient:
      1. Name, age, date of birth, home address, phone number, & social security number
      2. Chief complaint (CC)
      3. History of present illness (HPI)
      4. Past medical history (PMH)
      5. Medications
      6. Allergies to medications
   C. The following clinical data must be documented in the ePCR for every patient:
      1. Vital signs (at least 2 sets, at least 5 min apart)
         a. Pulse/heart rate (HR)
         b. Blood pressure
         c. Respiratory rate (RR)
         d. Oxygen saturation (SpO2)
         e. Temperature
      2. Point-of-care glucose analysis, if indicated by any symptom-specific CPG or by patient condition

EVALUATION AND TRANSPORT, cont.

3. Glasgow Come Scale (GCS) score
4. End-tidal CO2 (ETCO2), if indicated by any symptom-specific CPG or by patient condition
5. Physical examination
6. All interventions performed AND the clinical response to those interventions
7. All medications given, including the dose, route, and clinical response to those medications
8. Patient disposition (e.g., transported, refused, released into law enforcement custody)
9. Signature of patient (or legally responsible individual)

D. Signatures of 2 EMS personnel
E. The reasons for any incomplete or missing information must be documented in the ePCR.

III. Transport Decision-Making
A. Following patient assessment, EMS personnel shall offer all patients transport by Rescue to a hospital emergency department, except for the limited circumstances where a BioTel Physician Approved Refusal to Transport may be warranted as outlined below in Section IX.
B. EMS personnel shall NOT initiate discussion of topics that may inappropriately influence a patient to decline transport. For example:
1. EMS personnel shall NOT initiate a discussion of the cost of ambulance transport
2. EMS personnel shall NOT provide an estimate of ED waiting times
C. If one EMS professional on scene believes a patient should be transported by ambulance to a hospital ED, the patient shall be offered transport.
D. If EMS personnel disagree about the need for transport, BioTel should be contacted for assistance.

IV. Patients Declining Transport
A. Following evaluation by EMS personnel, some patients may decline further assessment, treatment, or transport.
B. If EMS personnel believe a patient possesses the capacity to make an informed decision to refuse transport, that patient maintains the right of self-determination and shall be allowed to refuse transport ONLY IF ALL the following criteria are met:
1. The patient can legally consent to treatment (e.g., not a minor), per CONSENT POLICY.
2. The patient is not in custody of law enforcement (under arrest or Emergency Detention), per CUSTODY POLICY.
3. EMS personnel have no reason to suspect the patient lacks decision-making capacity.
4. EMS personnel have discussed the risks of non-transport with the patient and the patient's family (when present).
5. The patient verbalizes to EMS personnel in their own words that they understand the risks associated with non-transport (including worsening illness and even death).
6. EMS personnel believe the patient understands and accepts these risks after receiving accurate and unbiased information and without inappropriate influence from other parties.

C. Mandatory BioTel Contact
1. DFR EMS Providers MUST contact BioTel for patients who decline transport if the patient does NOT meet ALL criteria listed in Section B (above), **or** if any of the following Mandatory BioTel Contact/ "High Risk" criteria in Section D (below) are met.
2. Contacting BioTel ensures that there is an additional record of the offer of transport and verifies the patient's decision-making capacity to refuse and the acceptance of risks, up to and including death (when clinically pertinent), thereby decreasing liability for the EMS Providers, Dallas Fire-Rescue, and the City of Dallas.
3. BioTel staff may attempt to persuade the patient to accept hospital transport and may seek additional assistance from a BioTel Medical Control Physician.

EVALUATION AND TRANSPORT, cont.

D. Mandatory BioTel Contact Criteria include:
   1. Any patient unable to demonstrate capacity/understand risks of refusing transport
   2. Altered mental status including:
   3. GCS <15 (if not baseline mental status)
   4. Clinically intoxicated patients
   5. Patients younger than 2 years of age
   6. Includes any suspicion for Brief Resolved Unexplained Event (BRUE)
   7. Patient reports being pregnant or is visibly pregnant
   8. History and/or signs or symptoms consistent with any of the following:
   9. Acute MI*
   10. Acute Stroke*
   11. Transient Ischemic Attack (TIA)*
   12. Prehospital Trauma Triage or Burn Center Criteria met
   13. Medication administered by DFR personnel (excluding Albuterol, Ipratropium or Normal Saline)
   14. Patient unable to ambulate/walk without assistance (if baseline functional status is ambulatory)
   15. Patient or someone else called 911 due to concern they intentionally ingested drugs/medications to harm themselves or have expressed suicidal or homicidal thoughts
   16. Suspected abuse or neglect of an adult or child
   17. EMS personnel's judgement that BioTel involvement is in the best interest of the patient
   18. Medico-legal issues

E. *Definitions for Mandatory BioTel Contact Criteria
   1. Acute MI signs or symptoms
   2. Ischemic changes on 12-lead EKG (e.g., ST elevation/depression, T-wave inversions)
   3. Chest pain or anginal equivalent (e.g., epigastric pain) with associated symptoms suggestive of ACS such as diaphoresis, nausea/vomiting, radiation to back/jaw/shoulder, lightheadedness, syncope, exertional onset or change, history of prior myocardial infraction or coronary artery disease.
   4. Acute Stroke or TIA signs or symptoms
   5. Positive Cincinnati Stroke Scale (Face-Arm-Speech), if not consistent with patient's baseline
   6. Sudden onset of persistent or transient (resolved or intermittent): Focal weakness, numbness or tingling of the face, arm, and/or leg, speech change or inability to speak, vision change or loss, vertigo or gait imbalance, or inability to walk.

F. Audio Recorded Refusals
   1. If a paramedic believes that the patient's decision to refuse transport is reasonable and does not put the patient at risk of loss of life or limb, **AND** if the patient does not meet any Mandatory BioTel Contact/"High Risk" criteria (see above, Section D.), then paramedics shall obtain an audio recorded refusal and that individual shall sign the ePCR, indicating that he/she has declined transport.
   2. Only the patient, parent/legal guardian of a minor, or holder of a Durable Power of Attorney for Healthcare (of a patient who no longer makes medical decisions for themselves) may provide the audio recording and sign the refusal.
   3. If the patient cannot participate in the audio recording or signature and there is not a a proper surrogate legal decision-maker, BioTel shall be consulted. All non-English speaking patients or legal decision-makers shall have a DFR language-certified member, or a certified phone ("language line") interpreter assist in obtaining the appropriate recording in the patient's or decision-maker's native language. Family/bystanders are not an interpreter substitute.
   4. DFR EMS Providers shall adhere to the provided script for all refusals.

G. There shall be NO acceptable instances for a patient refusal wherein DFR EMS Providers do not obtain an audio recording strictly adhering to the script OR contact BioTel. One of these must occur PRIOR to the patient or paramedic leaving the scene:

EVALUATION AND TRANSPORT, cont.

1. In the event of technological issue(s)/failure preventing an audio recording being able to be obtained OR ambient noise related concerns, BioTel shall be contacted so that the refusal is captured on a recorded line.
2. For the following situations:
   a. Scene is deemed unsafe requiring DFR EMS Providers to leave the patient
   b. Patient elopes from the scene
   c. Patient refuses to participate in any form of audio recording (Tablet or BioTel)
3. THEN DFR EMS Providers shall contact their EMS Supervisor to discuss any further action(s) required AND obtain an audio recording of their EMS Supervisor verifying they were contacted and any other pertinent details. This may be accomplished via recording a speaker phone conversation or in-person.

VII. Mandatory Custody Transport Criteria (for patients who are under arrest or under emergency detention)

A. Due to the high-risk nature of patients in custody, the following additional age, vital sign, and complaint specific criteria known as “Mandatory Custody Transport Criteria” apply for transport decision making.

B. A patient in custody with ANY Mandatory BioTel Contact Criteria OR Mandatory Custody Transport Criteria MUST be transported to a hospital emergency department by Rescue, unless a BioTel Medical Control Physician or DFR Medical Director approves the non-transport.

C. Mandatory Custody Transport Criteria (remainder of Old “Mandatory Offer of Transport Criteria”)
   1. Age
   2. The patient is less than 18 years of age and is not “emancipated”;
   3. The patient is age 75 years or older
   4. Sustained abnormal adult vital signs:
      i. Pulse rate less than 50 or greater than 110 beats per minute;
      ii. Systolic blood pressure less than 90 mmHg or greater than 200 mmHg;
      iii. Diastolic blood pressure greater than 110 mmHg;
      iv. Respiratory rate less than 12 or greater than 24 breaths per minute;
      v. Room air oxygen saturation less than 95%;
      vi. POC blood glucose level less than 70 or greater than 300 mg/dL;
   5. Complaint
      i. The patient has non-traumatic chest pain/discomfort;
      ii. The patient reports shortness of breath or difficulty breathing;
      iii. The patient reports having abdominal pain

D. DFR EMS personnel who are functioning in the capacity of a RIGHT Care team member or City Detention Center Paramedic shall utilize these criteria additional criteria in addition to the Mandatory BioTel Contact Criteria.
   1. Exception: For RIGHT Care, patients/clients expressing suicidal or homicidal thoughts and no reported, suspected or confirmed overdose may be dispositioned as clinically appropriate by the RIGHT Care Licensed Clinical Social Worker.

V. Non-Transport Initiated by EMS Personnel

A. EMS personnel-initiated refusal of transport is strictly prohibited in the Dallas Fire-Rescue system. DFR EMS Providers shall offer transport by Rescue to EVERY patient except for the limited circumstances in Section IX.

IX. BioTel Physician Approved Refusal to Transport (PART)

A. After a thorough history and examination, if paramedics believe that the patient does not have ANY emergency condition that warrants transport by Rescue to the hospital, BioTel may be contacted for consideration of a Physician Approved Refusal to Transport.

EVALUATION AND TRANSPORT, cont.

B. BioTel must be contacted with paramedics on-scene and within the vicinity of the patient.
C. Approval will be made solely at the discretion of the BioTel Medical Control Physician.
D. If a PART request is denied the patient shall be transported, although BioTel staff/physician may allow the patient to be transported only to the closest appropriate hospital.
    1. If a patient subsequently denies transport, this should be handled in real-time on the recorded line or BioTel re-contacted for a recorded refusal.

See Next Two Pages for the

DFR Non-Transport Process Algorithm

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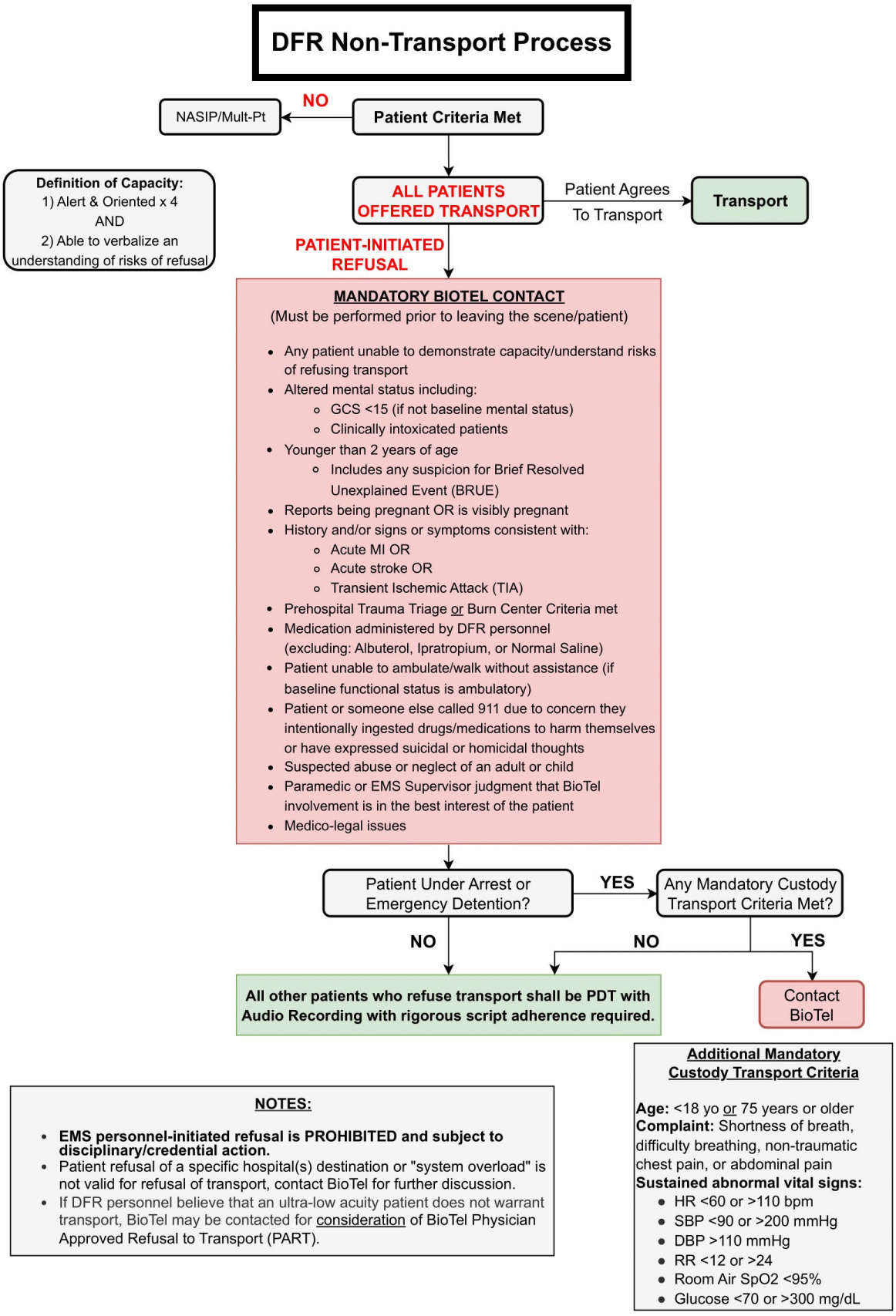
EVALUATION AND TRANSPORT, cont.



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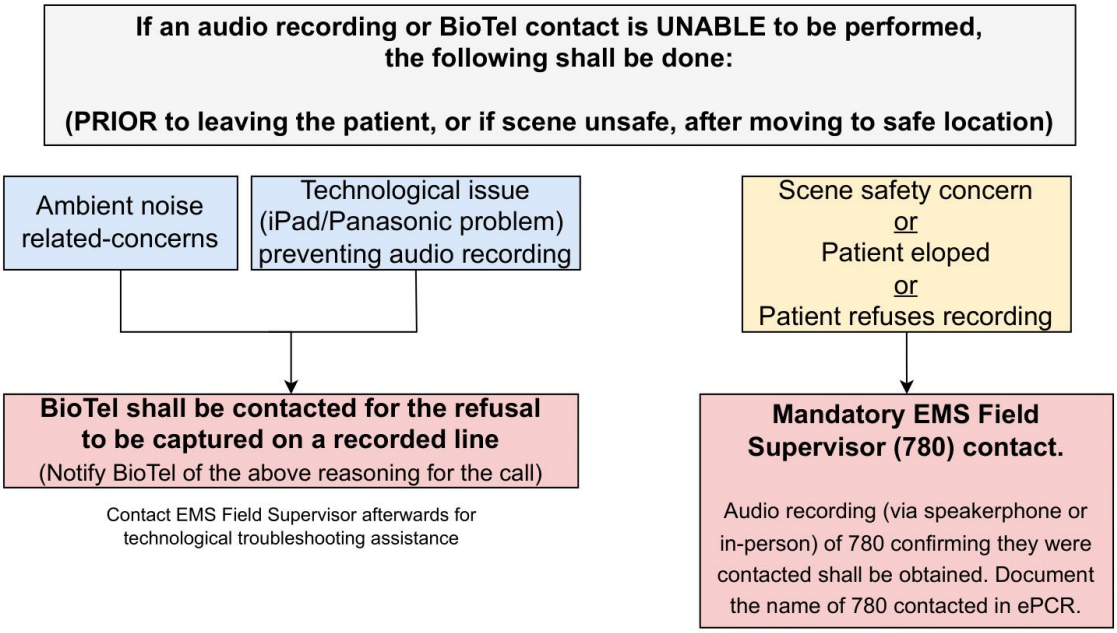
EVALUATION AND TRANSPORT, cont.



For any other circumstances not covered above, contact BioTel for further guidance.

Audio Recording Script

Utilization of a language-certified DFR employee OR language line is mandatory if non-English speaking pt.

- **This is Dallas Fire-Rescue Paramedic (Name) on (Unit). I have evaluated my patient and established their capacity to decline transport.**
- **Could you please state your name and age?**
  - *If LEGAL surrogate decision-maker, ask to state name and relation*
- *If ANY abnormal vital signs (reference Mandatory Custody Transport Criteria for abnormal cut-offs):*
  Do you understand your vital signs are abnormal and could indicate a life-threatening condition?
- **Do you understand that we have offered you transport to the hospital by a Dallas Fire-Rescue ambulance?**
- **Are you declining this transport by Dallas Fire-Rescue?**
- **Do you understand and accept the risks of refusing ambulance transport including worsening of your condition, up to and potentially including death or disability?**
- **Do you understand you can call 911 back if needed?**
- **Are you willing to sign that you are declining transport at this time?**
- **Thank you. I'll stop recording now and get your signature.**

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FREESTANDING EMERGENCY CENTER TRANSPORT

Purpose: To provide guidance to BioTel EMS personnel regarding which patients may be transported to a Freestanding Emergency Center (FEC)
Inclusion Criteria: All patients evaluated, treated, and transported by BioTel member EMS agencies
Exclusion Criteria: None

I. Background
   A. The Texas Health and Safety Code (Section 254.001) and Texas Administrative Code (25 TAC 131) permit the operation of Freestanding Emergency Centers (FECs) to provide emergency medical care.
   B. At the time of publication of this policy, Texas State regulatory agencies and EMS advisory bodies have not published requirements or guidelines on the transport of EMS patients to FECs.

II. Patient Transport to an FEC
   A. This policy is PERMISSIVE and does not require EMS personnel to transport any patient to an FEC.
   B. Only FECs approved by BioTel (see **Section III** below) may receive patients transported by BioTel EMS agencies.
   C. Transport to an approved FEC may ONLY be considered for patients with non-critical illness or vital signs.
   D. If there is any uncertainty about whether transport of a given patient to an FEC is appropriate, EMS personnel shall discuss the transport with their field supervisor or contact the BioTel Communications Center to discuss the case.
   E. Patients with ANY of the following confirmed or suspected conditions or criteria shall NOT be transported to an FEC:
      1. Any patient with critical illness or unstable vital signs
      2. STEMI, NSTEMI, or other acute coronary syndrome (ACS)
      3. Stroke or Transient Ischemic Attack (TIA)
      4. Patients meeting BioTel Prehospital Trauma Center Triage Criteria (see DESTINATION DECISION-MAKING POLICY and TRAUMA – GENERAL CPG)
      5. Sepsis
      6. Behavioral health emergencies or acute behavioral disturbances
      7. Patients with apparent drug intoxication or drug overdose
      8. Patients in law enforcement custody or under emergency detention (see CUSTODY POLICY)
      9. Any patient who, in the judgment of a BioTel EMS professional, should not be transported to an FEC

III. FEC Approval Procedure and Criteria
   A. An FEC seeking approval to receive patients from BioTel agencies must submit a formal request to the BioTel Medical Director.
   B. An FEC must attest that it meets and the following criteria to be approved to receive patients from BioTel agencies:
      1. Medical Director with Board-certification in Emergency Medicine
      2. 24/7 availability of Board-certified/Board-eligible Emergency Physicians
      3. 24/7 availability of at least two RNs with ACLS, PALS, and either TNCC or ATCN certifications
      4. Published surge capacity plan including on-call physician and nursing coverage
      5. Commitment to adhere to EMTALA regulations
      6. 24/7 CT capability and a radiology tech on site
      7. 24/7 Radiologist coverage
      8. Laboratory capability
      9. Ultrasound capability

FREESTANDING EMERGENCY CENTER TRANSPORT, cont.

10. Capability for special procedures:
    a. Emergency airway management
    b. Ventilator availability and management
    c. 12-lead ECG
    d. Thrombolytics
    e. Sedation
11. Emergency transfer agreements in place, including ambulance availability
12. Active participation in BioTel Council meetings
13. Active participation in NCTTRAC meetings
14. Quality management plan in place
15. Communication plan, including receiving EMS agencies and BioTel

C. After receipt of a request for approval and attestation to all the above criteria, The BioTel Council will discuss approval of an FEC at its next scheduled quarterly meeting.
D. The final decision to approve an FEC rests with the BioTel Medical Director.
E. An updated list of approved FECs will be provided to BioTel EMS agencies and publicized on the BioTel website on a regular basis.

IV. Quality Management Procedure
A. BioTel agencies and their Associate Medical Directors will collaborate with FEC leadership to review and address any quality issues related to patient transport to FECs.
B. Results of and recommendations from these reviews shall be provided to the BioTel Medical Director for possible action, including reevaluation of the FEC’s approval status.

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INTERACTION WITH PHYSICIANS ON THE SCENE OF EMERGENCY CALLS

Purpose: To guide BioTel EMS personnel on acceptable patient care interventions when encountering a physician at the scene of an emergency medical call.
Inclusion Criteria: Any response to a patient's emergency call where a physician is on-scene.
Exclusion Criteria: No specific exclusions.

I. Background and Overview
   A. BioTel EMS personnel are authorized to provide medical care under the delegated practice of their physician medical director.
   B. BioTel EMS personnel are only authorized to provide care and interventions within the scope of their training and according to the BioTel Clinical Practice Guidelines (CPGs) or orders from BioTel medical control physicians.
   C. When responding to emergency calls, BioTel EMS personnel may occasionally encounter on-scene physicians ("intervenor physicians") who are not part of the BioTel System but want to participate in or direct the care of a patient.
   D. **Unless specifically authorized by a BioTel medical control physician, BioTel EMS personnel may NOT accept orders from intervenor physicians on emergency calls**.

II. Intervenor Physician on the Scene of an Emergency Medical Call
   A. EMS personnel must obtain authorization from a BioTel medical control physician before accepting any orders or direction from an intervenor physician WITHOUT an established physician-patient relationship.
      1. For physicians with an established physician-patient relationship, see **Section III**.
   B. Any intervenor physician who wishes to direct medical care must first verify their identity and credentials to EMS personnel by showing:
      1. A valid, government-issued photo ID
      2. A current, valid Texas medical license
   C. To be authorized to direct patient care, an intervenor physician must agree to ALL the following:
      1. Speak with the BioTel medical control physician.
      2. Accept TOTAL responsibility for patient care until the patient is transferred to the care of receiving ED staff.
      3. Accompany the patient to the hospital in the ambulance.
      4. Sign the electronic patient care record (ePCR) acknowledging all orders they provide.
   D. Whenever an intervenor physician is authorized to direct medical care by a BioTel medical control physician, EMS personnel will follow all orders from the intervenor physician that are within the scope of their training and the CPGs.
      1. Orders outside the scope of training of EMS personnel or the CPGs must be personally carried out by the intervenor physician.
      2. EMS personnel must receive explicit approval from a BioTel medical control physician to undertake any care or action outside of the CPGs.
   E. When authorized to follow the direction of an intervenor physician, EMS personnel MUST document the following items in the ePCR:
      1. The intervenor physician's full name, Texas medical license number, medical license expiration date, and complete contact information.
      2. All orders given by the intervenor physician.
      3. Any authorized deviations from CPGs permitted by the BioTel medical control physician.

INTERACTION WITH PHYSICIANS ON THE SCENE OF EMERGENCY CALLS, cont.

F. This section only covers interaction with intervenor physicians in non-healthcare settings (e.g., private residences, public areas). For guidance on interaction with physicians in healthcare settings, see **Section III** below.

III. On-scene Physicians with Established Physician-Patient Relationships
- A. Physicians on-scene in a healthcare setting (e.g., hospital, outpatient clinic, urgent care center, freestanding ED) who have already established a physician-patient relationship have the authority to direct care for that patient PRIOR to transferring care to BioTel EMS personnel.
  1. These physicians are referred to as “private physicians” for the purposes of this policy to differentiate from intervenor physicians without established physician-patient relationships.
- B. In this setting, BioTel EMS personnel should generally honor a private physician’s decision to transport a patient from a healthcare setting to an appropriate receiving ED.
- C. If BioTel EMS personnel are asked to perform an intervention or administer a medication by a private physician, EMS personnel should inform the physician that they are only authorized to provide care consistent with the BioTel CPGs and should immediately contact BioTel should any conflict of requested treatment with the CPGs persist.
- D. AFTER assuming care of a patient, BioTel EMS personnel may only provide care and interventions consistent with the BioTel CPGs or as directed by a BioTel medical control physician.
  1. If a private physician wants to continue directing patient care outside of the healthcare setting after transfer of care to EMS personnel, the requirements in **Section II** above apply.
- E. A BioTel medical control physician should be consulted whenever there is disagreement or confusion between a private physician and EMS personnel regarding patient care, method of transport, or transport destination.

IV. Resuscitation Efforts with Physicians On-Scene
- A. When EMS personnel encounter a physician (either intervenor or private) on-scene with a patient, and a decision must be made about initiating, continuing, or terminating resuscitative efforts, EMS personnel shall proceed with care according to the BioTel CPGs.
- B. If an on-scene physician (either intervenor or private) gives any instruction or order that is contrary to the BioTel CPGs, EMS personnel shall NOT comply with the order and shall immediately contact a BioTel medical control physician for guidance.

V. Special Considerations
- A. If a BioTel medical control physician arrives on the scene of an emergency call AND can be satisfactorily identified, EMS personnel may accept their medical direction without contacting the BioTel communications center.
  1. If a physician’s identity can’t be verified on-scene, EMS personnel should contact BioTel.
- B. Within the context of a disaster deployment, EMS personnel are authorized to practice under the direction of a Medical Control Physician who has been deployed by the State to the local Medical Operations Center (according to the STATE DISASTER DEPLOYMENT POLICY).
- C. Medical orders from non-physician healthcare providers (e.g., PAs, nurse practitioners, registered nurses) are NOT to be accepted unless specifically authorized by a BioTel medical control physician.
- D. This procedure shall be followed whether EMS personnel are evaluating a patient at a single scene, a “mass gathering” event, or any multiple casualty incident (MCI).

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OUT-OF-HOSPITAL DO NOT RESUSCITATE (OOH-DNR) ORDERS

Purpose: To provide guidance when encountering out-of-hospital Do Not Resuscitate Order (OOH-DNR) forms or devices.
Inclusion Criteria: Patients in end-of-life medical situations (including cardiac or respiratory arrest) with OOH-DNR order forms or devices.
Exclusion Criteria: Patients without OOH-DNR order forms or devices.

I. Background and Overview
   A. An out-of-hospital Do Not Resuscitate Order form or device (hereafter referred to as an OOH-DNR) is presumed to represent a patient's wishes to forgo resuscitation attempts and be permitted to have a natural death with peace and dignity.
   B. A patient with a valid OOH-DNR should not receive CPR, assisted ventilation, advanced airway management, transcutaneous pacing, cardioversion, or defibrillation.
   C. An OOH-DNR does not prevent the provision of other emergency care or measures intended to make the patient more comfortable.
   D. In some cases, the validity of an OOH-DNR may be uncertain.
   E. Occasionally, EMS personnel are faced with a patient's relative, guardian or medical proxy (e.g., someone with Medical Power of Attorney or possessing a court order) who requests to revoke a valid OOH-DNR.
   F. EMS personnel are NOT required to accept an OOH-DNR that does not meet the requirements of this policy.
   G. DNR requests that do not meet the criteria outlined in this policy—including requests by a Medical Power of Attorney or an on-scene physician—require authorization by a BioTel medical control physician.
   H. In situations where multiple individuals claim conflicting decision-making authority in creating, honoring, or revoking an OOH-DNR, immediately contact BioTel to speak with a medical control physician.
   I. Whenever there is uncertainty about whether to initiate or continue resuscitation efforts, EMS personnel shall proceed with resuscitative efforts and immediately contact BioTel for medical control physician consultation.

II. The following items shall be accepted as proof of valid OOH-DNR instructions for a patient:
   A. Texas Department of State Health Services (DSHS) OOH-DNR Order Form (see **Appendix A**)
   B. Texas OOH-DNR Bracelet
   C. Texas OOH-DNR Necklace

III. Guide to verifying the validity of an OOH-DNR Order form or device:
   A. A Texas DSHS OOH-DNR Order form shall be verified using a three-step process:
      1. The patient's full legal name and date of birth must be printed at the top of the form.
      2. Either of the following two conditions must be met:
         a. One of Sections A, B, C, D, or E is completed by an appropriate individual (or individuals) AND the document is signed by <u>two</u> witnesses (or signed & stamped by <u>one</u> notary public).
         b. Section F is completed by <u>two</u> physicians. This option does not require witnesses.
      3. The acknowledgement section at the end of the form contains ADDITIONAL signatures from all individuals and witnesses who signed in previous sections of the form.
   B. OOH-DNR Bracelet
      1. There are 2 acceptable OOH-DNR bracelets—a stainless steel version (on which patient identifiers may be written) depicted in **Figure 1** and a plastic version (<u>without</u> patient identifiers) depicted in **Figure 2.**

OUT-OF-HOSPITAL DO NOT RESUSCITATE (OOH-DNR) ORDERS, cont.

2. Either bracelet worn around the patient's wrist shall be honored as if it were a valid OOH-DNR Order form
3. An OOH-DNR bracelet that is NOT worn on the patient's wrist shall not be honored
4. The bracelet shall NOT be removed from the patient's wrist, even if the patient is deceased

Figure 1

Figure 2

C. OOH-DNR Necklace
   1. The OOH-DNR necklace is made of stainless steel and is inscribed with patient information, as shown in **Figure 3**.
   2. An OOH-DNR necklace worn around the patient's neck shall be honored as if it were a valid OOH-DNR Order form
   3. EMS personnel shall NOT honor an OOH-DNR necklace that is NOT worn around the patient's neck.
   4. The necklace shall NOT be removed from the patient's neck, even if the patient is deceased

Figure 3

D. Out-of-state, foreign, or unidentifiable OOH-DNR Order forms
   1. If an OOH-DNR Order form other than the Texas DSHS form described above is presented, initiate/continue resuscitation efforts and IMMEDIATELY contact BioTel for medical control physician consultation to determine whether the OOH-DNR may be honored.

E. Living wills
   1. A living will does NOT replace or substitute for an OOH-DNR Order form or device and does NOT authorize EMS personnel to withhold or terminate resuscitation.

OUT-OF-HOSPITAL DO NOT RESUSCITATE (OOH-DNR) ORDERS, cont.

IV. Conditions under which an OOH-DNR Order form shall NOT be honored without first consulting a BioTel medical control physician:
   A. The OOH-DNR Order form is not properly completed per the requirements above.
   B. The form has been altered (e.g., certain words or treatments marked out).
   C. The patient is known to be pregnant.
   D. There are any unnatural or suspicious circumstances concerning the patient's condition that are observed by EMS personnel on the scene (e.g., emptied pill bottles, indications of violence, signs of external cause of injury).
   E. The OOH-DNR Order form is revoked by an appropriate individual (as outlined in **Section V** below).
   F. A BioTel medical control physician orders the specific treatment of the patient, as permitted by statute.

V. Who may revoke an OOH-DNR?
   A. The wishes of the patient supersede any OOH-DNR! The patient (including a competent minor who can consent to their own treatment) can revoke their own OOH-DNR.
   B. An approved OOH-DNR device (bracelet or necklace) may only be revoked by the patient.
   C. A proxy—such as a Medical Power of Attorney (MPOA) or someone possessing a court order—may revoke an OOH-DNR Order form in either of the following two situations and ONLY IF the MPOA or court order is shown to EMS personnel:
      1. The proxy executed/signed the OOH-DNR Order form on the patient's behalf, OR
      2. The proxy's document (MPOA or court order) was executed AFTER the OOH-DNR Order form
   D. A legal guardian, agent, physician, or qualified relative may revoke an OOH-DNR Order form ONLY if they executed/signed the OOH-DNR Order form on the patient's behalf.
   E. Revocation may consist of:
      1. Verbal communication to EMS Personnel
      2. Destruction of the OOH-DNR Order form
      3. Physical removal of an OOH-DNR device
         a. Only the patient (i.e., NOT a proxy) may revoke an OOH-DNR using this method.
   F. Whenever revocation of an OOH-DNR order is requested, a BioTel medical control physician must be contacted.
   G. Whenever revocation of an OOH-DNR is approved, detailed documentation of who revoked the order, how it was revoked, and why revocation occurred is mandatory.

VI. Procedure to comply with a valid OOH-DNR
   A. The name on the OOH-DNR Order form or device must be matched to the patient's identity
      1. Note: A stainless steel OOH-DNR bracelet (shown in **Figure 1** above) may not contain any identifying information. If the wristband is blank, it still may be honored in good faith.
   B. EMS personnel on scene agree that the OOH-DNR appears valid
   C. Once an OOH-DNR is found to be valid, it should be honored by immediately withholding:
      1. CPR
      2. Assisted ventilation
      3. Advanced airway placement
      4. Placement of the AED or manual defibrillator
      5. Transcutaneous pacing
      6. Cardioversion or defibrillation
   D. The form or device should remain with the patient AND should be provided to either the hospital (if transportation occurs), law enforcement, or medical examiner/funeral home personnel prior to EMS personnel departing the scene.

OUT-OF-HOSPITAL DO NOT RESUSCITATE (OOH-DNR) ORDERS, cont.

VII. Documentation requirements

A. At the time a valid OOH-DNR is honored and resuscitative efforts are withheld/terminated, EMS personnel should contact the BioTel Communications Center to relay information as required by Texas DSHS.

B. EMS personnel should document the following items in the electronic patient care record (ePCR) when an OOH-DNR is honored:

1. The type of OOH-DNR used to confirm the patient's 'Do Not Resuscitate' status
2. Any problems encountered during implementation of the OOH-DNR
3. The name of the patient's attending physician as documented on the OOH-DNR Order form (if applicable)
4. The full name, address, phone number, and relationship to the patient of any witness used to identify the patient
5. Any resuscitative efforts made prior to withholding or terminating resuscitation

C. EMS personnel should document the following items in the ePCR when an OOH-DNR is revoked:

1. The type of OOH-DNR (form or device) being revoked
2. The full name, address, phone number, and relationship to the patient of the individual revoking the OOH-DNR
3. The basis of authority of the individual revoking the OOH-DNR (e.g., MPOA, court order, instructions from a BioTel medical control physician)
4. Any resuscitative efforts made after revocation of the OOH-DNR

VIII. Hospice patients (with or without a valid OOH-DNR on-scene):

A. EMS personnel should make every attempt to contact the patient's hospice case manager or hospice nurse for information about the patient's status, wishes, or on-file OOH-DNR orders.

B. Patient care should proceed in accordance with BioTel EMS Clinical Practice Guidelines including providing resuscitation efforts if OOH-DNR status is uncertain.

C. EMS personnel should contact BioTel medical control for guidance if questions or concerns arise.

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RADIO AND VERBAL REPORTING

Purpose: To describe minimum standards for communicating patient information to receiving hospital personnel, BioTel communications center staff, or to medical control physicians
Inclusion Criteria: Any EMS incident where a radio or verbal report is provided
Exclusion Criteria: No specific exclusions

I. Background and Overview
   A. When communicating with receiving hospital personnel, BioTel communications center staff, or BioTel medical control physicians, EMS personnel shall provide a concise and well-organized report according to the standards below in **Section II**.
   B. These standards apply to reports made by phone, over the radio, or in person.

II. Field Reporting Format
   A. EMS personnel shall document the name of the person who receives their verbal report.
   B. When contacting the BioTel communications center, EMS personnel should "start with the ask" and communicate the reason for contact, including but not limited to the following options:
      1. Routine hospital notification
      2. Specialty care notification or alert (e.g., Trauma, Burn, STEMI, Stroke, Obstetrics)
      3. BioTel staff consultation
      4. Medical control physician consultation
      5. Discussion about TERMINATION OF RESUSCITATION
      6. Assistance with destination decision-making
      7. Patient refusing care (against medical advice) or declining transport
      8. Request for activation of the EMERGENCY LEGAL ASSISTANCE PROGRAM (ELAP)
   C. A field report by EMS personnel shall include, at a MINIMUM, the following information:
      1. EMS agency and unit number
      2. Patient age and gender
      3. Patient complaint(s) or mechanism(s) of injury
      4. Vital signs
      5. Level of consciousness
      6. Pertinent positive and negative findings from the patient history and physical exam
      7. Transport code
      8. Estimated transport time to destination hospital
      9. Major interventions performed (e.g, AIRWAY MANAGEMENT, medications administered, IV or IO access, cardioversion/defibrillation, sedation, restraints)
      10. Any other pertinent information that provides context or would assist the ED treatment team in caring for the patient (e.g., CUSTODY status, concerns of ABUSE/NEGLECT/EXPLOITATION, environmental factors at scene of EMS incident)

III. Special Considerations
   A. If EMS personnel are unable to provide a timely report due to a communications equipment failure, ongoing care of a critically ill patient, or other extenuating circumstances, they shall request their agency dispatch center to relay as much information as possible to the BioTel communications center EARLY during the patient transport.
   B. BioTel will work with member EMS agencies and receiving facility partners to monitor, review, and improve the quality of remote and in-person verbal reporting.

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REPORTING OF ABUSE, NEGLECT, OR EXPLOITATION

Purpose: To guide BioTel EMS personnel on acceptable patient care interventions when encountering a physician at the scene of an emergency medical call.
Inclusion Criteria: Any response to a patient's emergency call where a physician is on-scene.
Exclusion Criteria: No specific exclusions.

I. Background and Overview
   A. The Texas Family Code (Section 261) defines the duty and obligation of non-physician healthcare professionals (including EMS personnel) to report ANY suspected child abuse or neglect to a state-designated authority.
      1. This duty may NOT be delegated to others or waived based on any perceived "legal privilege."
   B. These reporting requirements also apply to suspected cases of abuse, neglect, or exploitation of the elderly, the mentally disabled, or the physically disabled.
   C. Anyone who reports abuse, neglect, or exploitation in good faith is immune from civil or criminal liability.
   D. Reporting suspected abuse, neglect, or exploitation enables patients and families to get help.
   E. Failing to make a report could mean the difference between life and death for a patient.

II. Reporting Process for Suspected Abuse, Neglect, or Exploitation
   A. BioTel EMS personnel shall evaluate ANY patient for whom abuse, neglect, or exploitation is suspected and transport them to an appropriate hospital ED.
   B. Vulnerable patient populations include:
      1. Children (<18 y/o)
      2. Elderly persons (≥65 y/o)
      3. Physically disabled persons
      4. Mentally ill or intellectually disabled persons, including those in state-run facilities or programs
   C. The patient's history, physical examination, environmental factors at the scene, and other relevant observations and evidence shall be clearly and objectively documented in the ePCR.
   D. EMS personnel shall directly state their concerns about possible abuse, neglect or exploitation to the receiving ED staff.
   E. EMS personnel shall ALSO directly report ANY suspected abuse, neglect, or exploitation as soon as possible to AT LEAST ONE of the following state-designated authorities:
      1. Report concerns about individual persons to either:
         a. The Texas Department of Family and Protective Services (DFPS)
            i. 1-800-252-5400 OR 1-800-877-5300
            ii. https://txabusehotline.org
                OR
         b. Local law enforcement officer(s)
      2. Report concerns about facilities to the Texas Health and Human Services Commission (HHSC):
         a. 1-800-458-9858
         b. https://txhhs.my.site.com/complaint/s/
   F. The report of suspected abuse must include ALL the following information at a minimum:
      1. The patient's name and address
      2. The name, address, and phone number of the person responsible for the patient's care, custody, or welfare
      3. Details regarding the possible abuse, neglect, or exploitation
      4. The names and phone numbers of all EMS personnel involved in the EMS encounter
   G. Documentation of any report made should be included in the electronic patient care record (ePCR).

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RESTRAINT OF PATIENT

Purpose: To guide BioTel EMS personnel in the use of limited physical restraints and early chemical sedation for medical management of patients who are violent or at risk of harming themselves / others

Inclusion Criteria: Any EMS/Fire/Police incident involving care and/or transport of a potentially violent, combative, or dangerous patient

Exclusion Criteria: Patients who do not require physical restraint or emergency medications for de-escalation of potentially violent behavior

I. Background and Overview
   A. Safety of the patient, community, and EMS personnel is the topmost priority
   B. EMS personnel must consider the possibility that agitated, aggressive, or violent behavioral may be a sign of an emergent medical condition, such as: head injury, drug intoxication, a psychiatric disorder, or a metabolic disorder. Refer to the following CPGs, as indicated:
      1. BEHAVIORAL EMERGENCY / ACUTE BEHAVIORAL DISTURBANCE
      2. ALTERED MENTAL STATUS
      3. DRUG OVERDOSE OR INTOXICATION
   C. Physical restraint of a violent or potentially violent patient should only be used in a limited fashion when the patient presents a potential risk to themselves or others.
   D. Only the MINIMAL NECESSARY level of restraint (physical or medication) shall be used at any time.
   E. Restraints shall be applied in a humane and professional manner.

II. Physical Restraints
   A. Only padded leather or soft restraints (e.g., Posey vest, Velcro, or seat-belt type) may be used.
   B. The suggested restraint technique consists of a six-point system, preferably connecting the patient to a stretcher.
      1. Use a snug fitting device at the wrists and ankles to secure both arms and legs in an extended position.
         a. Both legs should be restrained in the extended position.
         b. Both arms should be restrained in the extended position down at the patient's side, OR one arm may be restrained by the patient's side and the other may be restrained above the patient's head.
      2. Prevent the patient from sitting up by applying appropriate restraints across the chest and thighs.
         a. Straps should be snug but should NOT restrict chest wall movement.
      3. The head of the stretcher should be elevated approximately 30 degrees, if possible, to decrease the risk of aspiration.
      4. If using a backboard, restrain the patient in a supine position.
      5. If a lateral position is necessary, tilt the backboard approximately 15 degrees TOWARD EMS personnel so that airway and breathing status can be monitored.
   C. The method of restraint shall always permit adequate monitoring of vital signs, including waveform capnography (ETCO2).
   D. The method of restraint shall not compromise the patient's cardiorespiratory or neurologic status.
   E. A mechanism to immediately release all restraints is MANDATORY
   F. Minimum documentation for application of physical restraints includes:
      1. Reason for use of restraints
      2. Device and technique used
      3. Assessment (and periodic reassessment) of the neurovascular status of any restrained extremities
      4. Assessment (and periodic reassessment) of the patient's neurologic and cardiorespiratory status

III. Prohibited Restraint Methods and Patient Positions
   A. Patients shall NOT be transported in or allowed to roll over into a PRONE position

RESTRAINT OF PATIENT, cont.

B. EMS personnel in the BioTel System may NOT apply any of the following forms of restraint:
   1. Sandwich Technique – placing patient between 2 objects (e.g., backboard and scoop stretcher)
   2. Hobble Technique (a.k.a., "hogtie") – Wrists and ankles bound behind patient's back
   3. ANY restraint technique that restricts chest wall or abdominal movement
   4. Hard, plastic ties (e.g., zip ties)
   5. Any restraint device that requires a key for removal

IV. Emergency Medications
   A. For patients who continue to demonstrate agitation, aggression, or violent behavior after all other safety measures have been performed, EMS personnel may treat ongoing agitation by administering calming medications (a.k.a., "sedation").
   B. Calming medications should preferentially be administered by the intramuscular (IM) route and may be administered through the patient's clothing if necessary for the safety of those on scene.
   C. Refer to the BEHAVIORAL EMERGENCY / ACUTE BEHAVIORAL DISTURBANCE CPG for guidance on medication selection and dosing.
   D. For pediatric patients, contact BioTel as soon as is practical for medical control physician guidance before administering calming medications.

V. Patients in Custody of Law Enforcement Personnel
   A. This policy does not negate the need for a law enforcement officer (LEO) to use appropriate restraint equipment approved by their respective agencies for arrest and/or control (e.g., conducted energy devices, handcuffs).
   B. Patient care is the responsibility of the highest medical authority on scene.
      1. Unless a BioTel EMS physician is on scene, EMS personnel are the highest medical authority.
      2. If another physician who is NOT a BioTel EMS physician is on scene, refer to the ON-SCENE INTERACTION WITH PHYSICIANS POLICY and contact BioTel for guidance.
   C. A patient who can understand the consequences of their decisions (i.e., has capacity) does not lose their right to participate in decision making about their medical care, regardless of their custody status.
   D. BioTel EMS personnel shall work COLLABORATIVELY with law enforcement personnel to determine the safest way to restrain and transport a patient who is in custody.
   E. When law enforcement personnel have determined a patient must remain handcuffed during EMS transport:
      1. EMS personnel shall determine the safest way to secure the patient and handcuffs.
      2. All criteria in **Sections II & III** above must be met.
      3. An LEO MUST accompany the handcuffed patient IN THE PATIENT CARE COMPARTMENT of the ambulance.
      4. The officer MUST have a handcuff key immediately available to allow rapid release of one or both cuffs in the event of a clinical change.
      5. In the event of disagreement about how to safely maintain handcuffs during transport, contact BioTel for support and guidance.
   F. Refer to the CUSTODY POLICY for additional information and guidance on patients in custody.

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RETURN TO DUTY AFTER EXTENDED ABSENCE

Purpose: To outline a process from EMS professionals to resume patient care in the BioTel System after an extended absence from clinical activity
Inclusion Criteria: Any previously credentialed EMS professional away from clinical activity for >6 mo
Exclusion Criteria: EMS professionals new to the BioTel System (see CREDENTIALING POLICY)

I. Background and Overview
   A. **Clinical activity** is defined as the provision of emergency medical evaluation and treatment as a component of an EMS professional's regular duties on a fire apparatus or ambulance.
   B. Some individuals who were previously credentialed in the BioTel EMS system experience extended periods of time away from clinical activity as an EMS professional. Examples of reasons for extended absence from clinical activity may include:
      1. Military service
      2. Injury or illness
      3. Maternity leave, paternity leave, or other FMLA
      4. Administrative reassignment
   C. Any EMS professional who does not engage in clinical activity for more than 6 months shall be considered 'clinically inactive' and completion of a Re-Entry Plan is required before they may resume patient care within the BioTel System.
   D. Requiring clinically inactive EMS professionals to complete a competency-based Re-Entry Plan after clinical inactivity is essential to ensure safe and effective patient care in the prehospital setting.

II. Process for Return to Duty
   A. A BioTel EMS agency identifies a clinically active EMS professional as a candidate for re-entry to the BioTel System.
   B. The agency and its Medical Director work together to create a Re-Entry Plan (REP) for that individual EMS professional on a case-by-case basis.
   C. The scope and depth of an REP shall take into account the length of the EMS professional's time away from clinical activities as well as the nature of their activities during this period.
      1. Clinical work with an outside entity (e.g., deployment as a military medic or work with another EMS agency) MAY require a less comprehensive REP than non-clinical work (e.g., sick leave or non-EMS-related work).
      2. Clinical inactivity within the BioTel system (e.g., administrative duty with the fire department) MAY require a less rigorous REP than activities outside the system (e.g., sick leave or non-EMS-related work).
   D. After all requirements for re-entry have been met, a written record of REP completion shall be signed by the involved EMS professional, a representative from the agency's EMS leadership, and the medical director.
      1. After all of these parties have acknowledged completion of the REP, the involved EMS professional may return to regular duty with an unrestricted EMS credential.

III. Scope and Depth of the Re-Entry Plan
   A. EMS professionals who have been clinically inactive for ≤6 months generally do not require further action PRIOR to reinstatement UNLESS the agency's leadership believes additional interventions are needed.
      1. These individuals SHOULD complete all missed CE, skills sessions, operational drills, training, or updates within 60 days of resuming clinical activity.

RETURN TO DUTY AFTER EXTENDED ABSENCE, cont.

B. EMS professionals who have been clinically inactive for greater than 6 months shall undergo an REP including some combination of:
   1. Continuing Education (CE)
   2. Refresher course on the BioTel Clinical Practice Guidelines (CPGs)
   3. The BioTel CPG exam
   4. Skills refresher course
   5. Field evaluation / precepted EMS runs
   6. Medical director interview
   7. Any other activities or requirements delineated by EMS agency leadership or the medical director.

C. EMS professionals who have been clinically inactive for >3 years MAY be required to return to paramedic school to be eligible for re-credentialing. This decision shall be made at the discretion of the medical director OR EMS agency leadership.

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SOCIAL WORK PROGRAM REFERRAL

Purpose: To provide EMS personnel with a mechanism to address the social service needs of patients
Inclusion Criteria: Patients who EMS leadership believes might benefit from social services
Exclusion Criteria: No specific exclusions

I. Scenarios for Which BioTel Social Work Contact is Recommended
   A. Resource Deficit
      1. A patient, the patient's family, or EMS personnel identifies a resource deficit that prevents that individual from reaching their full physical or mental potential.
      2. Examples include (but are not limited to) the need for:
         a. Alternate housing placement
         b. Additional home support (e.g., home health or durable medical equipment)
         c. Connection to a medical home
         d. Coordination of community resources
   B. Frequent and/or excessive use of the 911 System by individuals to meet basic needs or for non-emergent reasons.

II. BioTel Social Work Program Features
   A. Referrals should be made at EMS agency leadership discretion.
   B. Referrals are flexible and can be structured according to the needs of each BioTel agency.
   C. The BioTel social worker can attempt intervention to provide services to or education and guidance about challenging patient populations.
   D. Social work referral is based on patient need, not on number of EMS runs made. The BioTel social worker will work collaboratively with BioTel member agencies to assess candidates and their needs.
   E. Crisis intervention:
      1. The BioTel social worker may not be able to respond in real time to crisis situations.
      2. A patient's immediate physical and mental health needs take priority over social needs.
      3. EMS personnel should follow BioTel CPGs, BioTel policies, and agency policies for any patient they determine to be in immediate danger or in an unsafe situation.
      4. A social work referral can be made following clinical management and safety assurance.
   F. A BioTel social work referral is NOT a substitute for mandatory reporting in cases of suspected (see the REPORTING OF ABUSE, NEGLECT, OR EXPLOITATION POLICY for guidance). After the report is filed, a social work referral can be made to coordinate efforts by responding agencies.
   G. BioTel social workers are available to provide education and support to member agencies and personnel.

III. Referral Process
   A. EMS professionals should follow their agency's process and procedure for initiating a referral.
   B. The BioTel social worker will follow up with the designated contact person at the referring agency.
   C. As part of the treatment plan, the BioTel social worker may complete home visits when requested by the referring agency or as needed (with approval from agency leadership).
      1. The social worker shall be accompanied by an agency representative or BioTel staff member.
   D. Any decision to terminate services for a referred individual (including patient refusals to participate) should be discussed by EMS agency and BioTel social work leadership.

IV. For immediate assistance in complex situations, EMS personnel should contact BioTel staff to determine the need to contact a BioTel social worker and/or to activate the BioTel EMERGENCY LEGAL ASSISTANCE PROGRAM (per POLICY).

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STATE DISASTER DEPLOYMENT

Purpose: To establish guidelines for BioTel EMS personnel who have been deployed outside of their normal jurisdiction as part of a State response team during a disaster
Inclusion Criteria: As above
Exclusion Criteria: EMS incidents within the normal jurisdiction of a BioTel agency

I. Background
   A. Members of a BioTel EMS agency may be deployed as part of a State response to a disaster or impending disaster.
   B. This policy applies to BioTel EMS personnel deployed IN AN OFFICIAL CAPACITY by their EMS agency as part of a State disaster response.

II. Medical Authority During Deployment
   A. BioTel EMS personnel deployed by their agency as part of a State disaster response shall operate under the authority of the DFR Medical Director and provide care according to the BioTel Clinical Practice Guidelines (CPGs).
      1. EMS personnel shall contact the BioTel Communications Center or a BioTel medical control physician as directed by the BioTel CPGs.
   B. Under certain circumstances, the Texas Disaster Medical System (TDMS) may deploy a Medical Control Physician into the local designated Medical Operations Center (MOC).
      1. BioTel EMS personnel are authorized to practice under the medical direction of this formally deployed Medical Control Physician (instead of the DFR Medical Director) within the context of their disaster deployment.
      2. When practicing under a formally deployed Medical Control Physician, BioTel EMS personnel must document ALL the following information in the electronic patient care record (ePCR):
         a. The physician's full name
         b. The physician's credentials (e.g., MD, DO)
         c. The physicians Texas medical license number
         d. Details of all treatment ordered by the physician
   C. When a Medical Control Physician has NOT been formally deployed by the state AND when BioTel EMS personnel are UNABLE TO CONTACT BioTel, these EMS personnel shall use their best clinical judgment to provide patient care within their scope of practice and according to BioTel CPGs.
      1. Under these circumstances, CLINICALLY INDICATED treatments that normally require prior authorization by a BioTel medical control physician may be used without BioTel contact.
      2. BioTel EMS personnel shall document ANY AND ALL deviations from the BioTel CPGs that were performed out of necessity during the disaster response.

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TERMINATION OF RESUSCITATION

Purpose: To allow termination of prehospital resuscitative efforts for cardiac arrest in situations of futility after the delivery of adequate ALS-level treatment.
Inclusion Criteria: All patients encountered in cardiac arrest by BioTel EMS personnel.
Exclusion Criteria: No specific exclusions

I. Background and Overview
   A. Studies show that on-scene resuscitation of patients in NON-TRAUMATIC cardiac arrest improves patient survival rather than immediate transport to a hospital ED.
   B. After appropriate on-scene resuscitative efforts for such a patient have failed, transport of the patient to a hospital ED rarely—if ever—results in patient survival to hospital discharge.
   C. Termination of resuscitation (TOR) in the field is appropriate for patients in non-traumatic cardiac arrest who meet criteria for futility of further resuscitative efforts.
   D. Every reasonable effort shall be made to resuscitate patients who are encountered in cardiac arrest and do not meet criteria for death as outlined in the DETERMINATION OF DEATH POLICY.

II. Exclusions to Termination of Resuscitation (unless approved by a Medical Control Physician)
   A. The patient is less than 18 years of age.
   B. The patient has had at least 5 minutes of sustained ROSC at any point.
   C. The patient has achieved non-sustained ROSC 2 or more times.
   D. The patient has a persistent shockable cardiac rhythm (VF or pulseless VT) after 3 or more CONSECUTIVE defibrillator shocks.
   E. The patient is visibly pregnant or known to be pregnant with an estimated gestational age ≥22 weeks.

III. Termination of Resuscitation by Standing Order (WITHOUT consulting BioTel)
   A. Unless a specific case of cardiac arrest meets ALL relevant criteria for Medical cardiac arrest (**Section III.B**) or Traumatic cardiac arrest (**III.C)**, EMS personnel MUST consult a BioTel medical control physician to discuss TOR (see **Section IV**).
   B. For **MEDICAL cardiac arrest,** TOR may be performed if ALL the following criteria are met:
      1. No exclusions to TOR listed in **Section II**.
      2. Cardiac rhythm is asystole or pulseless electrical activity (PEA) with a rate <40 bpm.
      3. Resuscitative efforts have been provided by BIOTEL EMS PERSONNEL according to the CARDIAC ARREST CPG for:
         a. 20 minutes for an unwitnessed cardiac arrest.
         b. 30 minutes for a cardiac arrest WITNESSED BY BioTel EMS personnel.
      4. The patient is receiving effective ventilation confirmed with EtCO2 via a bag-valve mask, supraglottic airway, or endotracheal tube.
      5. IV/IO access has been established and appropriate rhythm-specific medications have been administered.
      6. The end-tidal CO2 value is <20 mmHg when considering TOR (see **Section VI.C**).
      7. The patient does not have any signs of life when considering TOR, such as spontaneous respirations, eye opening, or spontaneous movement.
      8. The cause of arrest is not hypothermia, electrocution, or lightning strike.
      9. Resuscitation is not taking place in a crowded public setting (excluding nursing homes and other long-term care facilities).

TERMINATION OF RESUSCITATION, cont.

C. For **TRAUMATIC cardiac arrest**, TOR may be performed if ALL the following criteria are met:
   1. No exclusions to TOR listed in **Section II**.
   2. The patient did NOT arrest from a MEDICAL cause before suffering SECONDARY trauma.
   3. The cardiac arrest was NOT witnessed by EMS personnel.
   4. Cardiac rhythm is asystole or pulseless electrical activity (PEA) with a rate <40 bpm.
   5. Resuscitative efforts have been provided according to CARDIAC ARREST – TRAUMATIC CAUSE CPG including:
      a. Effective ventilation confirmed with EtCO2 via a bag-valve mask, supraglottic airway, or endotracheal tube.
      b. Reversible causes of traumatic cardiac arrest (compressible hemorrhage and/or tension pneumothorax) have been addressed, as indicated.
   6. At least 5 minutes of resuscitation
   7. Applicable to PENETRATING trauma cardiac arrest ONLY:
      a. Transport time is greater than 5 minutes to the closest Level I or Level II Trauma Center.

IV. Medical Control Physician Consultation for Termination of Resuscitation
   A. Any patient who does not meet criteria in **Section III.B** or **III.C** may be CONSIDERED for TOR only AFTER consultation with a BioTel medical control physician.
   B. If a request for TOR is declined by the BioTel medical control physician, the patient should immediately be transported to the closest appropriate receiving hospital ED with CPR in progress (unless alternative orders have been given by the medical control physician)

V. Procedure for Termination of Resuscitation
   A. Notify the appropriate law enforcement agency and remain on scene until officers arrive.
   B. To the extent possible, set up visual barriers so that the public cannot view the body.
   C. Do not remove any property from the body or from the scene for any purpose.
   D. Leave the body at the scene in the care of the appropriate law enforcement agency.
   E. If the decision is made to terminate resuscitative efforts in the back of a BioTel EMS agency ambulance, refer to the DECEASED PATIENT IN AN AMBULANCE POLICY for guidance.

VI. Special Considerations
   A. If a valid out-of-hospital DNR order (per OUT-OF-HOSPITAL DO NOT RESUSCITATE ORDER POLICY) is encountered during ongoing resuscitative efforts, EMS personnel should immediately terminate resuscitation and document the time of TOR in the ePCR.
   B. Partial attempts at resuscitation, “slow codes,” or “BLS only” care ARE STRICTLY PROHIBITED in the BioTel System. Resuscitative efforts should follow guidance in the BioTel CARDIAC ARREST CPGs.
   C. End-tidal CO2 values (ETCO2) do not play an absolute role in TOR. However, a patient with a sudden, sustained jump in ETCO2, such as from <20 mmHg to the 35-45 mmHg range, may indicate a positive response to resuscitation and should be discussed with the medical control physician.

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TRANSPORT IN NON-AMBULANCE VEHICLES

Purpose: To outline situations in which an EMS patient may be transported in a vehicle other than an ambulance
Inclusion Criteria: All patients encountered by BioTel EMS personnel
Exclusion Criteria: None

I. Background and Overview
   A. Section 773 of the Texas Health and Safety Code permits fire protection personnel to transport sick or injured patients in non-ambulance vehicles. Such transports are indicated only when EMS is "unable to provide emergency medical services imminently at the patient's location."
   B. Currently, all BioTel agency fire protection personnel are also EMS professionals. As a result, instances where BioTel agency personnel are unable to provide emergency medical care at a patient's location should be rare.
   C. For most EMS calls, instances where BioTel agency personnel are unable to transport patients in an ambulance but are able to transport in a different fire department vehicle should be rare.

II. Procedure during routine EMS calls
   A. Under exceptional circumstances, it is possible that EMS personnel might encounter a sick or injured patient but be unable to "imminently" transport that patient to a hospital ED in an ambulance.
   B. In such a situation, EMS personnel shall immediately contact a BioTel medical control physician to discuss whether transporting the patient in a non-ambulance vehicle is appropriate.

III. Procedure during mass casualty incidents (MCI)
   A. During an MCI involving a large number (≥10) of patients, the number of critical patients who require immediate transport may potentially exceed the number of ambulances available in a timely manner.
   B. In such situations, EMS personnel shall first follow all BioTel and agency-specific guidelines and policies regarding patient triage and transport during MCIs.
   C. If EMS personnel believe transport of a patient in a non-ambulance vehicle is appropriate, they shall immediately attempt to contact a BioTel medical control physician to discuss the case.
      1. Crews and medical control physicians should weigh the risks and benefits of transporting multiple patients in a single ambulance against those of transporting in a non-ambulance vehicle.
      2. If communications are disrupted and a medical control physician can't be reached, EMS personnel shall use their best clinical judgment to determine whether the benefits of transport in a non-ambulance vehicle outweigh the risks of transporting a critical patient in this manner.

IV. Special Considerations
   A. If transport in a non-ambulance vehicle is approved, a paramedic must accompany the patient in the compartment in which they are transported and continue to provide care.
   B. Patients transported in non-ambulance vehicles should be transported to the closest appropriate hospital ED.
   C. Generally, only non-ambulance vehicles that have emergency services markings and can activate lights and sirens should be used for patient transport under this policy (e.g., fire/EMS command and support units, police vehicles).
   D. EMS personnel shall follow all applicable state and local laws governing non-ambulance vehicles as well as all national standard guidelines on vehicle operating safety.
   E. Unless medically contraindicated, patients should be seated and secured in age-appropriate safety restraints and positions whenever a non-ambulance vehicle is in motion.

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WAIT TIMES AT HOSPITALS

Purpose: To minimize wait times at receiving EDs, enabling EMS personnel to promptly return to service
Inclusion Criteria: Any EMS call or incident involving patient transport
Exclusion Criteria: EMS calls not involving patient transport

I. Background & Overview
   A. Due to crowding issues at receiving hospital emergency departments (EDs), EMS personnel are occasionally asked to wait before transferring a patient to the care of ED personnel.
   B. A wait time ("wall time") of more than 20 minutes is considered prolonged or excessive according to *de facto* industry standard for EMS.
   C. The medicolegal responsibilities for patient care after an ambulance arrives at a receiving ED are frequently misunderstood by both ED and EMS personnel.
      1. Once a patient seeking emergency care arrives on the property of a hospital providing emergency services (including by ambulance), care of that patient immediately becomes the legal responsibility of the receiving hospital under EMTALA.
      2. This responsibility does NOT depend on ED personnel "accepting" a patient.
      3. This responsibility does NOT depend on ED personnel obtaining a handoff report from EMS personnel.
      4. This responsibility does NOT depend on ED personnel providing EMS personnel with a signature to "release" them from the receiving ED.
   D. This policy provides guidance for BioTel agency EMS personnel when faced with prolonged wait times at receiving EDs.

II. Policy Specifics
   A. When the wait time at a receiving ED reaches **20 minutes** and transfer from the EMS stretcher to a designated patient area (e.g., hospital bed, hospital stretcher, wheelchair, chair) has not been initiated, BioTel agency EMS personnel shall request to speak to the ED charge nurse and should:
      1. Remind the charge nurse that they have been waiting for a bed and have been out of service for 20 minutes since arrival.
      2. Request that patient transfer be expedited.
   B. When the wait time at a receiving ED reaches **45 minutes** without resolution, BioTel agency EMS personnel shall:
      1. Request from the charge nurse an estimate of the time remaining until a designated area for patient transfer is available.
      2. If a designated space is not immediately made available to transfer the patient, EMS personnel shall contact the BioTel communications center for further assistance.
   C. When contacted by an EMS crew waiting at a receiving ED for more than **45 minutes**, BioTel Communications Center staff shall:
      1. Request to speak with the receiving ED charge nurse and discuss the following:
         a. Remind the charge nurse that the patient is legally the receiving hospital's responsibility under EMTALA since that patient is on hospital grounds.
         b. Remind the charge nurse that the EMS crew is standing by as a courtesy to provide a handoff since patient care is currently the receiving hospital's responsibility.
         c. Request prompt resolution of the delay in patient transfer and handoff.
         d. Discuss diverting some or all BioTel EMS agency ambulances from that specific hospital for a specified amount of time (e.g., 2 hours) to help alleviate their crowding issue.
      2. If unsuccessful, BioTel staff shall attempt to contact the EMS Liaison for the receiving ED.
   D. If BioTel communications center staff are not able to resolve the situation using the above measures within **1 hour** of EMS arrival at the receiving hospital, BioTel staff shall contact a BioTel medical control physician for assistance. The physician MAY pursue options, including but not limited to:

WAIT TIMES AT HOSPITALS, cont.

1. Speaking with the receiving hospital's ED charge nurse or EMS liaison
2. Contacting the receiving hospital's administrator on call
3. Approving offloading of the patient to the receiving ED's waiting room or triage area when a designated area for patient transfer (e.g., hospital bed, hospital stretcher, wheelchair) has not been made available.
    a. Such an approval will ONLY be granted on a case-by-case basis after considering the patient's complaint, stability, functional status, and all efforts made to resolve the prolonged wait time.
    b. The medical control physician will provide instructions on appropriate handoff procedures in the event of a unilateral patient offload.

III. Special considerations
- A. BioTel member agency EMS personnel shall always conduct themselves professionally when communicating with receiving ED staff.
- B. Unilateral decisions to offload patients (per **Section II.D.3**) should be rare and shall ONLY occur after medical control physician consultation.
- C. Details of any prolonged wait time, unconventional patient handoff, physician-approved patient offload, or other physician-approved actions should be documented in the electronic patient care record (ePCR).

Formulary

****Medications marked "OPTIONAL" in this section are permitted but NOT required in the BioTel System. They may be stocked at the discretion of each agency.****

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ACETAMINOPHEN

Brand Names: Tylenol

Class: Non-opioid analgesic

Action: Blocks various pain receptors in the central nervous system

Indications:

Management of mild to moderate pain

- See PAIN MANAGEMENT CPG

Contraindications: hypersensitivity, active hepatitis or severe liver disease (e.g., cirrhosis), patients who are unable to swallow or maintain their airway

Precautions:

- Avoid oral medications in patients with impaired level of consciousness or at risk of aspiration.
- Use caution if patients have taken Acetaminophen-containing combination medications prior to EMS arrival (e.g., Norco, Percocet, Vicodin, over-the-counter cold medicine).

Side Effects: no significant adverse effects

Dose and Route:

Mild to moderate pain

- ≥14 y/o: 650-1000 mg PO
- <14 y/o: 15 mg/kg (Max: 650 mg)
    - If oral liquid unavailable, administer the closest dose possible to this amount that can be given using oral tablets (e.g., 325 mg, 500 mg, or 650 mg)

Special Considerations:

- Make sure to ask patients about history of liver disease AND/OR use of over-the-counter medications that contain Acetaminophen.

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ADENOSINE

Brand Names: Adenocard

Class: Antidysrhythmic

Action: Slows electrical conduction at the AV node

Indications:

Re-entrant supraventricular tachycardia (SVT)

- See TACHYCARDIA – STABLE, TACHYCARDIA – UNSTABLE (ADULT), TACHYCARDIA – UNSTABLE (PEDIATRIC) CPGs

Contraindications: hypersensitivity, 2nd or 3rd degree heart block, atrial fibrillation/fluter, sick sinus syndrome

Precautions: use caution in patients with asthma or COPD as Adenosine may cause bronchospasm

Side Effects: facial flushing, palpitations, chest tightness, shortness of breath, hypotension, dizziness, headache, transient dysrhythmia

Dose and Route:

1. Probable SVT, stable
   - ≥14 y/o: 12 mg IV/IO push with IMMEDIATE flush of 10-mL **Normal Saline**
     - If incomplete response after 90 seconds, may repeat same dose ONCE
   - <14 y/o: 0.1 mg/kg (Max: 6 mg) rapid IV/IO push with IMMEDIATE flush of 10-mL **Normal Saline**
     - If incomplete response after 90 seconds, may give ONE additional dose of 0.2 mg/kg (Max: 12 mg)
2. Probable SVT, unstable
   - Consider ONLY if time permits while preparing for synchronized cardioversion
   - Adult & Pediatric dosage as per SVT, stable

Special Considerations:

- Adenosine has a VERY short window of effectiveness.
  - It should be administered through a large-bore, proximal IV (e.g., 18 G in the antecubital area) whenever possible.
  - Single syringe method:
    - Using a 20 or 30 mL luer-lock syringe, draw appropriate dose of adenosine, draw up remaining syringe volume from a **Normal Saline** IV bag/infusion line. Administer fast IV/IO push.
  - Stopcock method:
    - Using a 3-way stopcock and the 2-syringe method (1 syringe of appropriate dose of adenosine, 1 syringe of **Normal Saline** flush) is recommended so that the flush can be administered immediately after the medication.

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ALBUTEROL

Brand Names: Proventil, Ventolin

Class: Sympathomimetic (beta-1 & beta-2 agonist), bronchodilator

Action: Binds beta-1 & beta-2 receptors causing bronchodilation, cardiac stimulation, and intracellular shift of potassium

Indications:

- Bronchospasm (wheezing) due to asthma, COPD, allergic reaction, or toxic exposure
  - See RESPIRATORY DISTRESS (ADULT), RESPIRATORY DISTRESS (PEDIATRIC), and ALLERGIC REACTION CPGs
- Emergency treatment of acute hyperkalemia with ECG changes
  - See HYPERKALEMIA CPGs

Contraindications: hypersensitivity, pediatric patient with possible croup (barking cough, stridor)

Precautions:

- Use caution in patients with severe tachycardia (not an absolute contraindication).
- Use caution in patients with known heart disease (e.g., CHF, coronary artery disease).
- Continuous ECG monitoring should be used during administration to detect dysrhythmias.

Side Effects: tachycardia, PVCs, anxiety, palpitations, tremors, nausea/vomiting, headache

Dose and Route:

1. Bronchospasm / wheezing:
   - Adult & Pediatric: 5 mg nebulized every 10 minutes, up to 3 doses as needed
2. Allergic reaction:
   - Adult & Pediatric: 2.5 mg nebulized every 5 minutes, up to 3 doses as needed
3. Hyperkalemia with ECG changes
   - Adult & Pediatric: 10 mg nebulized
   - May repeat ONCE at 20 minutes if still en route to receiving hospital ED and ECG changes persist

Special Considerations:

- Potential benefits outweigh potential risks of use during pregnancy
- May be administered in-line with NIPPV/CPAP
- May have impaired or limited effect in patients taking beta-blocker medications (e.g., metoprolol, carvedilol, propranolol, atenolol)
- NOTE: the dose of albuterol for hyperkalemia is significantly higher than for bronchospasm

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AMIODARONE

Brand Names: Cordarone, Nexterone

Class: Class III antidysrhythmic

Action: Broad electrophysiologic effects:
- Blocks sodium channels, potassium channels, calcium channels, and beta receptors
- Slows SA node firing rate, slows AV node conduction, and relaxes vascular smooth muscle

Indications:

- Cardiac arrest with a shockable rhythm (ventricular fibrillation or pulseless ventricular tachycardia)
  - See CARDIAC ARREST – GENERAL CPG
- Unstable wide-complex tachycardia that does not respond to defibrillation
  - See TACHYCARDIA – UNSTABLE (ADULT) and TACHYCARDIA – UNSTABLE (PEDIATRIC) CPGs

Contraindications: hypersensitivity, hypotension / cardiogenic shock, symptomatic bradycardia, 2nd & 3rd degree AV block, sick sinus syndrome

Precautions:

- Use continuous ECG and vital sign monitoring during administration (especially infusions).
- Monitor patients with renal failure closely if they receive this medication.

Side Effects: hypotension, bradycardia, heart block, acute heart failure, nausea/vomiting,

Dose and Route:

1. Cardiac arrest with ventricular fibrillation (VF) or pulseless ventricular tachycardia (pVT) that does not respond to defibrillation
   - ≥14 y/o:
     - First dose: 300 mg IV/IO
     - Second dose: 150 mg IV/IO
   - <14 y/o:
     - First dose: 5 mg/kg IV/IO (Max: 300 mg)
     - Second dose: half of First dose
2. Sustained wide-complex tachycardia in hemodynamically UNSTABLE patients with a pulse who do not respond to defibrillation
   - ≥14 y/o: 150 mg IV/IO infusion over 10 minutes
     - Waste 250 mL (1/2) of a 500 mL bag
     - Add 300 mg to the remaining 250 mL
     - Infuse ONLY 150 mg (HALF/ 125 mL) of bag
     - Discard remaining contents of infusion
   - <14 y/o: 5 mg/kg IV/IO infusion over 10 min (Max: 150 mg)

Special Considerations:

- Discontinue this medication if hypotension, bradycardia, or heart block occurs

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ASPIRIN

Other Names: Bayer, acetyl-salicylic acid (ASA)

Class: Antiplatelet agent, non-steroidal anti-inflammatory

Action: Inhibits COX-1/2 enzymes, inhibiting platelet aggregation and inflammatory mediator synthesis

Indications:

Suspected acute coronary syndromes (ACS) including ischemic chest pain or myocardial infarction (MI)

- See CHEST PAIN CPG

Contraindications: hypersensitivity to aspirin, GI bleeding, other active bleeding disorder, suspected aortic dissection, possible hemorrhagic stroke, pregnancy (especially 3rd trimester)

Precautions:

- Avoid oral medications in patients with impaired level of consciousness or at risk of aspiration.
- Avoid in patients with head injury, possible hemorrhagic stroke, or for whom you are highly concerned for aortic dissection.

Side Effects: nausea/vomiting, heartburn / gastroesophageal reflux, anaphylaxis

Dose and Route:

Suspected ischemic chest pain / acute coronary syndrome / myocardial infarction

- ≥14 y/o: four 81 mg tablets (324 mg) OR one 325 mg tablet PO; instruct the patient to chew and swallow.
- <14 y/o: not normally administered in this age group

Special Considerations:

- May be administered to patients taking anticoagulants such as Warfarin (Coumadin), Clopidogrel (Plavix), Enoxaparin (Lovenox), Apixaban (Eliquis), Rivaroxaban (Xarelto), Ticagrelor (Brilinta) or similar AS LONG AS no other contraindications above are met.

ATROPINE

Brand Names: AtroPen, DuoDote autoinjector (together with Pralidoxime), Mark 1 kit (one component)

Class: Sympatholytic, anticholinergic

Action: Blocks acetylcholine receptors. Inhibits vagal tone, treating some types of bradycardia. Decreases mucosal secretions.

Indications:

- Symptomatic / unstable bradycardia (due to vagally mediated etiologies)
  - See BRADYCARDIA (ADULT) and BRADYCARDIA (PEDIATRIC) CPGs
- Antidote for cholinergic toxicity from nerve agents, organophosphates, or carbamates
  - See TOXIC CHEMICAL EXPOSURE CPGs

Contraindications: hypersensitivity to atropine, bradycardia due to hypothermia, atrial fibrillation or flutter

Precautions:

- Continuous ECG monitoring should be used before, during, and after atropine administration.
- Paradoxical bradycardia can occur if administered too slowly or if it is underdosed.

Side Effects: tachycardia, dry mouth, dilated pupils, urinary retention, confusion, palpitations, paradoxical bradycardia, skin flushing, decreased sweating

Dose and Route:

1. Symptomatic / unstable bradycardia
   - ≥14 y/o: Consider 1 mg IV/IO if time permits while preparing for pacing
     - If effective, may repeat every 3-5 min (Max total dose: 3 mg)
   - <14 y/o: Consider 0.02 mg/kg IV/IO (Max: 0.5 mg) while preparing for pacing
     - May repeat ONCE if effective
2. Cholinergic toxicity (poisoning with nerve agents, organophosphates, etc.)
   - ≥14 y/o:
     - 2 mg IV/IO/IM every 3-5 min as needed until symptoms / secretions improve (up to 3 total doses)

       OR
     - 2 mg deep IM by auto-injector (e.g., DuoDote)
   - <14 y/o: 0.05 mg/kg (Max single dose: 2 mg) IV/IO/IM every 3-5 min as needed until symptoms / secretions improve (up to 3 total doses)

Special Considerations:

- Note: The dose of atropine for cholinergic poisoning is higher than for symptomatic bradycardia.
- Pupillary dilation from atropine administration may make a patient's pupils appear non-reactive.

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CALCIUM CHLORIDE

Other Names: $CaCl_2$

Class: Electrolyte solution

Action: Stabilizes electrical activity of cardiac myocyte cell membranes and increases myocardial contractility.

Indications:

- Acute hyperkalemia (elevated potassium)
  - See HYPERKALEMIA CPG
- Cardiac arrest with suspected underlying hyperkalemia
  - See CARDIAC ARREST – GENERAL CPG

Contraindications: known hypercalcemia, patients using digitalis (e.g. digoxin)

Precautions:

- Cannot be administered through the same IV/IO as sodium bicarbonate. The line must be thoroughly flushed with isotonic fluid between these medications.
- Administer through a large-bore, antecubital IV whenever possible. May cause tissue necrosis if it extravasates.
- Continuous ECG monitoring should be used before, during, and after administration.

Adverse Effects: local pain or burning, bradycardia, hypotension, cardiac arrest (VF or asystole)

Dose and Route:

1. ECG changes suggestive of acute hyperkalemia
   - ≥14 y/o: 1 g slow IV/IO over 5-10 min
   - <14 y/o: 20 mg/kg slow IV/IO over 5-10 min (Max: 1 g)
2. Cardiac arrest due to suspected hyperkalemia
   - ≥14 y/o: 1 g IV/IO push
   - <14 y/o: 20 mg/kg IV/IO push (Max: 1 g)

Special Considerations:

- None

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DEXAMETHASONE

Brand Names: Decadron

Class: Corticosteroid

Action: Synthetic steroid with anti-inflammatory and immunosuppressive effects

Indications:

- Adjunct treatment for bronchospasm in asthma or COPD
  - See RESPIRATORY DISTRESS (ADULT), RESPIRATORY DISTRESS (PEDIATRIC) CPGs
- Adjunct treatment for suspected croup with stridor in pediatric patients
  - See RESPIRATORY DISTRESS (PEDIATRIC) CPG
- Adjunct treatment for anaphylactic reactions (optional)
  - See ALLERGIC REACTION/ANAPHYLAXIS CPGs

Contraindications: known systemic fungal infection

Precautions:

- May cause transient hyperglycemia
- Consider avoiding in patients with active GI bleeding

Adverse Effects: hyperglycemia, nausea/vomiting, hypertension, gastritis

Dose and Route:

1. Bronchospasm / respiratory distress from asthma or COPD
   - ≥14 y/o: 10 mg IV/IO/IM/PO
   - <14 y/o: 0.5 mg/kg IV/IO/IM/PO (Max: 10 mg)
2. Croup with stridor in pediatric patients
   - Same dosing as for bronchospasm for pediatrics

Special Considerations:

- Corticosteroids have a delayed onset of action (>1 hour), so benefit may not be witnessed in the prehospital setting.
  - These medications should STILL be administered in the prehospital setting by EMS, because earlier administration has been shown to reduce severity of illness and decrease hospital admissions.
- Ensure receiving hospital staff are notified of administration during handoff to ensure patient is not inadvertently re-dosed in the Emergency Department.

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DEXTROSE 10%

Other Names: D10, D10W

Class: Carbohydrate solution

Action: Increases blood glucose concentration

Indications:

Symptomatic hypoglycemia
- See DIABETIC EMERGENCY CPG

Contraindications: hyperglycemia

Precautions:

- A point-of-care blood glucose analysis should be performed before administering dextrose.

Side Effects: local venous irritation

Dose and Route:

Symptomatic hypoglycemia
- Administer IV/IO over 10 min
  - >14 y/o: 125 mL
  - ≤13 y/o: 4 mL/kg (Max: 125 mL)

Special Considerations:

- In times of critical shortage, a 10% Dextrose solution can be made by diluting Dextrose 50% (D50) with 0.9% Normal Saline. Instructions for the dilution are as follows:
  - Waste 50 mL of **Normal Saline** from a 250 mL bag.
  - Inject 50 mEq (50 mL) of D50 (1 amp) into the bag of Normal Saline
    - You now have 250 mL of solution equivalent to Dextrose 10%
  - Administer following the instructions in the 'Dose and Route' section above.

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DIPHENHYDRAMINE

Brand Names: Benadryl

Class: Antihistamine

Action: Blocks type-1 histamine receptors, decreases allergic inflammatory response, has anticholinergic effects

Indications:

- Symptomatic relief during allergic reaction
  - See ALLERGIC REACTION / ANAPHYLAXIS CPG
- Treatment of dystonic reaction from antipsychotic (dopaminergic) medications
  - See DRUG OVERDOSE / DRUG INTOXICATION CPG

Contraindications: signs of anticholinergic toxicity, known hypersensitivity

Precautions:

- **Epinephrine** IM—NOT Diphenhydramine—is the FIRST-LINE treatment for severe allergic reaction or anaphylaxis.
  - DO NOT delay administration of **Epinephrine** to give Diphenhydramine.
  - Diphenhydramine can be administered AFTER Epinephrine.
- Use with caution in patients with altered mental status as drowsiness is a common side effect

Side Effects: tachycardia, palpitations, dizziness, drowsiness, ataxia, blurry vision, dry mouth

Dose and Route:

1. Allergic reaction
   - Administer IV/IO/IM for itching / rash / hives / swelling as needed
     - ≥14 y/o: 25 mg
     - <14 y/o: 1 mg/kg (Max: 25 mg)
2. Anaphylaxis
   - Administer AFTER Epinephrine following dosing instructions for ‘Allergic reaction’ above
3. Dystonic reaction / toxicity / torticollis from antipsychotic (dopaminergic) medications
   - Administer IV/IO/IM
     - ≥14 y/o: 50 mg
     - <14 y/o: 1 mg/kg (Max: 50 mg)

Special Considerations:

- None

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EPINEPHRINE (1 mg/mL)

Other Names: Adrenalin, Epinephrine 1:1000, “anaphylaxis dose” Epinephrine, EpiPen, EpiPen Jr

Class: sympathomimetic, alpha- and beta-adrenergic agonist

Action: increases heart rate and force of myocardial contraction, increases systemic vascular resistance (and blood pressure)

Indications:

- Anaphylaxis or severe allergic reaction
  - See ALLERGIC REACTION / ANAPHYLAXIS CPG
- Respiratory failure due to bronchospasm from asthma, reactive airway disease, or COPD
  - See RESPIRATORY DISTRESS (PEDIATRIC) and (ADULT) CPGs
- Suspected croup in a pediatric patient
  - See RESPIRATORY DISTRESS (PEDIATRIC) CPG
- Preparation of PUSH DOSE EPINEPHRINE for shock/hypotension from non-traumatic causes
- For epinephrine infusion - See Epinephrine 0.1 mg/mL formulary page for instructions.

Contraindications: None if indicated in the emergency setting

Precautions:

- Use continuous ECG and vital sign monitoring during administration.
- Patients on beta-blockers may not respond as well as expected to Epinephrine administration and may need higher doses.

Side Effects: palpitations, dysrhythmias, anxiety, tremulousness, dizziness, nausea/vomiting, MI

Dose and Route:

1. Anaphylaxis or allergic reaction with severe features including shock
   - Administer by IM route in the anterolateral thigh:
     - <25 kg: 0.15 mg IM
     - ≥25 kg: 0.3 mg IM
2. Respiratory failure due to bronchospasm (asthma, wheezing, COPD)
   - Administer by IM route in the anterolateral thigh:
     - ≥14 y/o: 0.3 mg
     - <14 y/o: 0.01 mg/kg IM (Max: 0.3 mg)
3. Suspected croup in infant or toddler
   - Administer 5 mg by nebulizer.
4. Shock or hypotension from non-traumatic causes, Symptomatic bradycardia in patients ≥14 y/o, or Refractory hypotension due to Anaphylaxis
   - Prepare PUSH DOSE EPINEPHRINE (10 mcg/mL) according to Method 3 in the PROCEDURE.
   - Administer fixed amounts of push dose Epinephrine, as indicated:
     - ≥14 y/o: 20 mcg (2 mL) IV/IO push every 2-5 min
     - <14 y/o: 1 mcg/kg IV/IO push (Max: 20 mcg) every 2-5 min
   - Flush with 2-3 mL Normal Saline IVP/IO immediately after each dose.
   - Titrate frequency of repeat administrations to desired clinical effect, as demonstrated by improvement in signs and symptoms of shock.

EPINEPHRINE (0.1 mg/mL)

Other Names: Adrenalin, Epinephrine 1:10,000, “code dose” Epinephrine

Class: sympathomimetic, alpha- and beta-adrenergic agonist

Action: increases heart rate and force of myocardial contraction, increases systemic vascular resistance (and blood pressure)

Indications:

- Cardiac arrest
  - See CARDIAC ARREST – GENERAL CPG
- Symptomatic bradycardia in patients <14 y/o
  - See BRADYCARDIA (PEDIATRIC) CPG
- Preparation of PUSH DOSE EPINEPHRINE for shock or hypotension from non-traumatic causes
- Symptomatic bradycardia in patients ≥14 y/o
  - See BRADYCARDIA (ADULT) CPG
- Refractory hypotension due to Anaphylaxis
  - See ALLERGIC REACTION / ANAPHYLAXIS (ALL AGES)

Contraindications: None if indicated in the emergency setting

Precautions:

- Use continuous ECG and vital sign monitoring during administration.
- Patients on beta-blockers may not respond as well as expected to Epinephrine administration.

Side Effects: palpitations, dysrhythmias, anxiety, tremulousness, dizziness, nausea/vomiting, MI

Dose and Route:

1. Cardiac arrest
   - Administer every 5-6 min (up to 3 doses)
     - ≥14 y/o: 1 mg IV/IO
     - <14 y/o: 0.01 mg/kg IV/IO (Max: 1 mg)
2. Symptomatic bradycardia (HR <60) in patients <14 y/o
   - Administer 0.01 mg/kg IV/IO (Max: 1 mg)
     - If bradycardia persists, repeat every 3-5 min
3. Shock or hypotension from non-traumatic causes, Symptomatic bradycardia in patients ≥14 y/o, or Refractory hypotension due to Anaphylaxis
   - Prepare PUSH DOSE EPINEPHRINE (10 mcg/mL) according to Methods 1 or 2 in the PROCEDURE.
   - Administer small amounts of push dose Epinephrine, as indicated:
     - ≥14 y/o: 20 mcg (2 mL) IV/IO push every 2-5 min
     - <14 y/o: 1 mcg/kg IV/IO push (Max: 20 mcg) every 2-5 min
   - Flush with 2-3 mL Normal Saline IVP/IO immediately after each dose.
   - Titrate frequency of repeat administrations to desired clinical effect, as demonstrated by improvement in signs and symptoms of shock.

EPINEPHRINE (0.1 mg/mL), cont.

4. As alternative to Push Dose Epinephrine for Symptomatic bradycardia in patients ≥14 y/o OR Refractory hypotension due to Anaphylaxis
   - Consider requesting EMS Field Supervisor for IV pump, however, do NOT delay infusion initiation.
   - Adult (≥14 y/o):
     - Add 1 mg (10 mL) to 1 L of NS (1 mcg/mL)
     - Use a 10 gtt/mL MACRO drip set.
     - Infuse @ 2 to 10 mcg/min (20 to 100 mL/minute
     - Titrate every 5 min by 2 mcg/min to SBP at least 90 mmHg and improved perfusion.
     - Maximum rate: 10 mcg/min (100 mL/min)

Dose (mcg/min)	Rate (gtt/min with 10 gtt/mL drip set)
2	20
4	40
6	60
8	80
10	100

   - Pediatric (<14 y/o):
     - Add 1 mg (10 mL) to 250 mL of NS (4 mcg/mL)
     - Use a 60 gtt/mL MICRO drip set.
     - Infants less than 1 year of age: See BioTel PEDI-Guide for initial rate and titration.
     - Children at least 1 year of age: Start at 2 mcg/min (30 gtt/min), refer to the BioTel PEDI-Guide for addition titration.
     - Titrate to SBP at least (70 + (2 x age)) mmHg and improved perfusion.
     - Maximum rate: 1 mcg/kg/min or 10 mcg/min

If epinephrine 1 mg/mL ("anaphylaxis epinephrine") is used as an alternative to epinephrine 0.1 mg/mL ("code dose epinephrine") to create an infusion, add 1 mL (1 mg) to the appropriate normal saline bag size.

Special Considerations:

- Remember to initiate and continue chest compressions for bradycardia (HR <60) in patients who are <14 y/o before administering epinephrine.
- May be deactivated by alkaline solutions (e.g., Sodium bicarbonate) if given close together.

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FENTANYL

Other Names: Sublimaze, Duragesic

Class: opioid analgesic

Action: acts on opioid receptors to induce potent analgesia and sedation

Indications:

Moderate to severe pain

- See PAIN MANAGEMENT CPG

Ischemic chest pain unresponsive to **Nitroglycerin**

- See CHEST PAIN CPG

Agitation in patients after advanced airway placement

- See ADVANCED AIRWAY DEVICE PROCEDURE

Contraindications: hypersensitivity, shock/hypotension, respiratory depression, intoxication with alcohol or benzodiazepines, altered level of consciousness or mental status change

Precautions:

- Do NOT administer unless **Naloxone** and advanced airway equipment are available.
- Use continuous ECG and vital sign monitoring during administration.
- Has a synergistic effect on respiratory depression with alcohol and benzodiazepines.
  - Do NOT co-administer with **Midazolam** or other benzodiazepines.

Side Effects: respiratory depression, sedation, confusion, dizziness, nausea/vomiting, hypotension

Dose and Route:

1. Moderate to severe pain
   - Administer by slow IV push/IM/IN/IO
     - ≥14 y/o: 25-100 mcg
     - <14 y/o: 2 mcg/kg (Max: 50 mcg)
2. Ischemic chest pain refractory to **Nitroglycerin**
   - For continued pain after Nitroglycerin AND if systolic BP is >100 mmHg, consider administering 50 mcg IV/IO/IN
3. Agitation after advanced airway placement
   - Administer slow IV push/IO
     - ≥14 y/o: 50 mcg
     - <14 y/o: 0.1 mcg/kg (Max: 100 mcg)

Special Considerations:

- REDUCED or HALF doses should be considered for elderly (>65 y/o) or frail patients.

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GLUCAGON

****OPTIONAL MEDICATION****

Brand Names: Baqsimi, GlucaGen, Gvoke

Class: Synthetic peptide hormone

Action: Mobilizes glucose from the body's glycogen storage sites to raise blood glucose levels.

Indications:

1. Symptomatic hypoglycemia
   - See DIABETIC EMERGENCY CPG
2. Suspected beta-blocker overdose
   - See DRUG OVERDOSE / DRUG TOXICITY CPG

Contraindications: hypersensitivity, hyperglycemia

Precautions:

- Dextrose 10% or Oral Glucose are the FIRST-LINE treatments for hypoglycemia.
- Glucagon is an optional SECOND-LINE treatment for that may be considered when glucose or dextrose cannot be administered by the PO or IV routes (e.g., when a patient is too combative to establish access)

Side Effects: Nausea/vomiting, dizziness, hypotension, tachycardia, rebound hypoglycemia

Dose and Route:

1. Symptomatic hypoglycemia
   - Administer by IM/IN route:
     - ≥5 y/o: 1 mg
     - <5 y/o: 0.5 mg
2. Suspected beta-blocker overdose
   - Administer by IV/IO/IM route:
     - ≥14 y/o: 1 mg
     - <14 y/o: 0.5 mg

Special Considerations:

- Glucagon often requires at least 5 minutes to take effect after IM administration.
- Supplemental carbohydrates (e.g., oral Glucose) should be given once patients return to normal mental status after Glucagon to prevent rebound hypoglycemia.

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GLUCOSE 40% GEL

Other Names: Glutose

Class: Carbohydrate gel

Action: Increases blood glucose concentration

Indications:

Symptomatic hypoglycemia
- See DIABETIC EMERGENCY CPG

Contraindications: absent gag reflex, inability to protect airway, hyperglycemia

Precautions:

- A point-of-care blood glucose analysis should be performed before administering glucose.
- If patient is not able to tolerate PO intake due to altered level of consciousness, absent gag reflex, or inability to protect airway, refer to Dextrose 10%

Side Effects: aspiration

Dose and Route:

Symptomatic hypoglycemia
- ≥7 y/o: Administer 15 g (one tube) PO and instruct patient to swallow
- <7 y/o: Massage 7.5 g (1/2 tube) into the mucosa of the patient's cheek

Special Considerations

- None

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HYDROXOCOBALAMIN

****OPTIONAL MEDICATION****

Brand Names: Cyanokit, Vitamin B12a

Class: Cyanide antidote; vitamin

Action: Binds cyanide in the bloodstream, creates cyanocobalamin which is excreted from the body in the urine.

Indications:

Treatment of cyanide toxicity

- See CARBON MONOXIDE AND CYANIDE EXPOSURE CPG

Contraindications: hypersensitivity

Precautions:

- IV administration is strongly preferred over the IO route as a pressure bag cannot be used on the glass medication vial.
- Do not administer Hydroxocobalamin in the same IV/IO line with Fentanyl.
- A dedicated second IV/IO line is recommended for administering Hydroxocobalamin, if possible.

Side Effects: anaphylaxis, hypertension, infusion site reaction, rash, nausea/vomiting, chest tightness, shortness of breath, headache, red discoloration of urine

Dose and Route:

Suspected cyanide toxicity (Shock / hypotension, Severely altered mental status, Severe respiratory distress, Cardiac arrest)

- Reconstitute the medication:
  - Use the transfer spike to transfer 200 mL of Isotonic Fluid (either Normal Saline or Lactated Ringer's) into the Hydroxocobalamin (Cyanokit) vial.
  - Gently rock or invert (do NOT shake) the vial to mix until the powder fully dissolves.
  - If the solution does not turn dark red OR if particles are still present after mixing, do NOT administer.
- Use included vented infusion set.
- Administer the medication IV/IO over 15 minutes:
  - ≥14 y/o: 5 g
  - <14 y/o: 70 mg/kg (Max: 5 g)
- If IV pump used for infusion, connect pump infusion tubing distal to the included vented infusion set.

Special Considerations:

- After administration, Hydroxocobalamin interferes with SpO2 and SpCO oximetry measurements. If available, measure SpCO BEFORE administration of Hydroxocobalamin.

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IPRATROPIUM

****OPTIONAL MEDICATION****

Brand Names: Atrovent

Class: Anticholinergic

Action: Antagonist at muscarinic acetylcholine receptors. Inhibits vagally-mediated reflexes, inducing bronchodilation.

Indications:

- ADJUNCT treatment for bronchospasm (wheezing) due to asthma, COPD, allergic reaction, or toxic exposure
  - See RESPIRATORY DISTRESS (ADULT), RESPIRATORY DISTRESS (PEDIATRIC)

Contraindications: hypersensitivity, pediatric patient with possible croup (barking cough, stridor)

Precautions:

- **Albuterol**, not Ipratropium, is the first-line medication for wheezing or bronchospasm. Ipratropium is an OPTIONAL ADJUNCT medication.
- Continuous ECG monitoring should be used during administration to detect dysrhythmias.
- Use caution in patients with known heart disease (e.g., CHF, coronary artery disease).
- For patients <2 y/o, do not use this medication for wheezing without first consulting a BioTel medical control physician.

Side Effects: tachycardia, palpitations, anxiety, blurred vision, dry mouth, cough, urinary retention

Dose and Route:

- Bronchospasm / wheezing:
  - Adult & Pediatric: 0.5 mg nebulized every 10 minutes, up to 3 doses as needed

Special Considerations:

- None

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LACTATED RINGER'S

Other Names: LR, Ringer's lactate

Class: isotonic crystalloid solution

Action: Expands intravascular volume. Cleanses wounds by removing soluble chemicals and particles.

Indications:

- Fluid replacement for hypovolemia, hypotension, or shock
  - See NAUSEA/VOMITING, DIABETIC EMERGENCY, SHOCK/HYPOTENSION (ADULT and PEDIATRIC), SYNCOPE, HEAT EMERGENCY, COLD EMERGENCY, VENTRICULAR ASSIST DEVICE, and CARDIAC-ARREST – POST-ROSC CARE CPGs
- Irrigation of wounds
  - See EYE INJURY and TRAUMA – AMPUTATED BODY PART CPGs

Contraindications: patients volume overload or pulmonary edema (from CHF or renal failure); administration in the same line as Amiodarone or Ketamine

Precautions:

- Use with caution in patients who are prone to volume overload (e.g., CHF patients)
- Administering excessive isotonic fluid to a hypotensive trauma patient worsens a patient's ability to clot (coagulopathy). Adhere closely to the guidance in the TRAUMA branch of the SHOCK/HYPOTENSION CPGs.
- Unlike **Normal saline** Lactated Ringer's should NOT be used to dilute medications for infusion (e.g., Magnesium sulfate, Norepinephrine, Epinephrine, Dextrose)
- Lactated Ringer's is INCOMPATIBLE in the same line as Amiodarone or Ketamine
  - Before administering these medications, Lactated Ringer's should be HELD, the line should be flushed with **Normal saline**, and the medication should be administered per guidance in relevant CPGs.
  - The line should be flushed with Normal saline again before restarting Lactated Ringer's.

Side Effects: pulmonary edema in patients prone to volume overload; coagulopathy in trauma patients

Dose and Route:

1. Fluid replacement for hypovolemia
   - Nausea/vomiting, diabetic emergency, heat emergency, or syncope
     - >14 y/o: Administer 1 L IV/IO
     - ≤14 y/o: Administer 20 mL/kg IV/IO (Max: 1 L)
   - Cold emergency (OPTIONAL)
     - Administer WARMED fluid ONLY, according to dosing instructions above.
   - Shock/hypotension
     - Refer to indication-specific dosing in CPGs
2. Irrigation of wounds
   - Refer to guidance in EYE INJURY and TRAUMA – AMPUTATED BODY PART CPGs.

Special Considerations:

- None

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LIDOCAINE

****OPTIONAL MEDICATION****

Brand Names: Xylocaine, Lidocaine 2%

Class: Local anesthetic

Action: Blocks sodium channels on cellular membranes, providing local anesthetic effect.

Indications:

- Local anesthesia prior to infusion through IO line
  - See INTRAOSSEOUS (IO) ACCESS PROCEDURE

Contraindications: hypersensitivity to lidocaine OR any other anesthetic medication ending in "-caine," bradycardia, 2nd & 3rd degree AV block hypotension / cardiogenic shock, supraventricular dysrhythmias (e.g., SVT)

Precautions:

- Use continuous ECG and vital sign monitoring during administration (especially infusions).
- Use with caution in patients >65 y/o, patients with liver failure, or patients with CHF.
- For patients in critical need of vascular access, do not delay administration of other medications to infuse lidocaine through an IO line.

Side Effects: drowsiness, seizures, nausea/vomiting, bradycardia, hypotension, heart block, cardiovascular collapse, cardiac arrest

Dose and Route:

1. Local anesthesia prior to infusion through an IO line
   - IF TIME PERMITS for conscious patients, infuse into the newly placed IO line over 30 seconds AND let the medication dwell for 30 seconds:
     - ≥14 y/o: 40 mg
     - <14 y/o: 0.5 mg/kg (Max: 40 mg)
   - Flush the IO line with 10 mL Normal Saline

Special Considerations:

- Administration of lidocaine through an IO in an unconscious patient is generally not indicated.

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MAGNESIUM SULFATE

Other Names: $MgSO_4$

Class: Electrolyte solution

Action: Blocks cellular calcium channels, relaxes smooth muscle, relaxes constricted bronchioles, acts in the CNS as an anticonvulsant, and reverses magnesium deficiency.

Indications:

1. Torsades de Pointes (polymorphic ventricular tachycardia)
   - See TACHYCARDIA – UNSTABLE and CARDIAC ARREST – GENERAL CPGs
2. Respiratory failure from bronchospasm (asthma or COPD)
   - See RESPIRATORY DISTRESS (ADULT and PEDIATRIC) CPGs
3. Pre-eclampsia or Eclampsia
   - See OB/GYN – PREGNANCY COMPLICATIONS CPG
4. Refractory eclamptic seizures
   - See OB/GYN – PREGNANCY COMPLICATIONS CPG

Contraindications: hypersensitivity, shock/hypotension, 3rd degree heart block, respiratory depression, patients on routine dialysis, digitalis toxicity

Precautions:

- Do NOT administer in patients taking digitalis medications (e.g., digoxin)
- Magnesium sulfate from a vial must be diluted in 100-250 mL Isotonic Fluid before administering. Alternatively, a premixed bag of Magnesium sulfate may be used.
- For UNSTABLE Torsades de Pointes, perform cardioversion BEFORE infusing Magnesium.

Side Effects: drowsiness, respiratory depression, bradycardia, hypotension, muscle weakness

Dose and Route:

1. Torsades de Pointes (polymorphic ventricular tachycardia)
   - ≥14 y/o: 2 g (diluted in 100-250 mL Isotonic Fluid) over 15 min
   - <14 y/o: 40 mg/kg (diluted in 100-250 mL Isotonic Fluid) over 15 min (Max: 2 g)
2. Severe or worsening respiratory distress
   - ≥14 y/o: 2 g (diluted in 100-250 mL Isotonic Fluid) over 15 min
   - <14 y/o: 40 mg/kg (diluted in 100-250 mL Isotonic Fluid) over 15 min (Max: 2 g)
3. Pre-eclampsia or Eclampsia
   - IV/IO: 5 g (diluted in 100-250 mL Isotonic Fluid) over 15 min
   - IM: 10 g (undiluted), half of total dose in each buttock
4. Refractory eclamptic seizures
   - If seizures continue 15 minutes AFTER administering **Midazolam** AND an initial dose of Magnesium sulfate (as above), administer an additional 3 g (diluted in 100-250 mL Isotonic Fluid) IV/IO over 15 min.

Special Considerations:

- If using premixed bags for pre-eclampsia, ensure the dose is high enough for the indication.

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MIDAZOLAM

Other Names: Versed

Class: benzodiazepine

Action: CNS depression by binding $GABA_A$ receptors. Causing sedation and amnesia. Has anticonvulsant effects.

Indications:

1. Management of agitation during behavioral health emergency / acute behavioral disturbance
   - See BEHAVIORAL HEALTH EMERGENCY / ACUTE BEHAVIORAL DISTURBANCE CPG
2. Chest pain due to illicit stimulant use
   - See CHEST PAIN CPG
3. Management of agitation after intubation
   - See ADVANCED AIRWAY DEVICE PROCEDURE
4. Excessive shivering during cooling for heat emergency
   - See HEAT EMERGENCY / HEAT STROKE / HYPERTHERMIA CPG
5. Active seizure
   - See SEIZURE and OB/GYN – PREGNANCY COMPLICATIONS CPGs
6. Procedural sedation
   - See SEDATION PROCEDURE

Contraindications: hypersensitivity, shock/hypotension, pre-existing respiratory depression, narrow-angle glaucoma

Precautions:

- Midazolam has potent synergistic effects with other benzodiazepines (e.g., Valium, Xanax), alcohol, and opioids (e.g. Fentanyl, Morphine, Heroin). Use EXTREME caution administering Midazolam to these patients, especially if there are pre-existing signs of respiratory depression or sedation.
- Always be prepared to assist ventilations in case of over-sedation.
- Continuous monitoring is MANDATORY and shall include ECG, BP every 5 minutes, SpO2, and EtCO2, as well as visual observation.

Side Effects: Respiratory depression, apnea, drowsiness, hypotension, dizziness, dysrhythmia

Dose and Route:

1. Calming / sedation during a behavioral health emergency / acute behavioral disturbance
   - ≥14 y/o (*see CPG for additional descriptions of levels of agitation*):
     - Mild Agitation and/or Uncontrolled Anxiety: 2.5 mg IV/IM/IN
     - Moderate Agitation: 5 mg IM or 2.5 mg IV (if IV already established)
     - Severe Agitation: 10 mg IM or 5 mg IV (if IV already established)
   - <14 y/o: 0.1 mg/kg IM/IN (Max: 5 mg)
     - May also administer via IV route if IV access has already been established.
   - If redosing is needed, the same initial dose may be repeated ONCE.
2. Chest pain due to recent stimulant use (e.g., cocaine, methamphetamine)
   - Consider administering 2.5 mg IV/IM/IN to counter excessive sympathetic activity.
   - May repeat after 5-10 minutes if incomplete response.

MIDAZOLAM, cont.

3. Management of agitation after intubation
   - ≥14 y/o: 5 mg IV/IO
   - <14 y/o: 0.2 mg/kg IV/IO (Max: 5 mg)
4. Excessive shivering during cooling for heat emergency
   - ≥14 y/o: 2.5 mg IV/IO OR 5 mg IN
   - <14 y/o: 0.05 mg/kg IV/IO (Max: 2.5 mg) OR 0.1 mg/kg IM/IN (Max: 5 mg)
5. Active seizure (including eclampsia)
   - ≥14 y/o: 10 mg IM or 5 mg IV/IO
   - Pediatrics (0-13 years): IM/IN only (IM preferred, IN only as a backup)
     - Use chart below or BioTel PEDI-Guide for dosing. Ask bystander/caregiver for patient's age, if age unknown use length-based tape to determine color zone.

Color Zone					
Age	0 – 3 mo	4 – 16 mo	17 mo – 5 yrs	6 – 11 yrs	12-13 yrs
Dose	0.2 mg/kg *Refer to PEDI-Guide*	1.25 mg	2.5 mg	5 mg	10 mg
Volume		0.25 mL	0.5 mL	1 mL	2 mL

     - For pediatric patients with severe growth restriction (very low wt.), use 0.2 mg/kg IM/IN or contact BioTel for guidance
   - If patient is still seizing after 5 minutes, re-dose Midazolam ONCE using the same age-based dosing guidance above.
     - *Patients 12-13 years: C*ontact BioTel to discuss dosing prior to giving a 2nd dose.
   - If seizure continues ≥5 minutes after 2nd dose, consider contacting a BioTel medical control physician for guidance on possible additional medications.
6. Procedural sedation
   - ≥14 y/o: 2.5 mg IV/IO OR 5 mg IN/IM
   - <14 y/o: 0.1 mg/kg IV/IO/IN/IM (Max: 5 mg)

Special Considerations:

- Midazolam does NOT have analgesic (pain relieving) effects.

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NALOXONE

Other Names: Narcan

Class: opioid antagonist

Action: Competes with other opioids to bind opioid receptors and reverses opioid toxicity.

Indications:

Respiratory depression due to suspected opioid toxicity

- See ALTERED MENTAL STATUS and DRUG OVERDOSE / DRUG INTOXICATION CPGs

Contraindications: hypersensitivity, use in newborn infant from opioid-dependent mother

Precautions:

- The treatment endpoint is improved respiratory status, NOT complete reversal of opioid intoxication.
- Use caution in patients who are opioid-dependent, as Naloxone may cause opioid withdrawal (including agitation, vomiting, etc.).
- ALL patients who receive Naloxone should be transported for further evaluation in an ED.

Side Effects: acute withdrawal, agitation, violent behavior, nausea/vomiting, tachycardia, hypertension

Dose and Route:

Respiratory depression, inadequate respiratory rate, or apnea from suspected opioid toxicity

- ≥14 y/o: 0.4-0.5 mg IV/IO OR 2 mg IN
- <14 y/o: 0.1 mg/kg IV/IO/IM/IN (Max: 0.4 mg IV/IO/IM or 2 mg IN)
- If incomplete response, repeat Naloxone every 3 min

Special Considerations:

- Naloxone should not be administered for altered mental status without signs/symptoms of respiratory depression (i.e. as diagnostic tool or “coma cocktail”).
- Naloxone is NOT indicated in cardiac arrest, even in suspected/confirmed opioid overdose.
- Naloxone may not reverse hypotension in patients with signs of opioid toxicity.
- The duration of effect of some opioids may exceed the duration of effect of Naloxone.
    - Be prepared to re-dose Naloxone.
- Some synthetic opioids (e.g., illicit Fentanyl) are very potent and may require very high doses or more frequent re-dosing of Naloxone.

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NITROGLYCERIN

Other Names: NitroStat, GoNitro

Class: nitrate

Action: Causes peripheral and central vasodilation. Decreases cardiac preload and afterload to reduced myocardial oxygen demand.

Indications:

1. Ischemic chest pain
   - See CHEST PAIN CPG
2. Respiratory distress from suspected CHF / pulmonary edema
   - See RESPIRATORY DISTRESS (ADULT) CPG

Contraindications: hypersensitivity, systolic BP <100 mmHg, HR <50 bpm, use of phosphodiesterase inhibitors medications for erectile dysfunction or pulmonary hypertension in the LAST 48 HOURS

Examples: sildenafil (Viagra, Revatio), vardenafil (Levitra, Staxyn), or tadalafil (Cialis, Adcirca)

Precautions:

- IV access should be established BEFORE administering Nitroglycerin, especially if ECG shows acute MI.
- If systolic BP drops below 100 mmHg or HR drops below 50 bpm, do NOT administer additional doses of Nitroglycerin.

Side Effects: hypotension, headache, nausea/vomiting, syncope, reflex tachycardia, flushing, dizziness

Dose and Route:

1. Ischemic chest pain
   - Administer 0.4 mg SL
   - May repeat every 3-5 min IF SBP >100 mmHg & HR >50 bpm (up to 3 total doses)
2. Respiratory distress with clinical evidence of CHF / pulmonary edema (e.g., crackles, swelling)
   - Administer 0.4 mg SL
   - May repeat every 5 min IF SBP >100 mmHg & HR >50 bpm

Special Considerations:

- An Inferior STEMI (ST elevation in leads II, III, and aVF) is no longer considered an ABSOLUTE contraindication to administering Nitroglycerin. However:
  - Inferior MI may involve the right ventricle.
  - Patients with right ventricular myocardial infarction often have hypotension or signs of shock.
  - BP and HR should be monitored very carefully if Nitroglycerin is used in patients with Inferior MI.

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NOREPINEPHRINE

Other Names: Levophed

Class: sympathomimetic; vasopressor

Action: Strongly stimulates alpha-adrenergic receptors to induce vasoconstriction. Weakly stimulates beta-adrenergic receptors to increase cardiac contractility and heart rate. These effects increase systolic and diastolic blood pressures.

Indications:

Shock or hypotension (including during post-ROSC care)

- See SHOCK/HYPOTENSION (ADULT and PEDIATRIC) and CARDIAC ARREST – POST-ROSC CARE CPGs

Contraindications: hypersensitivity, shock due to hypovolemia (e.g., severe dehydration or blood loss)

Precautions:

- Continuous ECG monitoring should be used during administration to detect dysrhythmias.
- Administer via large-bore antecubital IV, when possible, to minimize tissue injury from extravasation.
  - Administration by the IO route is also acceptable.
- Norepinephrine is incompatible in the same line as **Sodium bicarbonate**.

Side Effects: hypertension, tachycardia, palpitations, dysrhythmias, chest pain,

Dose and Route:

Shock or hypotension (including during post-ROSC care)

- Initiate infusion by IV/IO route:
  - >14 y/o: 4 mcg/min (Max: 10 mcg/min)
  - ≤14 y/o: 0.1 mcg/kg/min (Max: 10 mcg/min)
- Titrate vasopressor every 2-5 min until hypotension resolves / signs of shock improve.

Special Considerations:

- Consider requesting EMS Field Supervisor for IV pump, however, do NOT delay infusion initiation.
- Instructions for mixing a Norepinephrine infusion (drip):
  - Mix 4 mg Norepinephrine in 500 mL **Normal Saline** (NOT Lactated Ringer's) to make a solution with a concentration of 8 mcg/mL.
  - Use a 60 drop/mL drip set and titrate the infusion according to the following chart:

Dose (mcg/min)	Rate (gtt/min)
1	8
2	15
3	23
4	30
5	38
6	45
7	53
8	60
9	68
10	75

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NORMAL SALINE

Other Names: 0.9% Sodium chloride, 0.9% NS, NS, saline

Class: isotonic crystalloid solution

Action: Expands intravascular volume. Cleanses wounds by removing soluble chemicals and particles.

Indications:

- Fluid replacement for hypovolemia, hypotension, or shock
  - See NAUSEA/VOMITING, DIABETIC EMERGENCY, SHOCK/HYPOTENSION (ADULT and PEDIATRIC), SYNCOPE, HEAT EMERGENCY, COLD EMERGENCY, VENTRICULAR ASSIST DEVICE, and CARDIAC-ARREST – POST-ROSC CARE CPGs
- Irrigation of wounds
  - See EYE INJURY and TRAUMA – AMPUTATED BODY PART CPGs
- Dilution of medications for infusion

Contraindications: volume overload or pulmonary edema (from CHF or renal failure)

Precautions:

- Use with caution in patients who are prone to volume overload (e.g., CHF patients)
- Administering excessive isotonic fluid to a hypotensive trauma patient worsens a patient's ability to clot (coagulopathy). Adhere closely to the guidance in the TRAUMA branch of the SHOCK/HYPOTENSION CPGs.

Side Effects: pulmonary edema in patients prone to volume overload; coagulopathy in trauma patients

Dose and Route:

1. Fluid replacement for hypovolemia
   - Nausea/vomiting, diabetic emergency, heat emergency, or syncope
     - >14 y/o: Administer 1 L IV/IO
     - ≤14 y/o: Administer 20 mL/kg IV/IO (Max: 1 L)
   - Cold emergency (OPTIONAL)
     - Administer WARMED fluid ONLY, according to dosing instructions above.
   - Shock/hypotension
     - Refer to indication-specific dosing in CPGs
2. Dilution of medications for infusion
   - Refer to indication-specific dosing for Magnesium, Norepinephrine, Epinephrine, or Dextrose in RESPIRATORY DISTRESS (ADULT and PEDIATRIC CPGs), OB/GYN – PREGNANCY COMPLICATIONS, SHOCK/HYPOTENSION CPGs and PUSH DOSE EPINEPHRINE PROCEDURE
3. Irrigation of wounds
   - Refer to guidance in EYE INJURY and TRAUMA – AMPUTATED BODY PART CPGs.

Special Considerations:

- Compatible with all EMS medications.

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ONDANSETRON

Other Names: Zofran

Class: antiemetic; 5-HT_3 receptor antagonist

Action: Blocks 5-HT_3 (serotonergic) receptors in the central nervous system to prevent nausea and vomiting.

Indications:

Nausea and/or vomiting

- See NAUSEA/VOMITING CPG

Contraindications: hypersensitivity, patients <2 y/o

Precautions:

- Use with caution in patients with known QTC prolongation (>500 ms).
  - Only use the PO formulation in these patients.

Side Effects: headache, dizziness, blurred vision, prolonged QTC interval, drowsiness (uncommon)

Dose and Route:

Nausea and/or vomiting

- Administer POIV/IM:
  - >14 y/o: 4 mg
  - 5-13 y/o:
    - 4 mg PO (ODT formulation)
      OR
    - 0.15mcg/kg/min IV/IM/IO (Max: 4 mg)
  - 2-4 y/o:
    - 2 mg PO (ODT formulation)
      OR
    - 0.15 mg/kg IV/IM/IO (Max: 4 mg)

Special Considerations:

- Ondansetron is not effective in every patient. Those who do not respond to an initial dose are unlikely to respond to additional doses.

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PRALIDOXIME

****OPTIONAL MEDICATION****

Other Names: 2-PAM, DuoDote autoinjector (together with Atropine), Mark 1 kit (one component)

Class: Cholinesterase re-activator

Action: Reactivates cholinesterase enzyme that has been phosphorylated due to toxicity from nerve agents or organophosphates.

Indications:

Cholinergic toxicity (poisoning with nerve agents, organophosphates, etc.)

- See TOXIC CHEMICAL EXPOSURE CPG

Contraindications: Hypersensitivity

Precautions:

- Elderly and pediatric patients are more susceptible to side effects of DuoDote administration.

Side Effects: tachycardia, hypertension, blurred vision, headache, dry mouth, nausea/vomiting, dizziness

Dose and Route:

Cholinergic toxicity (poisoning with nerve agents, organophosphates, etc.)

- Administer 600 mg IM via DuoDote auto-injector.
- Repeat every 3-5 min as needed until symptoms / secretions improve (up to 3 total doses).

Special Considerations:

- Administration of Pralidoxime (DuoDote) does not provide complete protection against nerve agents. Situational awareness, scene safety procedures, and proper PE use are essential.
- Pralidoxime is typically sourced from a governmental stockpile (e.g., CHEMPACK) as Pralidoxime/Atropine auto-injector.

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SODIUM BICARBONATE

Brand Names: "Bicarb", $NaHCO_3$

Class: Electrolyte; alkalinizing agent

Action: Combines with acidic molecules in the blood to alkalinize (increase) pH.

Indications:

- Treatment of toxicity from antidepressant (serotonergic) medications (widened QRS)
  - See DRUG OVERDOSE / DRUG INTOXICATION CPG
- Sudden cardiac arrest in the setting of a behavioral emergency
  - See BEHAVIORAL EMERGENCY / ACUTE BEHAVIORAL DISTURBANCE CPG

Contraindications:

Precautions:

- Sodium bicarbonate is not indicated in cardiac arrest (including suspected hyperkalemia) unless approved through BioTel physician consultation.
- Sodium bicarbonate is incompatible in the same line as multiple other drugs.
  - These include: Amiodarone, Calcium chloride, Epinephrine, Norepinephrine
  - IV/IO lines should be thoroughly flushed before and after administering Sodium bicarbonate.
- Administer via large-bore antecubital IV, when possible, to minimize tissue injury from extravasation.
  - Administration by the IO route is also acceptable.

Side Effects: metabolic alkalosis, hypokalemia, tissue necrosis if extravasation

Dose and Route:

All indications:

- Administer 1 mEq/kg IV/IO (Max: 50 mEq)

Special Considerations:

- Administering Sodium bicarbonate often causes a notable increase in ETCO2. This may be noticed during cardiac arrest resuscitation.
- One "amp of bicarb" is a slang term that usually refers to a 50 mL pre-filled syringe containing 50 mEq of 8.4% Sodium bicarbonate (at a concentration of 1 mEq/mL)

Appendices

Figure: 25 TAC §157.25 (h)(2)

OUT-OF-HOSPITAL DO-NOT-RESUSCITATE (OOH-DNR) ORDER

TEXAS DEPARTMENT OF STATE HEALTH SERVICES

Print Form

STOP DO NOT RESUSCITATE

This document becomes effective immediately on the date of execution for health care professionals acting in out-of-hospital settings. It remains in effect until the person is pronounced dead by authorized medical or legal authority or the document is revoked. Comfort care will be given as needed.

Person's full legal name _____ Date of birth _____ ☐ Male ☐ Female

A. Declaration of the adult person: I am competent and at least 18 years of age. **I direct that none of the following resuscitation measures be initiated or continued for me: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Person's signature _____ Date _____ Printed name _____

B. Declaration by legal guardian, agent or proxy on behalf of the adult person who is incompetent or otherwise incapable of communication:

I am the: ☐ legal guardian; ☐ agent in a Medical Power of Attorney; OR ☐ proxy in a directive to physicians of the above-noted person who is incompetent or otherwise mentally or physically incapable of communication.

Based upon the known desires of the person, or a determination of the best interest of the person, **I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Signature _____ Date _____ Printed name _____

C. Declaration by a qualified relative of the adult person who is incompetent or otherwise incapable of communication: I am the above-noted person's:

☐ spouse, ☐ adult child, ☐ parent, OR ☐ nearest living relative, and I am qualified to make this treatment decision under Health and Safety Code §166.088.

To my knowledge the adult person is incompetent or otherwise mentally or physically incapable of communication and is without a legal guardian, agent or proxy. Based upon the known desires of the person or a determination of the best interests of the person, **I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Signature _____ Date _____ Printed name _____

D. Declaration by physician based on directive to physicians by a person now incompetent or nonwritten communication to the physician by a competent person: I am the above-noted person's attending physician and have:

☐ seen evidence of his/her previously issued directive to physicians by the adult, now incompetent; OR ☐ observed his/her issuance before two witnesses of an OOH-DNR in a nonwritten manner.

I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.

Attending physician's signature _____ Date _____ Printed name _____ Lic # _____

E. Declaration on behalf of the minor person: I am the minor's: ☐ parent; ☐ legal guardian; OR ☐ managing conservator.

A physician has diagnosed the minor as suffering from a terminal or irreversible condition. **I direct that none of the following resuscitation measures be initiated or continued for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Signature _____ Date _____

Printed name _____

TWO WITNESSES: (See qualifications on backside.) We have witnessed the above-noted competent adult person or authorized declarant making his/her signature above and, if applicable, the above-noted adult person making an OOH-DNR by nonwritten communication to the attending physician.

Witness 1 signature _____ Date _____ Printed name _____

Witness 2 signature _____ Date _____ Printed name _____

Notary in the State of Texas and County of _____. The above noted person personally appeared before me and signed the above noted declaration on this date: _____.

Signature & seal: _____ Notary's printed name: _____ *Notary Seal*

[Note: Notary cannot acknowledge the witnessing of the person making an OOH-DNR order in a nonwritten manner]

PHYSICIAN'S STATEMENT: I am the attending physician of the above-noted person and have noted the existence of this order in the person's medical records. **I direct health care professionals acting in out-of-hospital settings, including a hospital emergency department, not to initiate or continue for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Physician's signature _____ Date _____

Printed name _____ License # _____

F. Directive by two physicians on behalf of the adult, who is incompetent or unable to communicate and without guardian, agent, proxy or relative: The person's specific wishes are unknown, but resuscitation measures are, in reasonable medical judgment, considered ineffective or are otherwise not in the best interests of the person. **I direct health care professionals acting in out-of-hospital settings, including a hospital emergency department, not to initiate or continue for the person: cardiopulmonary resuscitation (CPR), transcutaneous cardiac pacing, defibrillation, advanced airway management, artificial ventilation.**

Attending physician's signature _____ Date _____ Printed name _____ Lic# _____

Signature of second physician _____ Date _____ Printed name _____ Lic# _____

Physician's electronic or digital signature must meet criteria listed in Health and Safety Code §166.082(c).

All persons who have signed above must sign below, acknowledging that this document has been properly completed.

Person's signature _____ Guardian/Agent/Proxy/Relative signature _____

Attending physician's signature _____ Second physician's signature _____

Witness 1 signature _____ Witness 2 signature _____ Notary's signature _____

This document or a copy thereof must accompany the person during his/her medical transport.

INSTRUCTIONS FOR ISSUING AN OOH-DNR ORDER

PURPOSE: The Out-of-Hospital Do-Not-Resuscitate (OOH-DNR) Order on reverse side complies with Health and Safety Code (HSC), Chapter 166 for use by qualified persons or their authorized representatives to direct health care professionals to forgo resuscitation attempts and to permit the person to have a natural death with peace and dignity. This Order does NOT affect the provision of other emergency care, including comfort care.
APPLICABILITY: This OOH-DNR Order applies to health care professionals in out-of-hospital settings, including physicians' offices, hospital clinics and emergency departments.
IMPLEMENTATION: A competent adult person, at least 18 years of age, or the person's authorized representative or qualified relative may execute or issue an OOH-DNR Order. The person's attending physician will document existence of the Order in the person's permanent medical record. The OOH-DNR Order may be executed as follows:
Section A - If an adult person is competent and at least 18 years of age, he/she will sign and date the Order in Section A.
Section B - If an adult person is incompetent or otherwise mentally or physically incapable of communication and has either a legal guardian, agent in a medical power of attorney, or proxy in a directive to physicians, the guardian, agent, or proxy may execute the OOH-DNR Order by signing and dating it in Section B.
Section C - If the adult person is incompetent or otherwise mentally or physically incapable of communication and does not have a guardian, agent, or proxy, then a qualified relative may execute the OOH-DNR Order by signing and dating it in Section C.
Section D - If the person is incompetent and his/her attending physician has seen evidence of the person's previously issued proper directive to physicians or observed the person competently issue an OOH-DNR Order in a nonwritten manner, the physician may execute the Order on behalf of the person by signing and dating it in Section D.
Section E - If the person is a **minor** (less than 18 years of age), **who has been diagnosed by a physician as suffering from a terminal or irreversible condition**, then the minor's parents, legal guardian, or managing conservator may execute the OOH-DNR Order by signing and dating it in Section E.
Section F - If an adult person is incompetent or otherwise mentally or physically incapable of communication and does not have a guardian, agent, proxy, or available qualified relative to act on his/her behalf, then the attending physician may execute the OOH-DNR Order by signing and dating it in Section F with concurrence of a second physician (signing it in Section F) who is not involved in the treatment of the person or who is not a representative of the ethics or medical committee of the health care facility in which the person is a patient.
In addition, the OOH-DNR Order must be signed and dated by two competent adult witnesses, who have witnessed either the competent adult person making his/her signature in section A, or authorized declarant making his/her signature in either sections B, C, or E, and if applicable, have witnessed a competent adult person making an OOH-DNR Order by nonwritten communication to the attending physician, who must sign in Section D and also the physician's statement section. Optionally, a competent adult person or authorized declarant may sign the OOH-DNR Order in the presence of a notary public. However, a notary cannot acknowledge witnessing the issuance of an OOH-DNR in a nonwritten manner, which must be observed and only can be acknowledged by two qualified witnesses. Witness or notary signatures are not required when two physicians execute the OOH-DNR Order in section F. The original or a copy of a fully and properly completed OOH-DNR Order or the presence of an OOH-DNR device on a person is sufficient evidence of the existence of the original OOH-DNR Order and either one shall be honored by responding health care professionals.
REVOCATION: An OOH-DNR Order may be revoked at ANY time by the person, person's authorized representative, or physician who executed the order. Revocation can be by verbal communication to responding health care professionals, destruction of the OOH-DNR Order, or removal of all OOH-DNR identification devices from the person.
AUTOMATIC REVOCATION: An OOH-DNR Order is automatically revoked for a person known to be pregnant or in the case of unnatural or suspicious circumstances.

DEFINITIONS

Attending Physician: A physician, selected by or assigned to a person, with primary responsibility for the person's treatment and care and is licensed by the Texas Medical Board, or is properly credentialed and holds a commission in the uniformed services of the United States and is serving on active duty in this state. [HSC §166.002(12)].
Health Care Professional: Means physicians, nurses, physician assistants and emergency medical services personnel, and, unless the context requires otherwise, includes hospital emergency department personnel. [HSC §166.081(5)]
Qualified Relative: A person meeting requirements of HSC §166.088. It states that an adult relative may execute an OOH-DNR Order on behalf of an adult person who has not executed or issued an OOH-DNR Order and is incompetent or otherwise mentally or physically incapable of communication and is without a legal guardian, agent in a medical power of attorney, or proxy in a directive to physicians, and the relative is available from one of the categories in the following priority: 1) person's spouse; 2) person's reasonably available adult children; 3) the person's parents; or, 4) the person's nearest living relative. Such qualified relative may execute an OOH-DNR Order on such described person's behalf.
Qualified Witnesses: Both witnesses must be competent adults, who have witnessed the competent adult person making his/her signature in section A, or person's authorized representatives making his/her signature in either Sections B, C, or E on the OOH-DNR Order, or if applicable, have witnessed the competent adult person making an OOH-DNR by nonwritten communication to the attending physician, who signs in Section D. Optionally, a competent adult person, guardian, agent, proxy, or qualified relative may sign the OOH-DNR Order in the presence of a notary instead of two qualified witnesses. Witness or notary signatures are not required when two physicians execute the order by signing Section F. One of the witnesses must meet the qualifications in HSC §166.003(2), which requires that at least one of the witnesses not: (1) be designated by the person to make a treatment decision; (2) be related to the person by blood or marriage; (3) be entitled to any part of the person's estate after the person's death either under a will or by law; (4) have a claim at the time of the issuance of the OOH-DNR against any part of the person's estate after the person's death; or, (5) be the attending physician; (6) be an employee of the attending physician or (7) an employee of a health care facility in which the person is a patient if the employee is providing direct patient care to the patient or is an officer, director, partner, or business office employee of the health care facility or any parent organization of the health care facility.
Report problems with this form to the Texas Department of State Health Services (DSHS) or order OOH-DNR Order/forms or identification devices at (512) 834-6700.

Declarant's, Witness', Notary's, or Physician's electronic or digital signature must meet criteria outlined in HSC§166.011

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APPENDIX D – PEDI-Guide (Pediatric Emergency Drug & Interventions)

Purpose: To facilitate timely, safe administration of pediatric emergency medications using pre-calculated doses based on patient weight, length, or age to minimize incidence of dosing errors
Inclusion Criteria: Pediatric patients <14 years of age
Exclusion Criteria: Adult patients (≥14 years of age)

Procedure:

1. SELECT the appropriate color-coded chart (using the following hierarchy of criteria):[1]
   - If patient's weight is known, use the chart corresponding to their weight.
     - If a patient clearly weighs >37 kg, use their actual weight if known.
   - If patient's weight is NOT known, use a length-based resuscitation tape (e.g., Broselow tape) to identify the appropriate color-coded length zone and chart.
     - Measure from the top of the patient's head to their HEELS (not toes).
     - If the patient appears overweight, consider using one color zone higher for medication dosing only (not equipment sizing).
     - If a patient clearly weighs >37 kg, BUT actual weight is unknown, use the BLACK chart.
   - If a length-based tape is not available or can't be used due to patient condition (e.g., respiratory distress), select the chart corresponding to the patient's known or estimated age.
     - For seizures or time-sensitive circumstances, first select the appropriate AGE chart. When the patient is stabilized, switch to a weight- or length-based chart.
2. VOLUME (mL) of a medication to be administered is listed in far-right, blue-shaded column.[2,3]
3. If indicated, DILUTE the medication to achieve the correct concentration before administering.
   - Certain medications listed in bold, green font must be DILUTED before administration.
     - Dilution instructions are on the back side of each chart.
   - For **Epinephrine** and **Norepinephrine** drips, use the dilution and administration instructions listed on the back side of each chart.
4. Use the MEDICATION ADMINISTRATION CROSS-CHECK (MACC) PROCEDURE for every medication dose, EVERY time![4]

Special Considerations:

1. For newborns weighing <3kg, refer to NEWBORN CARE CPG and consult BioTel for guidance.
2. Most medication volumes in the PEDI-Guide are rounded to the nearest 0.1 mL for ease of administration and to be consistent with the accuracy of standard syringes. PEDI-Guide doses may vary from precise manually-calculated doses.
3. Dextrose 10% (D10W) doses have been rounded in a special way to simplify administration.
   - Doses <50 mL are rounded to the nearest 5 mL to help with dosing from a syringe.
   - Doses ≥50 mL are rounded to the nearest 25 mL to help with dosing from a bag.
4. **Be careful and alert!**
   - Medications may have different concentrations, differently sized vials, different doses for different indications, and/or different routes of administration.

GRAY	GRAY	GRAY	PINK	RED	PURPLE	YELLOW	WHITE	BLUE	ORANGE	GREEN	BLACK
< 1 mo	< 2 mo	< 3 mo	3-5 mo	6-11 mo	12-24 mo (1-2 y)	24-36 mo (2-3 y)	3-4 y	5-6 y	7-9 y	10-11 y	12-13 y
							15-19 kg	19-24 kg	24-30 kg	30-37 kg	37-50 kg
< 4 kg	< 5 kg	< 5 kg	5-8 kg	8-10 kg	10-12 kg	12-15 kg	33–42 lb	42–53 lb	53–64 lb	66–81 lb	81.4–110 lb
< 8.5 lb	< 11 lb	< 13 lb	13–15 lb	18–22 lb	22–26 lb	26–33 lb					

GRAY — Less than 1 month (6.6 – 8.5 lb) 3.0 – 3.9 kg

BioTel PEDI-Guide

Weight (kg): 3.0 – 3.9		**Weight (lb): 6.6 – 8.5**	
Age: Less than 1 month		**Length: 47 – 52 cm**	
Normal Vital Signs:	**HR 100 - 180**	**RR 30 - 60**	**SBP At least 60**
DEFIBRILLATION: 6 → 12 → 12 - 30 Joules		CARDIOVERSION: 3 → 6 → 12 Joules	
OPA: 50 mm; NPA: 14 Fr	Laryngoscope: 1 Straight	Fluid bolus (20 mL/kg): 60 mL IV push	
ETT: 3.0 Cuffed; Depth: 9 – 9.5 cm		King: Size 0; I-Gel: Size 1 Pink	

Newly-born infant CPR: 3:1 Ratio (Chest Compressions: Ventilations)
120 events per minute (90 compressions & 30 gentle ventilations)

Avoid overventilation
Refer to Neonatal CPG for detailed resuscitation guidelines
Refer to Universal Care - Pediatric and Cardiac Arrest CPG for additional guidance

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st Dose	3 mg/mL	0.3 mg	IV/IO	0.1 mL
Adenosine 2nd Dose	3 mg/mL	0.6 mg	IV/IO	0.2 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	15 mg	IV/IO	0.3 mL
Amiodarone - VT w/ pulse	50 mg/mL	10 mg	IV/IO	0.2 mL
Atropine - Bradycardia	0.1 mg/mL	0.05 mg	IV/IO	0.5 mL
Calcium Chloride	100 mg/mL	50 mg	IV/IO	0.5 mL slow IVP
Dexamethasone	4 mg/mL	1.6 mg	IV/IO/IM/PO	0.4 mL
Dextrose 10%	0.1 g/mL	1.5	IV/IO	15 mL slow IVP
Diphenhydramine	50 mg/mL	5 mg	IV/IO/IM	0.1 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.05 mg	**IM**	0.05 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.05 mg	**IV/IO**	0.5 mL
Epi Auto-Injector Junior	Not applicable unless syringe-dose epi is unavailable			
Epi 1:1000 NEB	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	5 mcg	IV/IO/IM/IN	0.1 mL
Glucagon	Contact BioTel for authorization			
Glucose Gel	15 g/37.5 mL tube	0.6 g	BUCCAL	1.5 mL
Hydroxocobalamin	5 g/200 mL	312.5 mg	IV	**See back**
Lidocaine 2% - IO insertion	20 mg/mL	2 mg	IO	0.1 mL
Magnesium Sulfate	**See Dilution Chart**	120 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	0.5 mg	IM/IN	0.1 mL
Naloxone	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Sodium Bicarbonate 8.4%	1 mEq/mL	3 mEq	IV/IO	3 mL

Medications not indicated: Ipratropium, Ondansetron

GRAY

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 5 gtt/min 0.2 mcg/kg/min: 9 gtt/min 0.3 mcg/kg/min: 14 gtt/min 0.4 mcg/kg/min: 18 gtt/min 0.5 mcg/kg/min: 23 gtt/min 0.6 mcg/kg/min: 27 gtt/min 0.7 mcg/kg/min: 32 gtt/min 0.8 mcg/kg/min: 36 gtt/min 0.9 mcg/kg/min: 41 gtt/min 1.0 mcg/kg/min: 45 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 5 gtt/min 0.2 mcg/kg/min: 9 gtt/min 0.3 mcg/kg/min: 14 gtt/min 0.4 mcg/kg/min: 18 gtt/min 0.5 mcg/kg/min: 23 gtt/min 0.6 mcg/kg/min: 27 gtt/min 0.7 mcg/kg/min: 32 gtt/min 0.8 mcg/kg/min: 36 gtt/min 0.9 mcg/kg/min: 41 gtt/min 1.0 mcg/kg/min: 45 gtt/min
Hydroxocobalamin	IV/IO		• Run 15 gtt/min for 15 min (1/16 vial or 12.5 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	• Run 48 gtt/min (12 mL) for 15 min. • Use 60 gtt/mL set. • Set timer!
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 2.4 mL SLOWLY over 2 min.

Less than 1 month (6.6 – 8.5 lb) 3.0 – 3.9 kg

GRAY

BioTel PEDI-Guide

Weight (kg): 4.0 – 4. 9		**Weight (lb): 8.6 – 10.8**	
Age: Less than 2 months		**Length: 52 – 55 cm**	
Normal Vital Signs:	**HR 100 - 180**	**RR 30 - 60**	**SBP at least 60**
DEFIBRILLATION: 8 → 16 → 16 - 40 Joules		CARDIOVERSION: 4 → 8 → 16 Joules	
OPA: 50 mm; NPA: 14 Fr	Laryngoscope: 1 Straight	Fluid bolus (20 mL/kg): 80 mL IV push	
ETT: 3.0 Cuffed; Depth: 9.5 – 10 cm		King: Size 0; I-Gel: Size 1 Pink	

Newly-born infant CPR: 3:1 Ratio (Chest Compressions: Ventilations)
120 events per minute (90 compressions & 30 gentle ventilations)

Avoid overventilation
Refer to Neonatal CPG for detailed resuscitation guidelines
Refer to Universal Care - Pediatric and Cardiac Arrest CPG for additional guidance

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st Dose	3 mg/mL	0.3 mg	IV/IO	0.1 mL
Adenosine 2nd Dose	3 mg/mL	0.6 mg	IV/IO	0.2 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	20 mg	IV/IO	0.4 mL
Amiodarone - VT w/ pulse	50 mg/mL	10 mg	IV/IO	0.2 mL
Atropine - Bradycardia	0.1 mg/mL	0.1 mg	IV/IO	1 mL
Calcium Chloride	100 mg/mL	100 mg	IV/IO	1 mL slow IVP
Dexamethasone	4 mg/mL	2 mg	IV/IO/IM/PO	0.5 mL
Dextrose 10%	0.1 g/mL	1.5 g	IV/IO	15 mL slow IVP
Diphenhydramine	50 mg/mL	5 mg	IV/IO/IM	0.1 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.05 mg	**IM**	0.05 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.05 mg	**IV/IO**	0.5 mL
Epi Auto-Injector Junior	Not applicable unless syringe-dose epi is unavailable			
Epi 1:1000 NEB	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	5 mcg	IV/IO/IM/IN	0.1 mL
Glucagon	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	2 g	BUCCAL	5 mL
Hydroxocobalamin	5 g/200 mL	312.5 mg	IV	**See back**
Lidocaine 2% - IO insertion	20 mg/mL	2 mg	IO	0.2 mL
Magnesium Sulfate	**See Dilution Chart**	160 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	1 mg	IM/IN	0.2 mL
Naloxone	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Sodium Bicarbonate 8.4%	1 mEq/mL	4 mEq	IV/IO	4 mL

Less than 2 months (8.6 – 10.8 lb) 4.0 – 4.9 kg

Medications not indicated: Ipratropium, Ondansetron

GRAY

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

Less than 2 months (8.6 – 10.8 lb) 4.0 – 4.9 kg

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 6 gtt/min 0.2 mcg/kg/min: 12 gtt/min 0.3 mcg/kg/min: 18 gtt/min 0.4 mcg/kg/min: 24 gtt/min 0.5 mcg/kg/min: 30 gtt/min 0.6 mcg/kg/min: 36 gtt/min 0.7 mcg/kg/min: 42 gtt/min 0.8 mcg/kg/min: 48 gtt/min 0.9 mcg/kg/min: 54 gtt/min 1.0 mcg/kg/min: 60 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 6 gtt/min 0.2 mcg/kg/min: 12 gtt/min 0.3 mcg/kg/min: 18 gtt/min 0.4 mcg/kg/min: 24 gtt/min 0.5 mcg/kg/min: 30 gtt/min 0.6 mcg/kg/min: 36 gtt/min 0.7 mcg/kg/min: 42 gtt/min 0.8 mcg/kg/min: 48 gtt/min 0.9 mcg/kg/min: 54 gtt/min 1.0 mcg/kg/min: 60 gtt/min
Hydroxocobalamin	IV/IO		• Run 15 gtt/min for 15 min (1/16 vial or 12.5 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	• Run 64 gtt/min (16 mL) for 15 min. • Use 60 gtt/mL set. • Set timer!
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 3.2 mL SLOWLY over 2 min.

GRAY — Less than 3 months (11 – 13 lb) 5.0 – 5.9 kg

BioTel PEDI-Guide

Weight (kg): 5.0 – 5. 9		**Weight (lb): 11 – 13**	
Age: Less than 3 months		**Length: 55 – 58 cm**	
Normal Vital Signs:	**HR 100 - 180**	**RR 30 - 60**	**SBP At least 60**
DEFIBRILLATION: 10 → 20 → 20 - 50 Joules		CARDIOVERSION: 5 → 10 → 20 Joules	
OPA: 50 mm; NPA: 14 Fr	Laryngoscope: 1 Straight	Fluid bolus (20 mL/kg): 100 mL	
ETT: 3.0 Cuffed; Depth: 10 – 10.5 cm		King: Size 1 White; I-Gel: Size 1.5 Blue	

2-Rescuer Infant CPR: 15:2 Ratio (Chest Compressions: Ventilations)
Compression Rate: 100 – 120/minute; Pause for breaths

Avoid overventilation
Refer to Universal Care - Pediatric and Cardiac Arrest CPG for additional guidance

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st Dose	3 mg/mL	0.6 mg	IV/IO	0.2 mL
Adenosine 2nd Dose	3 mg/mL	1.2 mg	IV/IO	0.4 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	25 mg	IV/IO	0.5 mL
Amiodarone - VT w/ pulse	50 mg/mL	15 mg	IV/IO	0.3 mL
Atropine - Bradycardia	0.1 mg/mL	0.1 mg	IV/IO	1 mL
Calcium Chloride	100 mg/mL	100 mg	IV/IO	1 mL slow IVP
Dexamethasone	4 mg/mL	2.8 mg	IV/IO/IM/PO	0.7 mL
Dextrose 10%	0.1 g/mL	2 g	IV/IO	20 mL slow IVP
Diphenhydramine	50 mg/mL	5 mg	IV/IO/IM	0.1 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.05 mg	**IM**	0.05 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.05 mg	**IV/IO**	0.5 mL
Epi Auto-Injector Junior	Not applicable unless syringe-dose epi is unavailable			
Epi 1:1000 NEB	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	5 mcg	IV/IO/IM/IN	0.1 mL
Glucagon	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	2 g	BUCCAL	5 mL
Hydroxocobalamin	5 g/200 mL	312.5 mg	IV	**See back**
Lidocaine 2% - IO insertion	20 mg/mL	2 mg	IO	0.1 mL
Magnesium Sulfate	**See Dilution Chart**	200 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	1 mg	IM/IN	0.2 mL
Naloxone	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Sodium Bicarbonate 8.4%	1 mEq/mL	5 mEq	IV/IO	5 mL

Medications not indicated: Ipratropium, Ondansetron

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BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 8 gtt/min 0.2 mcg/kg/min: 15 gtt/min 0.3 mcg/kg/min: 23 gtt/min 0.4 mcg/kg/min: 30 gtt/min 0.5 mcg/kg/min: 38 gtt/min 0.6 mcg/kg/min: 45 gtt/min 0.7 mcg/kg/min: 53 gtt/min 0.8 mcg/kg/min: 60 gtt/min 0.9 mcg/kg/min: 68 gtt/min 1.0 mcg/kg/min: 75 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 8 gtt/min 0.2 mcg/kg/min: 15 gtt/min 0.3 mcg/kg/min: 23 gtt/min 0.4 mcg/kg/min: 30 gtt/min 0.5 mcg/kg/min: 38 gtt/min 0.6 mcg/kg/min: 45 gtt/min 0.7 mcg/kg/min: 53 gtt/min 0.8 mcg/kg/min: 60 gtt/min 0.9 mcg/kg/min: 68 gtt/min 1.0 mcg/kg/min: 75 gtt/min
Hydroxocobalamin	IV/IO		• Run 15 gtt/min for 15 min (1/16 vial or 12.5 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	• Run 80 gtt/min (20) for 15 min. • Use 60 gtt/mL set. • Set timer!
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 4 mL SLOWLY over 2 min.

Less than 3 months (11 – 13 lb) 5.0 – 5.9 kg

PINK

BioTel PEDI-Guide				
Weight (kg): 6.0 – 7.9		**Weight (lb): 13.2 – 15.4**		
Age: 3 – 5 months		**Length: 59 – 67 cm**		
Normal Vital Signs:	**HR 100 - 180**	**RR 30 - 45**	**SBP At least 70**	
DEFIBRILLATION: 13 → 26 → 26 - 60 Joules		CARDIOVERSION: 7 → 13 → 26 Joules		
OPA: 50 mm; NPA: 14 Fr	Laryngoscope: 1 Straight	Fluid Bolus (20 mL/kg): 150 mL		
ETT: 3.0 Cuffed; Depth: 10 – 10.5 cm		King: Size 1 White; I-Gel: Size 1.5 Blue		
Medication Administration				
NAME	**CONCENTRATION**	**DOSE**	**ROUTE**	**VOLUME**
Adenosine 1st dose	3 mg/mL	0.6 mg	IV/IO	0.2 mL
Adenosine 2nd dose	3 mg/mL	1.2 mg	IV/IO	0.4 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	35 mg	IV/IO	0.7 mL
Amiodarone - VT w/ pulse	50 mg/mL	20 mg	IV/IO	0.4 mL
Atropine - Bradycardia	0.1 mg/mL	0.15 mg	IV/IO	1.5 mL
Calcium Chloride	100 mg/mL	150 mg	IV/IO	1.5 mL slow IVP
Dexamethasone	4 mg/mL	3.6 mg	IV/IO/IM/PO	0.9 mL
Dextrose 10%	0.1 g/mL	3 g	IV/IO	30 mL slow IVP
Diphenhydramine	50 mg/mL	5 mg	IV/IO/IM	0.1 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.1 mg	**IM**	0.1 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.1 mg	**IV/IO**	1 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	10 mcg	IV/IO/IM/IN	0.2 mL
Glucagon	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	2 g	BUCCAL	5 mL
Hydroxocobalamin	5 g/200 mL	625 mg	IV	**See back**
Lidocaine 2% - IO insertion	20 mg/mL	4 mg	IO	0.2 mL
Magnesium Sulfate	**See Dilution Chart**	280 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	1.25 mg	IM/IN	0.25 mL
Naloxone	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Sodium Bicarbonate 8.4%	1 mEq/mL	7 mEq	IV/IO	7 mL

3 – 5 months (13.2 – 15.4 lb) 6 – 7.9 kg

Medications not indicated: Ipratropium, Ondansetron

PINK

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 11 gtt/min 0.2 mcg/kg/min: 21 gtt/min 0.3 mcg/kg/min: 32 gtt/min 0.4 mcg/kg/min: 42 gtt/min 0.5 mcg/kg/min: 53 gtt/min 0.6 mcg/kg/min: 63 gtt/min 0.7 mcg/kg/min: 74 gtt/min 0.8 mcg/kg/min: 84 gtt/min 0.9 mcg/kg/min: 95 gtt/min 1.0 mcg/kg/min: 105 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 11 gtt/min 0.2 mcg/kg/min: 21 gtt/min 0.3 mcg/kg/min: 32 gtt/min 0.4 mcg/kg/min: 42 gtt/min 0.5 mcg/kg/min: 53 gtt/min 0.6 mcg/kg/min: 63 gtt/min 0.7 mcg/kg/min: 74 gtt/min 0.8 mcg/kg/min: 84 gtt/min 0.9 mcg/kg/min: 95 gtt/min 1.0 mcg/kg/min: 105 gtt/min
Hydroxocobalamin	IV/IO		• Run 30 gtt/min for 15 min (1/8 vial or 25 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	• Run 112 gtt/min (28 mL) for 15 min. • Use 60 gtt/mL set. • Set timer!
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 5.6 mL SLOWLY over 2 min.

3 – 5 months (13.2 – 15.4 lb)
6 – 7.9 kg

RED

BioTel PEDI-Guide

Weight (kg): 8 – 9.9		**Weight (lb): 17.6 – 21.8**	
Age: 6 – 11 months		**Length: 67.7 – 74.5 cm**	
Normal Vital Signs:	**HR 100 - 180**	**RR 30 - 45**	**SBP At least 70**
DEFIBRILLATION: 15 → 30 → 30 - 80 Joules		CARDIOVERSION: 8 → 16 → 30 Joules	
OPA: 50 mm; NPA: 14 Fr	Laryngoscope: 1 Straight	Fluid Bolus (20 mL/kg): 200 mL	
ETT: 3.0 Cuffed; Depth: 10.5 – 11 cm		King: Size 1 White; I-Gel: Size 1.5 Blue	

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st dose	3 mg/mL	0.9 mg	IV/IO	0.3 mL
Adenosine 2nd dose	3 mg/mL	1.8 mg	IV/IO	0.6 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	45 mg	IV/IO	0.9 mL
Amiodarone - VT w/ pulse	50 mg/mL	25 mg	IV/IO	0.5 mL
Atropine - Bradycardia	0.1 mg/mL	0.2 mg	IV/IO	2 mL
Calcium Chloride	100 mg/mL	200 mg	IV/IO	2 mL slow IVP
Dexamethasone	4 mg/mL	4 mg	IV/IO/IM/PO	1 mL
Dextrose 10%	0.1 g/mL	3.5 g	IV/IO	35 mL slow IVP
Diphenhydramine	50 mg/mL	10 mg	IV/IO/IM	0.2 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.1 mg	**IM**	0.1 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.1 mg	**IV/IO**	1 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	10 mcg	IV/IO/IM/IN	0.2 mL
Glucagon	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	2 g	BUCCAL	5 mL
Hydroxocobalamin	5 g/200 mL	625 mg	IV	See back
Lidocaine 2% - IO insertion	20 mg/mL	4 mg	IO	0.2 mL
Magnesium Sulfate	**See Dilution Chart**	360 mg	IV/IO	See back
Midazolam	10 mg/2 mL	1.25 mg	IM/IN	0.25 mL
Naloxone	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Sodium Bicarbonate 8.4%	1 mEq/mL	10 mEq	IV/IO	10 mL

6 – 11 months (17.6 – 21.8 lb) 8 – 9.9 kg

Medications not indicated: Ipratropium, Ondansetron

RED

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 14 gtt/min 0.2 mcg/kg/min: 27 gtt/min 0.3 mcg/kg/min: 41 gtt/min 0.4 mcg/kg/min: 54 gtt/min 0.5 mcg/kg/min: 68 gtt/min 0.6 mcg/kg/min: 81 gtt/min 0.7 mcg/kg/min: 97 gtt/min 0.8 mcg/kg/min: 108 gtt/min 0.9 mcg/kg/min: 122 gtt/min 1.0 mcg/kg/min: 135 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 14 gtt/min 0.2 mcg/kg/min: 27 gtt/min 0.3 mcg/kg/min: 41 gtt/min 0.4 mcg/kg/min: 54 gtt/min 0.5 mcg/kg/min: 68 gtt/min 0.6 mcg/kg/min: 81 gtt/min 0.7 mcg/kg/min: 97 gtt/min 0.8 mcg/kg/min: 108 gtt/min 0.9 mcg/kg/min: 122 gtt/min 1.0 mcg/kg/min: 135 gtt/min
Hydroxocobalamin	IV/IO		• Run 30 gtt/min for 15 min (1/8 vial or 25 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	• Run 144 gtt/min (36 mL) for 15 min. • Use 60 gtt/mL set. • Set timer!
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 7.2 mL SLOWLY over 2 min.

6 – 11 months (17.6 – 21.8 lb) 8 – 9.9 kg

PURPLE

BioTel PEDI-Guide

Weight (kg): 10 – 11.9		**Weight (lb): 22 – 26**	
Age: 12 – 23 months		**Length: 74.5 – 84 cm**	
Normal Vital Signs:	**HR 80 - 150**	**RR 25- 40**	**SBP At least 75**
DEFIBRILLATION: 20 → 40 → 40 - 100 Joules		CARDIOVERSION: 10 → 20 → 40 Joules	
OPA: 60 mm; NPA: 18 Fr	Laryngoscope: 1 Straight	Fluid Bolus (20 mL/kg): 200 mL	
ETT: 3.5 Cuffed; Depth: 11 – 12 cm		King: Size 1 White; I-Gel: Size 2 Gray	

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st dose	3 mg/mL	1.2 mg	IV/IO	0.4 mL
Adenosine 2nd dose	3 mg/mL	2.4 mg	IV/IO	0.8 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	50 mg	IV/IO	1 mL
Amiodarone - VT w/ pulse	50 mg/mL	25 mg	IV/IO	0.5 mL
Atropine - Bradycardia	0.1 mg/mL	0.2 mg	IV/IO	2 mL
Calcium Chloride	100 mg/mL	200 mg	IV/IO	2 mL slow IVP
Dexamethasone	4 mg/mL	5.6 mg	IV/IO/IM/PO	1.4 mL
Dextrose 10%	0.1 g/mL	4.5 g	IV/IO	45 mL slow IVP
Diphenhydramine	50 mg/mL	10 mg	IV/IO/IM	0.2 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.1 mg	**IM**	0.1 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.1 mg	**IV/IO**	1 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	10 mcg	IV/IO/IM/IN	0.2 mL
Glucagon - Hypoglycemia	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	3 g	BUCCAL	7.5 mL
Hydroxocobalamin	5 g/200 mL	625 mg	IV	See back
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	6 mg	IO	0.3 mL
Magnesium Sulfate	**See Dilution Chart**	440 mg	IV/IO	See back
Midazolam **(12-16 mo)**	10 mg/2 mL	1.25 mg	IM/IN	0.25 mL
Midazolam **(17-23 mo)**	10 mg/2 mL	2.5 mg	IM/IN	0.5 mL
Naloxone	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Sodium Bicarbonate 8.4%	1 mEq/mL	10 mEq	IV/IO	10 mL

12 – 23 months (22 – 26 lb) 10 – 11.9 kg

PURPLE

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 17 gtt/min 0.2 mcg/kg/min: 33 gtt/min 0.3 mcg/kg/min: 50 gtt/min 0.4 mcg/kg/min: 66 gtt/min 0.5 mcg/kg/min: 83 gtt/min 0.6 mcg/kg/min: 99 gtt/min 0.7 mcg/kg/min: 116 gtt/min 0.8 mcg/kg/min: 132 gtt/min 0.9 mcg/kg/min: 150 gtt/min (MAX)
Hydroxocobalamin	IV/IO		• Run 30 gtt/min for 15 min (1/8 vial or 25 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	• Run 29 gtt/min (44 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 8.8 mL SLOWLY over 2 min.

12 – 23 months (22 – 26 lb)
10 – 11.9 kg

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PEDI-DOSE GUIDE

YELLOW

BioTel PEDI-Guide

Weight (kg): 12 – 14.9		**Weight (lb): 26.4 – 32.8**	
Age: 24 – 35 months		**Length: 74.5 – 84 cm**	
Normal Vital Signs:	**HR 80 - 150**	**RR 25 - 40**	**SBP At least 75**
DEFIBRILLATION: 25 → 50 → 50 - 130 Joules		CARDIOVERSION: 13 → 26 → 50 Joules	
OPA: 60 mm; NPA: 20 Fr	Laryngoscope: 2 Straight	Fluid Bolus (20 mL/kg): 250 mL	
ETT: 4.0 Cuffed; Depth: 12.5 - 13.5 cm		King: Size 2 Green; I-Gel: Size 2 Gray	

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st dose	3 mg/mL	1.2 mg	IV/IO	0.4 mL
Adenosine 2nd dose	3 mg/mL	2.4 mg	IV/IO	0.8 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	70 mg	IV/IO	1.4 mL
Amiodarone - VT w/ pulse	50 mg/mL	35 mg	IV/IO	0.7 mL
Atropine - Bradycardia	0.1 mg/mL	0.25 mg	IV/IO	2.5 mL
Calcium Chloride	100 mg/mL	250 mg	IV/IO	2.5 mL slow IVP
Dexamethasone	4 mg/mL	6.4 mg	IV/IO/IM/PO	1.6 mL
Dextrose 10%	0.1 g/mL	3 g	IV/IO	50 mL
Diphenhydramine	50 mg/mL	10 mg	IV/IO/IM	0.2 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.15 mg	**IM**	0.15 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.15 mg	**IV/IO**	1.5 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB - Croup	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	15 mcg	IV/IO/IM/IN	0.3 mL
Glucagon - Hypoglycemia	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	3 g	BUCCAL	7.5 mL
Hydroxocobalamin	5 g/200 mL	1.25 g	IV	**See back**
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	6 mg	IO	0.3 mL
Magnesium Sulfate	**See Dilution Chart**	520 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	2.5 mg	IM/IN	0.5 mL
Naloxone	1 mg/mL	1.5 mg	IV/IO/IM/IN	1.5 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Ondansetron	2 mg/mL	2 mg	**IV/IO**	1 mL
Ondansetron		½ of 4-mg **ODT** (N/A for 8-mg ODT)		
Sodium Bicarbonate 8.4%	1 mEq/mL	15 mEq	IV/IO	15 mL

24 – 35 months (26.4 – 32.8 lb) 12 – 14.9 kg

YELLOW

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 20 gtt/min 0.2 mcg/kg/min: 39 gtt/min 0.3 mcg/kg/min: 59 gtt/min 0.4 mcg/kg/min: 78 gtt/min 0.5 mcg/kg/min: 98 gtt/min 0.6 mcg/kg/min: 117 gtt/min 0.7 mcg/kg/min: 137 gtt/min 0.8 mcg/kg/min: 150 gtt/min (MAX)
Hydroxocobalamin	IV/IO		• Run 60 gtt/min for 15 min (1/4 vial or 50 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	Respiratory Distress (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL. • Add 2 mL (1 g) to 100 mL NS.	• Run 35 gtt/min (52 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 50 mg/mL • Waste 1 mL from 10-mL NS flush. • Replace with 1 mL (0.5 g) mag sulfate.	• Push 10 mL SLOWLY over 2 min.

24 – 35 months (26.4 – 32.8 lb) 12 – 14.9 kg

WHITE

BioTel PEDI-Guide

Weight (kg): 15 – 18.9		**Weight (lb): 33 – 41.6**	
Age: 3 – 4 years		**Length: 95 – 108 cm**	
Normal Vital Signs:	**HR 80 - 140**	**RR 22 - 35**	**SBP At least 75**
DEFIBRILLATION: 33 → 65 → 65 - 150 Joules		CARDIOVERSION: 17 → 33 → 65 Joules	
OPA: 60 mm; NPA: 22 Fr	Laryngoscope: 2 Straight	Fluid Bolus (20 mL/kg): 300 mL	
ETT: 4.5 Cuffed; Depth: 14 – 15 cm		King: Size 2 Green; I-Gel: Size 2 Gray	

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Adenosine 1st dose	3 mg/mL	1.8 mg	IV/IO	0.6 mL
Adenosine 2nd dose	3 mg/mL	3.6 mg	IV/IO	1.2 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	90 mg	IV/IO	1.8 mL
Amiodarone - VT w/ pulse	50 mg/mL	45 mg	IV/IO	0.9 mL
Atropine - Bradycardia	0.1 mg/mL	0.35 mg	IV/IO	3.5 mL
Calcium Chloride	100 mg/mL	350 mg	IV/IO	3.5 mL slow IVP
Dexamethasone	4 mg/mL	8.4 mL	IV/IO/IM/PO	2.1 mL
Dextrose 10%	0.1 g/mL	7.5 g	IV/IO	75 mL
Diphenhydramine	50 mg/mL	15 mg	IV/IO/IM	0.3 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.2 mg	**IM**	0.2 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.2 mg	**IV/IO**	2 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB - Croup	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	20 mcg	IV/IO/IM/IN	0.4 mL
Glucagon - Hypoglycemia	1 mg/mL	0.5 mg	IV/IO/IM/IN	0.5 mL
Glucose Gel	15 g/37.5 mL tube	3.75 g	BUCCAL	1/4 tube
Hydroxocobalamin	5 g/200 mL	1.25 g	IV	**See back**
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	8 mg	IO	0.4 mL
Magnesium Sulfate	**See Dilution Chart**	680 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	2.5 mg	IM/IN	0.5 mL
Naloxone	1 mg/mL	2 mg	IV/IO/IM/IN	2 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Ondansetron	2 mg/mL	3 mg	**IV/IO**	1.5 mL
Ondansetron		½ of 4-mg **ODT** (N/A for 8-mg ODT)		
Sodium Bicarbonate 8.4%	1 mEq/mL	20 mEq	IV/IO	20 mL

3 – 4 years (33 – 41.6 lb) 15 – 18.9 kg

WHITE

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

3 – 4 years (33 – 41.6 lb) 15 – 18.9 kg

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 4 mcg/mL • Add 1 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	0.1 mcg/kg/min: 26 gtt/min 0.2 mcg/kg/min: 51 gtt/min 0.3 mcg/kg/min: 77 gtt/min 0.4 mcg/kg/min: 102 gtt/min 0.5 mcg/kg/min: 128 gtt/min 0.6 mcg/kg/min: 150 gtt/min (MAX)
Hydroxocobalamin	IV/IO		• Run 60 gtt/min for 15 min (1/4 vial or 50 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	Respiratory Distress (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL. • Add 2 mL (1 g) to 100 mL NS.	• Run 45 gtt/min (68 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 200 mg/mL • Waste 4 mL from 10-mL NS flush. • Replace with 4 mL (2 g) mag sulfate.	• Push 3.4 mL SLOWLY over 2 min.

BioTel PEDI-Guide

Weight (kg): 19 – 23.9		**Weight (lb): 41.8 – 52.6**		
Age: 5 – 6 years		**Length: 109 – 122.5 cm**		
Normal Vital Signs:	**HR 70 - 120**	**RR 18 - 30**	**SBP At least 80**	
DEFIBRILLATION: 40 → 80 → 80 - 200 Joules		CARDIOVERSION: 20 → 40 → 80 Joules		
OPA: 70 mm; NPA: 24 Fr	Laryngoscope: 2 Straight	Fluid Bolus (20 mL/kg): 400 mL		
ETT: 5.0 Cuffed; Depth: 15.5 – 16.5 cm		King: Size 2 Green; I-Gel: Size 2 Gray		

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Acetaminophen	325 mg tab	325 mg	PO	1 tab
Adenosine 1st dose	3 mg/mL	2.1 mg	IV/IO	0.7 mL
Adenosine 2nd dose	3 mg/mL	4.2 mg	IV/IO	1.4 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	100 mg	IV/IO	2 mL
Amiodarone - VT w/ pulse	50 mg/mL	50 mg	IV/IO	1 mL
Atropine - Bradycardia	0.1 mg/mL	0.4 mg	IV/IO	4 mL
Calcium Chloride	100 mg/mL	400 mg	IV/IO	4 mL slow IVP
Dexamethasone	4 mg/mL	10 mg	IV/IO/IM/PO	2.5 mL
Dextrose 10%	0.1 g/mL	7.5 g	IV/IO	75 mL
Diphenhydramine	50 mg/mL	20 mg	IV/IO/IM	0.4 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.2 mg	**IM**	0.2 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.2 mg	**IV/IO**	2 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB - Croup	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	20 mcg	IV/IO/IM/IN	0.4 mL
Glucagon	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Glucose Gel	15 g/37.5 mL tube	7.5 g	BUCCAL	1/2 tube
Hydroxocobalamin	5 g/200 mL	1.25 g	IV	See back
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	10 mg	IO	0.5 mL
Magnesium Sulfate	**See Dilution Chart**	840 mg	IV/IO	See back
Midazolam **(5 yrs)**	10 mg/2 mL	2.5 mg	IM/IN	0.5 mL
Midazolam **(6 yrs)**	10 mg/2 mL	5 mg	IM/IN	1 mL
Naloxone	1 mg/mL	2 mg	IV/IO/IM/IN	2 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Ondansetron	2 mg/mL	4 mg	**IV/IO**	2 mL
Ondansetron		1 full 4-mg **ODT** **OR** ½ of 8-mg **ODT**		
Sodium Bicarbonate 8.4%	1 mEq/mL	20 mEq	IV/IO	20 mL

BLUE

5 – 6 years (41.8 – 52.6 lb) 19 – 23.9 kg

BLUE

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 8 mcg/mL • Add 2 mL (2 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 15 gtt/min 4 mcg/min: 30 gtt/min 6 mcg /min: 45 gtt/min 8 mcg/min: 60 gtt/min 10 mcg/min: 75 gtt/min
Hydroxocobalamin	IV/IO		• Run 60 gtt/min for 15 min (1/4 vial or 50 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	Respiratory Distress (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL. • Add 2 mL (1 g) to 100 mL NS.	• Run 56 gtt/min (84 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 200 mg/mL • Waste 4 mL from 10-mL NS flush. • Replace with 4 mL (2 g) mag sulfate.	• Push 4.2 mL SLOWLY over 2 min.

5 – 6 years
(41.8 – 52.6 lb)
19 – 23.9 kg

ORANGE

BioTel PEDI-Guide

Weight (kg): 24 – 29.9		**Weight (lb): 53 – 64**	
Age: 7 – 9 years		**Length: 123 – 131 cm**	
Normal Vital Signs:	**HR 70 - 120**	**RR 18 - 30**	**SBP At least 85**
DEFIBRILLATION: 55 → 110 → 110 - 260 Joules		CARDIOVERSION: 27 → 52 → 100 Joules	
OPA: 80 mm; NPA: 26 Fr	Laryngoscope: 2 Straight	Fluid Bolus (20 mL/kg): 500 mL	
ETT: 6.0 Cuffed; Depth: 17 – 18 cm		King: Size 2.5 Orange; I-Gel: Size 2.5 White	

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Acetaminophen	325 mg tab	325 mg	PO	1 tab
Adenosine 1st dose	3 mg/mL	2.7 mg	IV/IO	0.9 mL
Adenosine 2nd dose	3 mg/mL	5.4 mg	IV/IO	1.8 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	140 mg	IV/IO	2.8 mL
Amiodarone - VT w/ pulse	50 mg/mL	70 mg	IV/IO	1.4 mL
Atropine - Bradycardia	0.1 mg/mL	0.5 mg	IV/IO	5 mL
Calcium Chloride	100 mg/mL	550 mg	IV/IO	5.5 mL slow IVP
Dexamethasone	4 mg/mL	10 mg	IV/IO/IM/PO	2.5 mL
Dextrose 10%	0.1 g/mL	10 g	IV/IO	100 mL
Diphenhydramine	50 mg/mL	25 mg	IV/IO/IM	0.5 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.25 mg	**IM**	0.25 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.25 mg	**IV/IO**	2.5 mL
Epi Auto-Injector Junior		0.15 mg	IM	Up to 3 units
Epi 1:1000 NEB - Croup	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	25 mcg	IV/IO/IM/IN	0.5 mL
Glucagon	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Glucose Gel	15 g/37.5 mL tube	15 g	BUCCAL	1 tube
Hydroxocobalamin	5 g/200 mL	2.5 g	IV	**See back**
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	14 mg	IO	0.7 mL
Magnesium Sulfate	**See Dilution Chart**	1000 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	5 mg	IM/IN	1 mL
Naloxone	1 mg/mL	2 mg	IV/IO/IM/IN	2 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Ondansetron	2 mg/mL	4 mg	**IV/IO**	2 mL
Ondansetron		1 full 4-mg **ODT** **OR** ½ of 8-mg **ODT**		
Sodium Bicarbonate 8.4%	1 mEq/mL	30 mEq	IV/IO	30 mL

7 – 9 years (53 – 64 lb) 24 – 29.9 kg

ORANGE

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 8 mcg/mL • Add 2 mL (2 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 15 gtt/min 4 mcg/min: 30 gtt/min 6 mcg /min: 45 gtt/min 8 mcg/min: 60 gtt/min 10 mcg/min: 75 gtt/min
Hydroxocobalamin	IV/IO		• Run 120 gtt/min for 15 min (1/2 vial or 100 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	Respiratory Distress (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL. • Add 2 mL (1 g) to 100 mL NS.	• Run 67 gtt/min (100 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 10 mg/mL • Add 2 mL (1 g) to 100 mL NS.	
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 200 mg/mL • Waste 4 mL from 10-mL NS flush. • Replace with 4 mL (2 g) mag sulfate.	• Push 5.2 mL SLOWLY over 2 min.

7 – 9 years (53 – 64 lb) 24 – 29.9 kg

GREEN

BioTel PEDI-Guide

Weight (kg): 30 – 36.9		**Weight (lb): 66 – 81**		
Age: 10 – 11 years		**Length: 131 – 144 cm**		
Normal Vital Signs:	**HR 60 - 100**	**RR 12 - 20**	**SBP At least 90**	
DEFIBRILLATION: 55 → 110 → 110 - 260 Joules		CARDIOVERSION: 27 → 52 → 100 Joules		
OPA: 80 mm; NPA: 26 Fr	Laryngoscope: 3 Straight	Fluid Bolus (20 mL/kg): 700 mL		
ETT: 6.5 Cuffed; Depth: 18.5 – 19.5 cm		King: Size 3 Yellow; I-Gel: Size 3 Yellow		

Medication Administration

NAME	CONCENTRATION	DOSE	ROUTE	VOLUME
Acetaminophen	325 mg tab	325 mg	PO	1 tab
Adenosine 1st dose	3 mg/mL	3 mg	IV/IO	1 mL
Adenosine 2nd dose	3 mg/mL	6.6 mg	IV/IO	2.2 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone - Arrest	50 mg/mL	160 mg	IV/IO	3.2 mL
Amiodarone - VT w/ pulse	50 mg/mL	80 mg	IV/IO	1.6 mL
Atropine - Bradycardia	0.1 mg/mL	0.5 mg	IV/IO	5 mL
Calcium Chloride	100 mg/mL	650 mg	IV/IO	6.5 mL slow IVP
Dexamethasone	4 mg/mL	10 mg	IV/IO/IM/PO	2.5 mL
Dextrose 10%	0.1 g/mL	12.5 g	IV/IO	125 mL
Diphenhydramine	50 mg/mL	35 mg	IV/IO/IM	0.7 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.3 mg	**IM**	0.3 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.3 mg	**IV/IO**	3 mL
Epi Auto-Injector ADULT	1 mg/mL	0.3 mg	IM	Up to 3 units
Epi 1:1000 NEB - Croup	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	35 mcg	IV/IO/IM/IN	0.7 mL
Glucagon	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Glucose Gel	15 g/37.5 mL tube	15 g	BUCCAL	1 tube
Hydroxocobalamin	5 g/200 mL	2.5 g	IV	See back
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	16 mg	IO	0.8 mg
Magnesium Sulfate	**See Dilution Chart**	1320 mg	IV/IO	See back
Midazolam	10 mg/2 mL	5 mg	IM/IN	1 mL
Naloxone	1 mg/mL	2 mg	IV/IO/IM/IN	2 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Ondansetron	2 mg/mL	4 mg	**IV/IO**	2 mL
Ondansetron		1 full 4-mg **ODT** **OR** ½ of 8-mg **ODT**		
Sodium Bicarbonate 8.4%	1 mEq/mL	35 mEq	IV/IO	35 mL

10 – 11 years (66 – 81 lb)
30 – 36.9 kg

GREEN

BioTel PEDI-Guide

Medication Dilution and Drip Instructions

All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 8 mcg/mL • Add 2 mL (2 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 15 gtt/min 4 mcg/min: 30 gtt/min 6 mcg /min: 45 gtt/min 8 mcg/min: 60 gtt/min 10 mcg/min: 75 gtt/min
Hydroxocobalamin	IV/IO		• Run 120 gtt/min for 15 min (1/2 vial or 100 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	Respiratory Distress (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 20 mg/mL. • Add 4 mL (2 g) to 100 mL NS.	• Run 44 gtt/min (66 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 20 mg/mL. • Add 4 mL (2 g) to 100 mL NS.	
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 200 mg/mL • Waste 4 mL from 10-mL NS flush. • Replace with 4 mL (2 g) mag sulfate.	• Push 6.6 mL SLOWLY over 2 min.

10 – 11 years
(66 – 81 lb)
30 – 36.9 kg

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12 – 13 years (81.4 – 110 lb) 37 – 50 kg

BioTel PEDI-Guide				
Weight (kg): 37 – 50		**Weight (lb): 81.4 – 110**		
Age: 12 – 13 years		**Length: 131 – 144 cm**		
Normal Vital Signs:	**HR 60 - 100**	**RR 12 - 20**	**SBP At least 100**	
DEFIBRILLATION: 75 → 150 → 150 - 360 Joules		CARDIOVERSION: 40 → 80 → 160 Joules		
OPA: 80 mm; NPA: 28 Fr	Laryngoscope: 4 or 5	Fluid Bolus (20 mL/kg): 800 mL		
ETT: 7.0 Cuffed; Depth: 21 – 22.5 cm		King: Size 3 Yellow; I-Gel: Size 3 Yellow		
Medication Administration				
NAME	**CONCENTRATION**	**DOSE**	**ROUTE**	**VOLUME**
Acetaminophen	325 mg	650 mg	PO	2 tab
Adenosine 1st	3 mg/mL	4.2 mg	IV/IO	1.4 mL
Adenosine 2nd	3 mg/mL	8.4 mg	IV/IO	2.8 mL
Albuterol NEB	2.5 mg/3 mL	5 mg	NEB	6 mL
Amiodarone- Arrest	50 mg/mL	200 mg	IV/IO	4 mL
Amiodarone- VT w/ pulse	50 mg/mL	100 mg	IV/IO	2 mL
Atropine - Bradycardia	0.1 mg/mL	0.5 mg	IV/IO	5 mL
Calcium Chloride	100 mg/mL	800 mg	IV/IO	8 mL slow IVP
Dexamethasone	4 mg/mL	10 mg	IV/IO/IM/PO	2.5 mL
Dextrose 10%	0.1 g/mL	12.5 g	IV/IO	125 mL
Diphenhydramine	50 mg/mL	40 mg	IV/IO/IM	0.8 mL
Epinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Epi 1:1000 IM	**1 mg/mL**	0.4 mg	**IM**	0.4 mL
Epi 1:10,000 IV	**0.1 mg/mL**	0.4 mg	**IV/IO**	4 mL
Epi Auto-Injector ADULT	1 mg/mL	0.3 mg	IM	Up to 3 units
Epi 1:1000 NEB - Croup	1 mg/mL	5 mg	NEB	5 mL
Fentanyl	50 mcg/mL	40 mcg	IV/IO/IM/IN	0.8 mL
Glucagon	1 mg/mL	1 mg	IV/IO/IM/IN	1 mL
Glucose Gel	15 g/37.5 mL tube	15 g	BUCCAL	1 tube
Hydroxocobalamin	5 g/200 mL	2.5 g	IV	**See back**
Ipratropium	0.5 mg/2.5 mL	0.5 mg	NEB	2.5 mL
Lidocaine 2% - IO insertion	20 mg/mL	20 mg	IV/IO	1 mL
Magnesium Sulfate	**See Dilution Chart**	1600 mg	IV/IO	**See back**
Midazolam	10 mg/2 mL	10 mg	IM/IN	2 mL
Naloxone	1 mg/mL	2 mg	IV/IO/IM/IN	2 mL
Norepinephrine Drip	Refer to Dilution Chart on back and contact BioTel			
Ondansetron	2 mg/mL	4 mg	**IV/IO**	2 mL
Ondansetron		1 full 4-mg **ODT** **OR** ½ of 8-mg **ODT**		
Sodium Bicarbonate 8.4%	1 mEq/mL	40 mEq	IV/IO	40 mL

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All medication dilution instructions MUST use the proper START concentration to be accurate!

MEDICATION NAME	INDICATION (ROUTE)	DILUTION RECIPE	ADMINISTRATION INSTRUCTIONS
Epinephrine Drip	IV/IO	Start concentration: 0.1 mg/mL End concentration: 4 mcg/mL • Add 10 mL (1 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 30 gtt/min 4 mcg/min: 60 gtt/min 6 mcg /min: 90 gtt/min 8 mcg/min: 120 gtt/min 10 mcg/min: 150 gtt/min
Norepinephrine Drip	IV/IO	Start concentration: 2 mg/2 mL End concentration: 8 mcg/mL • Add 2 mL (2 mg) to 250 mL NS. • Use 60 gtt/mL set. • Call 780 for IV pump. • Contact BioTel.	2 mcg/min: 15 gtt/min 4 mcg/min: 30 gtt/min 6 mcg /min: 45 gtt/min 8 mcg/min: 60 gtt/min 10 mcg/min: 75 gtt/min
Hydroxocobalamin	IV/IO		• Run 120 gtt/min for 15 min (1/2 vial or 100 mL). • Use 20 gtt/mL set in kit. • Set timer!
Magnesium Sulfate	Respiratory Distress (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 20 mg/mL. • Add 4 mL (2 g) to 100 mL NS.	• Run 53 gtt/min (80 mL) for 15 min. • Use 10 gtt/mL set. • Set timer!
	TdP w/ pulse (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 20 mg/mL. • Add 4 mL (2 g) to 100 mL NS.	
	Pulseless TdP (IV/IO)	Start concentration: 5 mg/10 mL End concentration: 200 mg/mL • Waste 4 mL from 10-mL NS flush. • Replace with 4 mL (2 g) mag sulfate.	• Push 80 mL SLOWLY over 2 min.

12 – 13 years (81.4 – 110 lb) 37 – 50 kg