The University of Texas Southwestern Medical Center at Dallas/
BioTel EMS System

Emergency Medical Services

Guidelines for Therapy

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UTSW/BioTel EMS Medical Direction Team

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Guidelines Approved By:

March 9, 2015

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Medical Director

UTSW/BioTel EMS System: Guidelines for Therapy

Table of Contents

INTRODUCTION

Emergency Medical Services (EMS) is the practice of emergency medicine in the out-of-hospital environment. September 2010 saw the official acceptance of EMS Medicine as a recognized sub-specialty within the House of Medicine. Therefore, we in EMS have a responsibility as never before to accept this recognition and to practice our craft with precision and dedication.

This year marks the 40th anniversary of the funding of the UTSW BioTel EMS System. This federation of partnering cities has shared a common purpose for all these many years - to relieve suffering of those who may call upon as for aid as best we can.

These Clinical Operating Guidelines – borne of the joint collaboration of the clinical practitioners of the UTSW BioTel EMS System – reflect the current state of evidence of EMS Medicine practice.

We join in mutual commitment to the betterment of the human condition. It is hoped that through these Guidelines – and with refinements to come with the passing years – we may achieve this goal.

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DEFINITIONS & ABBREVIATIONS

Airway Pressure means the pressure created during airway ventilation. Positive airway pressure is created when ventilating a patient through BVM, CPAP, a supraglottic device, or an endotracheal tube.

Consider means an optional, but not required, step, procedure, or medication. In the context of a treatment guideline, the intervention may be appropriate for some patients, but not for others. Paramedics may consult with BioTel to determine the specific conditions under which they should implement a treatment consideration.

Delirium means an acute state of altered mental status, presumed to be caused by an organic (not psychiatric) condition, until proven otherwise. It differs from dementia, which is a slower, chronic alteration of mentation.

ECG Monitoring means continuous, 3-lead, electrocardiographic monitoring (a.k.a. "EKG Monitoring"). This is neither the same as nor a substitute for a 12-lead ECG when the latter is clinically indicated.

Emergency Detention means an arrest made by a peace officer in which the peace officer has probable cause to believe that the subject arrested is an immediate threat to him/herself or others and requires mental health services. (This replaces "APOWW" – Arrest by a Peace Office Without a Warrant.)

Endotracheal Intubation Attempt means the passage of an endotracheal tube past the patient's teeth.

ePCR means the electronic Patient Care Report. If an electronic PCR is unavailable, a paper PCR may be substituted.

$ETCO_2$ Monitoring means continuous, waveform capnography monitoring of end-tidal CO_2 (a.k.a. "Capnography", "Waveform Capnography").

High-risk Pregnancy/Delivery means a pre-term delivery, breech presentation, multiple births, meconium staining, placenta previa, placental abruption, prolapsed cord, nuchal cord, preeclampsia, eclampsia, maternal drug abuse, or lack of prenatal care.

Intrathoracic Pressure means the pressure created within the thoracic pressure during inhalation and exhalation. Positive intrathoracic pressure is created when providing assisted ventilation, or when there is abnormal air or fluid within the thoracic cavity (e.g. pneumothorax). Excessive positive intrathoracic pressure results in diminished ability to inflate the lungs, and also compresses the structures of the mediastinum, reducing venous return and cardiac output.

Oxygenation means the delivery to and enrichment of cells and tissues with oxygen. Sick or injured patients may require treatment for abnormalities of oxygenation, ventilation, or both of these separate-but-related processes. Excessive over-supplementation with high-flow oxygen may be harmful in certain clinical conditions.

Pediatric means anyone who has not reached his/her 14th birthday. For legal considerations, such as the right to give consent or to refuse treatment, a pediatric patient is anyone who has not reached his or her 18th birthday. For cardiac arrest and defibrillation, a pediatric means anyone who has not reached his/her 8th birthday. Unless otherwise specified, treatment guidelines and standing orders apply to both adults and children.

Perfusion means the delivery of oxygen to end-organs through the bloodstream. Hypoperfusion means abnormally decreased perfusion and is a critical feature of shock.

POC Glucose means a point-of-care blood glucose analysis using a portable glucometer (a.k.a. "D-stick", "fingerstick blood glucose", "capillary blood glucose").

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Return of Spontaneous Circulation (ROSC) means the return of a palpable pulse following resuscitation efforts.

Shock means a severe state of hypoperfusion, arising from a variety of causes, including cardiac emergencies (obstruction to blood flow and pump failure), hypovolemia (both hemorrhagic and non-hemorrhagic), sepsis, and neurological conditions.

SpCO Measurement/Monitoring means carbon monoxide (CO) co-oximetry measurement/monitoring.

SpO_2 Monitoring means continuous pulse oximetry monitoring (a.k.a. “Pulse Ox”, “Pulse Ox monitoring”, “Pulse Oximetry”).

Supraglottic Airway (SGA) means a device inserted into the supraglottic structures to indirectly oxygenate and ventilate a patient, without intubating the trachea. It is considered a type of Advanced Airway.

Ventilation means the mechanical transfer of air or oxygen from the outside environment into the airways, and the transfer of carbon dioxide from the body to the outside environment. Ventilation may occur spontaneously (driven by normal physiology), or artificially (driven by an outside entity, as when an EMS provider delivers a breath using BVM or other assisted ventilation modality).

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ADULT TREATMENT OVERVIEW

Basic Airway Management

EMS personnel often use bag-valve-mask (BVM) devices prior to or in conjunction with advanced airway placement. Ideally, ventilation with a BVM is a two- or three-person procedure. Proper BVM ventilation should follow this mnemonic:

C Cervical-spine control, where indicated

O Oral airway in place

P Proper head and neck positioning

E Elevate the jaw

S Seal the mask (two hands)

S Steady, slow, single-hand, 1- to 1.5-second squeeze, followed by quick release of the bag

O Oxygen supply sufficient and functioning properly

S Sellick's maneuver (cricoid pressure) (NOTE: No longer routinely recommended; may be helpful in some cases.)

Advanced Airway Management

Any approved supraglottic airway is a suitable alternative to endotracheal intubation for most adult patients. EMT-Basics may insert an approved supraglottic airway provided that:

- The Medical Direction Team approves their agency for this procedure.
- Every EMT-Basic within the agency attends an approved training course.
- The EMT-Basic inserts the supraglottic airway ONLY under the watchful eye of an agency paramedic.

Paramedics may attempt endotracheal intubation if it is impossible to ventilate or oxygenate the patient with less invasive methods, AND the patient's clinical condition is deteriorating. In situations that warrant endotracheal intubation but the patient's level of consciousness precludes ET tube insertion, contact BioTel for authorization to sedate the patient. (Refer to the **PHARMACOLOGICALLY-ASSISTED INTUBATION** Policy.)

EMS personnel must use assessment adjuncts to guide intubation decisions and to confirm advanced airway placement, with the following caveats:

1. Pulse oximetry - a valuable tool to detect occult hypoxia; a normal reading does not rule out respiratory distress or the need for airway management. This tool plays no role in confirming ET tube placement.

2. End-tidal CO_2 detectors ($ETCO_2$) - The use of continuous waveform capnography is MANDATORY for verifying initial advanced airway placement and for ongoing tube surveillance. Be aware that certain conditions (e.g. prolonged cardiac arrest, massive pulmonary embolus, and poor chest compressions) produce undetectable quantities of carbon dioxide.

Proper assessment and documentation of endotracheal intubation (for both the adult and the pediatric patient) requires the paramedic to:

1. Visualize the tube passing between the vocal cords (for oral intubation)
2. Verify that no sounds are heard over the stomach when ventilating the patient through the ET tube
3. Verify good, symmetrical, bilateral breath sounds when ventilating the patient through the ET tube
4. Observe the chest rising and falling with each ventilation

5. Confirm placement with waveform capnography (less sensitive in certain cardiac arrest situations)

Do not assume that an endotracheal tube is in either the correct or the incorrect position based on any one of these steps in isolation. Continue to re-evaluate every few minutes and particularly after patient movement.

If there is ANY doubt as to the appropriate placement of an endotracheal tube, REMOVE the tube and ventilate the patient using a BVM. Paramedics may make only one endotracheal intubation attempt per patient. If the single attempt is unsuccessful, paramedics should insert an approved supraglottic airway (SGA) or provide effective ventilation with a BVM. The Medical Direction Team defines an endotracheal intubation attempt as the passage of an endotracheal tube past the teeth.

Assisted Ventilation, $ETCO_2$, and Advanced Airways

The use of $ETCO_2$ monitoring with waveform analysis is helpful in titrating the rate and volume of assisted ventilation in critically ill patients, both intubated and non-intubated.

Excessive rates of assisted ventilation may be harmful, as overzealous positive pressure ventilation can impair venous return, cardiac output and cerebral perfusion in certain patients. Examples include: patients with hypovolemia, acute exacerbations of COPD or asthma, and other conditions that might already impair circulation (e.g. cardiac tamponade, tension pneumothorax, or severe hemorrhage). After endotracheal intubation, use a tidal volume equal to a gentle, **one-hand** squeeze of the BVM sufficient only to create visible chest rise.

Begin assisted ventilation at a rate of no more than 8 to 10 breaths per minute and judiciously adjust ventilation rates in an effort to keep capnography levels within normal limits. However, do not adjust ventilation rates during or after cardiac arrest and CPR. In cases of suspected hypovolemia, post-traumatic circulatory arrest, or severe pulmonary expiratory obstruction (e.g. asthma, COPD), reduce the rates to approximately 6 breaths per minute. In all of these situations, over-ventilation can be harmful and dangerous.

If assisted ventilation is still required after return of spontaneous circulation (ROSC) following cardiac arrest, ventilation rates should not exceed 10 to 12 breaths per minute. A transiently high $ETCO_2$ level during ROSC is to be expected. Do NOT over-treat this by attempting to reduce levels rapidly to within normal limits.

Electrocardiogram (ECG) Acquisition

Paramedics MUST acquire a **12-lead ECG** for any patient who meets EITHER of these criteria:

- A patient older than 20 years of age with ANY Acute Coronary Syndrome (ACS) signs & symptoms;

OR

- Any age patient with ACS signs & symptoms AND a history of:
  - Hypertension;
  - Cardiac disease;
  - Tobacco use;
  - Diabetes mellitus;
  - Severe obesity;
  - High cholesterol;
  - Recent recreational drug use.

When in doubt, obtain & transmit a **12-lead ECG**.

NOTE: Continuous, 3-lead, ECG monitoring is **NEITHER** the same as **NOR** a substitute for the acquisition and transmission of a 12-lead ECG.

Endotracheal Tube Medication Administration

Because of the lack of demonstrated benefit, endotracheal medication administration is no longer performed in the UTSW/BioTel EMS system.

Intranasal (IN) Medication Administration

The use of generic mucosal atomizer devices (MAD) allows paramedics to administer certain medications into the nose (IN). The device creates a medication mist that is deposited onto the mucosal surfaces. The drug is then rapidly absorbed into the bloodstream. Within the BioTel system, only the following medications may be administered intranasal (IN):

- diazepam (optional medication)(adults only)
- fentanyl (optional medication)
- glucagon
- midazolam (optional medication)
- naloxone
- ondansetron (optional medication)

Medications administered via the IN route require a higher concentration of drug in a smaller volume of fluid than is typically used IV/IO. In general, do not administer more than 1 mL of volume during a single IN dose. Do not administer medications IN if the patient's nose is bleeding, or if nasal congestion or nasal discharge is present. Nasal administration does not always work for every patient and is less likely to be effective if the patient has been abusing inhaled vasoconstrictors such as cocaine.

IV/IO Therapy

Normal Saline will be the only IV/IO fluid routinely used in the BioTel system.

- For routine IV placement, infuse the fluid at a TKO rate. Paramedics may substitute a saline lock for IV TKO.
- Certain hypotensive trauma patients, such as those suffering traumatic cardiac arrest, may respond to fluid run wide open (WO), until ROSC or other appropriate clinical response is attained.
- For patients requiring volume resuscitation, infuse 20 mL/kg boluses up to a total of 1,000 mL, with frequent reevaluation after each bolus.
- For shock patients with uncontrolled internal or external bleeding, administer only enough fluid to maintain a palpable radial pulse.

Document in the patient care record the amount of fluid administered in the prehospital setting.

Antecubital veins and external jugular veins are the access sites of choice for adults in cardiac arrest. Paramedics may access pre-existing central venous lines in critical cases, if the individual paramedic has the specialized knowledge and equipment to do so. Intraosseous (IO) access may be performed on critically ill or injured patients when fluids and/or medications are necessary. Do not establish IO access to replace **routine** IV access that is unsuccessful or difficult to establish.

Cardiac Arrest

Metronomes: Chest compressions performed at a rate of 100-120 compressions per minute are associated with the best survival and recovery outcomes. Use of a metronome (built-in or standalone) throughout the resuscitation is critical to maintain the optimal rate of chest compressions.

First responders using an automated external defibrillator (AED) should power on the device first and then place the hands-free defibrillation pads on the patient's bare chest as early as possible. Do not interrupt CPR while applying the pads. The **CARDIAC ARREST** Guidelines provide direction for determining the proper timing for delivering defibrillation shocks. In general, following all AED visual and voice prompts ensures optimal care.

When using a manual defibrillator, place the device in the PADDLES lead, not in Lead II upon first patient contact. Continue to use the PADDLES lead throughout the resuscitation attempt. Use the manual defibrillator in MANUAL mode throughout the resuscitation attempt, unless medical direction and the agency MOP specifically permit otherwise. If the patient appears to be in asystole, quickly check for loose or disconnected leads, check the power, and check the gain (signal strength). The American Heart Association (AHA) and the Medical Direction Team no longer recommend interrupting CPR to check multiple leads to confirm asystole.

During cardiac arrest, perfusion of the heart muscle itself falls dramatically once chest compressions have stopped. Perform compressions with minimal interruptions in order to ensure maximum myocardial perfusion. Keep pauses in chest compression to less than 10 seconds (less than 5 seconds for shocks). Only pause for rhythm analysis, shock delivery, and ventilations prior to advanced airway insertion (when performing standard 30:2 CPR (adults) or 15:2 CPR (infants and children)). Proper compression **depth** for adults and children at least 8 years of age is at least 2 inches (5 cm), ensuring that the chest is allowed to fully recoil between compressions (recoil/release is the phase of the compressions duty cycle that "primes the pump").

Compression-to-Ventilation Ratio		
	No Advanced Airway	**Advanced Airway in place**
Adult with BVM ventilation	30:2	100-120 continuous chest compressions per minute and 8 to 10 ventilations per minute delivered asynchronously, without pausing chest compressions (6 ventilations per minute for traumatic cardiac arrest)
Child with BVM ventilation	15:2	
Infant with BVM ventilation	15:2	

Perform therapy for medical CPR cases on-scene where you find the patient. Do not attempt to move the patient to the ambulance for at least 10 minutes, assuming there is no risk of harm to the patient or EMS personnel by remaining at that location. Moving medical CPR patients early in the resuscitation phase interrupts CPR and diminishes the chances of recovery.

Researchers have not clearly established a link between long-term outcome and advanced skills, such as medication administration and tracheal intubation. Studies demonstrate that tracheal tube insertion in the field produces unacceptably high misplacement or unrecognized esophageal placement rates in many systems. Other studies demonstrate that tracheal tube insertion may produce excessive interruptions in chest compressions, which decreases the likelihood of a successful outcome. For all of these reasons, proper ventilation with a BVM (with a naso- or oropharyngeal airway) is the ventilation method of choice during the first six minutes of CPR (3 cycles of 2 minutes each). Paramedics should not make any attempt at advanced airway insertion (endotracheal or supraglottic) until after performing at least 6 minutes of CPR, unless the patient actively regurgitates. If this occurs, make every effort to continue uninterrupted chest compressions during suctioning and advanced airway placement.

During defibrillation attempts, all rescue personnel EXCEPT for the chest compressor should clear the patient while charging the AED or manual defibrillator. The chest compressor should continue chest compressions during charging. When the AED or defibrillator is ready, the chest compressor should very briefly pause compressions for shock delivery. As soon as the shock has been delivered, the chest compressor will immediately resume compressions within 5 seconds or less. This is the ideal point to rotate chest compressors.

During transport, two rescuers must be present in the back of the ambulance regardless of whether or not the patient has regained spontaneous circulation or not.

MASS CASUALTY INCIDENTS

Contact BioTel as early as possible to insure adequate notification and preparation of the receiving facilities.

PEDIATRIC TREATMENT OVERVIEW

Age Definitions

Unless otherwise specified, the BioTel system defines a pediatric patient for treatment and transport purposes (e.g. drug dosing and hospital destination) as a child younger than his or her 14th birthday.

There are, however, two important **exceptions** to this definition, as applied to **Basic Life Support (CPR)** and to **electrical therapy** for ventricular fibrillation (VF) and pulseless ventricular tachycardia (pVT). For these specific guidelines, the system defines a pediatric patient as an infant or child younger than his/her **8th** birthday.

For **legal** considerations, such as the right to give consent or to refuse treatment, the system defines a pediatric patient as anyone younger than his or her 18th birthday.

Approximate, Normal Pediatric Vital Signs by Age

AGE	Approx. Wt. (kg)	Heart Rate (BPM)	Resp. Rate (BPM)	Systolic BP (mm Hg)
Premature	< 3	100 to 190	40 to 60	Difficult to measure
Term Neonate	3 to 4	90 to 190	30 to 60	50 to 70
6 Months	5 to 7	80 to 180	25 to 40	60 to 110
1 Year	10	80 to 150	20 to 40	70 to 110
3 to 4 Years	15	80 to 140	20 to 30	80 to 115
5 to 6 Years	20	70 to 120	20 to 25	80 to 115
7 to 8 Years	25	70 to 110	20 to 25	85 to 120
9 Years	30	70 to 110	20 to 25	90 to 125
11 to 12 Years	35	60 to 110	15 to 20	95 to 135

Mean normal Systolic BP (SBP) estimate (mm Hg): 80 + (2 X age in years)

Lowest limit of SBP to define hypotension (mm Hg): SBP less than 70 + (2 X age in years) = hypotension

Weight (kg) can be estimated from pediatric length-based resuscitation tape ***OR*** (8 + (2 X age in years))
NOTE: Some experts now suggest using (10 + (2 X age in years))

Pediatric Airway Management

Proper ventilation with a BVM is the ventilation method of choice for the pediatric patient. Use tidal volumes sufficient only to produce visible chest rise. Assisted ventilation with excessive rates or force may be harmful.

Endotracheal intubation may be attempted if it is impossible to ventilate or oxygenate the patient with less invasive methods AND the patient is rapidly deteriorating.

Refer to the Advanced Airway Management section in the **ADULT TREATMENT Overview** for guidance on the proper assessment and documentation of endotracheal intubation. If there is ANY doubt as to the appropriate placement of an endotracheal tube, REMOVE the tube and ventilate the patient using a BVM.

Paramedics may make only one endotracheal intubation attempt per patient. If the single attempt is unsuccessful, provide effective ventilation with a BVM. An attempt made by a paramedic student counts as the single attempt. The Medical Direction Team defines an endotracheal intubation attempt as the passage of an endotracheal tube past the teeth.

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Pediatric Cardiac Arrest

SPECIAL NOTE: AGE DEFINITIONS FOR PEDIATRIC CARDIAC ARREST & CPR DIFFER SLIGHTLY FROM STANDARD BIOTEL PEDIATRIC AGE DEFINITIONS FOR OTHER TREATMENT GUIDELINES.

For pediatric cardiac arrest, the following definitions apply to Basic Life Support (CPR) and electrical therapy (defibrillation):

- Infant: less than 1 year of age (before 1st birthday)
- Child: 1 to 8 years of age (between 1st birthday and 8th birthday)
- Adult: 8 years of age & older

A child who is 8 years of age or older is considered to be an ADULT for the purposes of BASIC Life Support and CPR. Paramedics should use adult CPR methods, adult defibrillation pads and adult shock doses during electrical therapy for VF/pVT. However, paramedics should treat children younger than the 14th birthday as "pediatric" patients when performing ADVANCED Life Support interventions, including drug dosing. All medication doses in pediatric cardiac arrest should be weight-based; a pediatric length-based resuscitation tape or an equivalent, weight-based reference tool may be used for rapid reference.

Metronomes: Chest compressions performed at a rate of 100-120 compressions per minute are associated with the best survival and recovery outcomes. Use of a metronome (built-in or standalone) throughout the resuscitation is critical to maintain the optimal rate of chest compressions.

During cardiac arrest, perfusion of the heart muscle itself falls dramatically once chest compressions have stopped. Perform compressions with minimal interruptions in order to ensure maximum myocardial perfusion. Keep pauses in chest compression to less than 10 seconds (less than 5 seconds for shocks). Only pause for rhythm analysis, shock delivery, and ventilations prior to advanced airway insertion (when performing standard 30:2 CPR (adults and children at least 8 years old) or 15:2 CPR (infants and children under 8 years of age)).

Proper compression **depth** for infants and children under 8 years of age is at least 1/3 the chest anteroposterior (AP) chest diameter. For infants under 1 year old, this is approximately 1½ inches (4 cm). For children 1 to 8 years old, this is approximately 2 inches (5 cm). For both age groups, it is imperative that the chest is allowed to fully recoil between compressions (recoil/release is the phase of the compressions duty cycle that "primes the pump").

Use of AEDs in Pediatric Patients

First responders using an automated external defibrillator (AED) should power on the device and place the special, hands-free pediatric dose-attenuating pads (if available) on the patient's bare chest as early as possible. (NOTE: these are not the same as and are NOT interchangeable with the pediatric defibrillation pads used with manual monitor-defibrillators.) Do not interrupt chest compressions while applying the pads. If the infant/child is small, pads may be placed on the front and back of the left side of the chest ("sandwich") as an alternative.

Pediatric dose-attenuating AED pads (if available) are preferable for children between the ages of the 1st birthday and up to 8 years or age. Consult with medical direction and agency MOPs regarding the use of adult AED pads for children between the ages of the 1st birthday and up to 8 years of age.

For children who have reached their 8th birthday or older, use adult AED pads.

Do not use an AED on infants under 1 year old. Instead, perform high-quality CPR at a 15:2 compression-to-ventilation ratio, pausing compressions for breaths, until advanced personnel arrive with a manual monitor-defibrillator and appropriate pediatric equipment (e.g. pediatric defibrillation pads).

The **CARDIAC ARREST** Guidelines provide direction for determining the proper timing of defibrillation shocks.

Continued on the next page…

Use of Manual Monitor-Defibrillators for Pediatric Patients

For paramedics using a manual defibrillator, power on the device and apply hands-free, pediatric defibrillation pads for all infants and children younger than the 8th birthday. Place the device in the PADDLES lead - not in Lead II – upon initial patient contact and continue to use the PADDLES lead and MANUAL mode throughout the resuscitation attempt. If the patient appears to be in asystole, quickly check for loose or disconnected leads, check the power, and check the gain (signal strength). The American Heart Association and the Medical Direction Team no longer recommend interrupting CPR to check multiple leads to confirm asystole.

Cardiac arrest in pediatric patients most commonly results from hypoxia. However, it is important to place all sick infants and children on the ECG monitor because heart rate is an indicator of distress or improvement. **Hypotension and bradycardia both indicate impending cardiac arrest.**

Begin CPR, starting with effective chest compressions at a rate of 100 to 120 per minute if the pediatric patient is unresponsive and:

a. There is no palpable pulse; **OR**
b. The pulse rate is less than 60 per minute with signs of hypoperfusion despite 60 seconds of gentle ventilation with supplemental oxygen.

Pediatric patients rarely need transcutaneous pacing (TCP). When necessary (e.g. bradycardia), place the pads anterior/posterior and contact BioTel for settings.

Pediatric Trauma

- Minimal on-scene time is critical for the injured pediatric patient.
- Consider the mechanism of injury, even if the child appears stable on initial assessment. Identifying the mechanism of injury is critical for triaging the pediatric trauma patient to the correct facility. Refer to the **DESTINATION** Policy, or contact BioTel for guidance.
- When necessary for initial pre-hospital fluid resuscitation of hypovolemic shock, paramedics may rapidly administer one bolus of Normal Saline 20 mL/kg. Reassess vital signs and response. If necessary, repeat the 20 mL/kg rapid infusion once. Between fluid boluses, set the IV/IO drip rate at TKO. Do not run IV/IO fluids wide open in children. Additional fluid boluses require BioTel authorization.

Pediatric Fluid Therapy

- **IV: Microdrip** set for IV infusion for patients less than 20 lb. (10 kg); regular set if at least 20 lb. (10 kg).
- **IO: Regular tubing** set for intraosseous (IO) infusion, regardless of the patient's age.

Pediatric Standing Orders

For the majority of treatment guidelines, standing orders for pediatric patients are the same as those for adults. Exceptions to standing orders for pediatric patients include congestive heart failure. Contact BioTel for assistance and guidance at any time there are questions or concerns, even when standing orders address the situation.

Pediatric Doses

- **These treatment guidelines list pediatric medication doses as mL/kg and/or mg/kg. In order to avoid potentially harmful medication errors, it is critical to pay close attention to pediatric drug dosing guidelines, especially to avoid confusing "mg/kg" and "mL/kg".**
- The maximum dose (TOTAL amount that may be given to a patient) for all drugs never exceeds the maximum (TOTAL) adult dose. For assistance in selecting the correct dose and/or route of administration, contact BioTel, or use the length-based Pediatric Emergency Tape, or an equivalent weight-based reference tool.

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ALLERGIC REACTION

Inclusion Criteria: Patients presenting with rash, hives, shortness of breath, or other signs and symptoms, up to and including shock, apparently due to an allergic reaction. For Dystonic Reactions, please refer to #11 of these guidelines.

Basic Level

1. Assess and support ABCs. Ensure the airway is patent. Proceed with BVM ventilation and an oropharyngeal or nasopharyngeal airway, if needed.

2. Place the patient in a position of comfort. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor the patient's airway status.

3. Isolate the patient from the source of the allergen, if possible.

4. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

5. Assess breath sounds. If wheezing is present and paramedics are not present at the scene, EMT-Basics may administer epinephrine via the patient's own autoinjector, if available.
    a. During injection, hold the autoinjector against the patient's skin for at least 10 seconds.
    b. EMT-Basics may not administer additional autoinjector doses of epinephrine without BioTel authorization.

Advanced Level

6. Continuously monitor ECG and $ETCO_2$ if respiratory distress or shock is present, anticipated, or develops.

7. Consider establishing IV access at a TKO rate or use a saline lock.

8. Specific conditions:

If localized reaction only (hives), administer:	
Adult	**Pediatric**
• Diphenhydramine 25 – 50 mg IM or IV/IO.	• Diphenhydramine 1 – 2 mg/kg IM or IV/IO: o **For IM administration:** o Do not dilute; o Administer 1 to 2 mg/kg (0.02 to 0.04 mL/kg). o **For IV/IO administration:** o Dilute 50 mg (1 mL) with 9 mL Normal Saline to a final concentration of 5 mg/mL; o Administer 1 to 2 mg/kg (0.2 to 0.4 mL/kg).

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If shock, severe hypoperfusion, critical airway or SBP less than 90 mmHg (70mmHg + [Age x 2] in children), administer epinephrine 1:1,000 IM (intramuscular is preferred in this setting) as soon as possible. Do not delay epinephrine administration while attempting IV/IO access.	
Adult • Administer 1:1,000 epinephrine 0.3 mg – 0.5 mg IM. If the patient is responding but needs an additional dose, repeat single dose every 20 minutes up to a maximum total three doses (count autoinjector doses as part of the three). • 20 mL/kg mL Normal Saline fluid boluses IV/IO, as needed (up to 1,000 mL), to maintain a systolic blood pressure of 90 mmHg. • Diphenhydramine 25 – 50 mg IV/IO. • Administer methylprednisolone 125 mg IV/IO, if available (optional medication). • If no response to the IM epinephrine and fluid bolus within 10 minutes, administer 1:10,000 epinephrine 0.1 – 0.2 mg IV or IO (1 – 2 mL) VERY SLOWLY (over 1 minute).	**Pediatric** • Administer 1:1,000 epinephrine 0.01 mg/kg IM (0.01 mL/kg) (maximum dose is 0.3 mg); **AND** • 20 mL/kg Normal Saline fluid bolus IV/IO. o May repeat once (do not exceed total maximum fluid volume of 1 L); **AND** • Administer diphenhydramine 1 – 2 mg/kg IM or IV/IO: • **For IM administration:** o Do not dilute; o Administer 1 to 2 mg/kg (0.02 to 0.04 mL/kg). • **For IV/IO administration:** o Dilute 50 mg (1 mL) with 9 mL Normal Saline to a final concentration of 5 mg/mL; o Administer 1 to 2 mg/kg (0.2 to 0.4 mL/kg). **AND** • Administer methylprednisolone IV/IO, if available (optional medication) – Reconstitute 125 mg in 2 mL (as supplied), then dilute with 8 mL Normal Saline to a final volume of 10 mL (12.5 mg/mL); Administer IVP/IO : • Age less than 1 yr: 12.5 mg (1 mL) • Age 1 to 3 yr: 25 mg (2 mL) • Age 3 to 5 yr: 37.5 mg (3 mL) • Age 5 to 9 yr: 50 mg (4 mL) • Age 9 to 13 yr: 62.5 mg (5 mL) • If no response to IM epinephrine and fluid bolus within 10 minutes, administer 1:10,000 epinephrine 0.01 mg/kg IV or IO (0.1 mL/kg) VERY SLOWLY (over 1 minute).
For bronchospasm unresponsive after 5 minutes to epinephrine IM and diphenhydramine, administer albuterol 2.5 mg via nebulizer. May repeat up to a cumulative total of three (3) doses.	

9. Monitor vital signs and transport.

10. For additional patient care considerations not covered under standing orders, consult BioTel.

11. Acute dystonic reaction may occur in patients using neuroleptic drugs, particularly antipsychotic medications (e.g. haloperidol, risperidone). **Patients treated for dystonic reaction must be assessed by a qualified medical provider in a medical facility.**

For Acute Dystonic Reaction caused by an anti-psychotic medication, administer:	
Adult • Diphenhydramine 25 – 50 mg IM or IV/IO.	**Pediatric** • Diphenhydramine 1 – 2 mg/kg IM or IV/IO. o See above or the Drug Sheet for dosing details.

ALTERED LEVEL OF CONSCIOUSNESS

Inclusion criteria: Patients who are disoriented, weak, dizzy, confused, suffered a syncopal episode, or are unconscious. In these guidelines, hypoglycemia is defined as a POC glucose analysis of:
Adult: less than 80 mg/dL (non-diabetic), ***OR*** less than 110 mg/dL or symptomatic (diabetic);
Pediatric: less than 70 mg/dL (non-diabetic), ***OR*** less than 70 mg/dL or symptomatic (diabetic).
NOTE: Known diabetics may be symptomatic at a higher POC glucose level.

NOTE: Never administer dextrose to a patient who is NOT hypoglycemic. If the patient's level of consciousness is altered, and a POC glucose analysis is normal, search for alternative causes. Additional information is available at the bottom of these guidelines, on the next page. Refer to **NEONATAL** Guidelines for newborn care.

SPECIAL NOTE: The use of naloxone should be restricted to patients suspected of opioid narcotic overdose AND hypoventilation and/or hypoxia, AND pinpoint pupils. Its use outside of these indications may cause undesirable narcotic withdrawal.

Basic Level

1. Assess and support ABCs. If trauma is suspected, refer to the **SPINAL MOTION RESTRICTION** Policy to immobilize the spine & refer to the **TRAUMA** Guidelines.

2. If there is no evidence of trauma, place the patient in a position of comfort or in the left lateral position. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor the airway.

3. Administer oxygen, as needed, to maintain SpO_2 of at least 94%.

4. If hyperthermia is suspected, monitor the patient's temperature frequently. Be prepared to cool the patient aggressively, but do not cause shivering.

5. Perform a POC glucose analysis.
   a. If the adult patient is hypoglycemic but responsive AND able to protect his or her airway, administer 1 tube (15 g) oral glucose SL. (Pediatric patient 1 to 13 years old: administer ¼ - ½ tube SL.)
   b. If symptoms persist after 10 minutes, administer a second tube (15 g) of oral glucose SL. (Pediatric patient 1 to 13 years old: administer ¼ - ½ tube SL.)

Advanced Level

6. Consider establishing IV access at a TKO rate or use a saline lock. If the patient is hypotensive, treat according to **SHOCK** Guidelines.

7. If the patient is hypoglycemic AND . . .

. . . the level of consciousness does not improve with oral glucose, or if oral glucose could not be given, administer:		
At least 14 years of age (or over 50 kg) • 50% dextrose, 50 mL (25 grams) IVP/IO. • If symptoms and/or hypoglycemia persist after 10 minutes, administer an additional 25 grams (50 mL).	**1 year to 13 years of age** • 25% dextrose 2 mL/kg IVP/IO (waste 25 mL of D50; replace with 25 mL Normal Saline). • If symptoms and/or hypoglycemia persist after 10 minutes, administer an additional 2 mL/kg IVP/IO.	**Less than 1 year of age** • 10% dextrose 5 mL/kg IVP/IO (waste 40 mL of D50; replace with 40 mL Normal Saline). • Contact BioTel. • Newborn under 1 month of age: administer only 2 mL/kg.

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. . . IV or IO access cannot be obtained, administer:		
At least 14 years of age • Glucagon 1 mg IM, IN or SQ. • May repeat once after 20 min.	**1 year to 13 years of age** • Glucagon 1 mg IM, IN, or SQ. • May repeat once after 20 min.	**Less than 1 year of age** • Glucagon 0.5 mg IM, IN, or SQ. • May repeat once after 20 min.

8. All patients treated under these guidelines must have continuous cardiac monitoring. If a dysrhythmia develops, treat accordingly under its specific guidelines. Patients with continued altered mentation should also have $ETCO_2$ monitoring.

9.

If there is evidence of opioid narcotic use, with altered mental status, hypoventilation and/or hypoxia, AND pinpoint pupils, administer:	
Adult • Naloxone 0.4 mg every 5 minutes via IN or SLOW IVP or IO until the respiratory rate improves and the patient can maintain a SpO_2 of at least 94%, **OR** until 2 mg have been given.	**Pediatric** • Naloxone 0.1 mg/kg via IN or SLOW IV Push or IO (maximum single dose 0.4 mg) until the respiratory rate improves and the patient can maintain a SpO_2 of at least 94%, **OR** until 2 mg have been given.
If unable to establish IV access or if IN administration is not possible, administer the naloxone IM.	

10. If the respiratory rate or oxygen saturation does not improve with a full naloxone dose, secure and monitor the patient's airway with an advanced airway, discontinue naloxone use, and proceed in the algorithm.

11.

If altered mental status with bradycardia is caused by beta-blocker toxicity, administer:	
Adult • Glucagon 1 mg – 5 mg IVP/IO over 2 to 5 min, OR 1 mg IM or IN. • May repeat once after 20 minutes.	**Pediatric** • Glucagon 0.5 mg (under age 1 yr) or 1 mg (at least one year of age) IV/IO, IM, or IN. • May repeat once after 20 minutes.

12.

If altered mental status with bradycardia is caused by calcium-channel blocker toxicity, administer:	
Adult • Calcium chloride, 10 – 15 mg/kg slow IVP/IO. (optional medication)	**Pediatric** • Contact BioTel for authorization and dosing (risk of phlebitis). (optional medication)

13. For patients with excited delirium, refer to **EXCITED DELIRIUM** Guidelines.

14. Monitor vital signs and attempt to transport.

15. For additional patient care considerations (e.g. other drug toxicities) not covered under standing orders, consult BioTel.

Notes:
- If the patient becomes alert and oriented after glucose/glucagon administration, do NOT administer naloxone.
- If the patient does not respond to glucose/glucagon & naloxone, consider other causes of altered LOC.
- Do not attempt to restore full consciousness in patients with evidence of narcotic use. Titrate naloxone administration to restore adequate ventilatory status, or to a SpO_2 of at least 94%.
- Transport any patient taking any medication combination that includes glipizide (Glucotrol®) or other sulfonylureas (Dymelor® [acetohexamide], Diabinese® [chlorpropamide], Orinase® [tolbutamide], or Tolinase® [tolazamide]) if hypoglycemia is present in the field, as these agents are cleared very slowly from the bloodstream and necessitate physician evaluation.

AMPUTATION

Inclusion Criteria: Patients with isolated amputation of any extremity. EMS personnel may also need to refer to **SHOCK** and/or **PAIN MANAGEMENT** Guidelines, and/or the **TOURNIQUET** Policy.

Basic Level

1. Assess and support ABCs. If the initial assessment is abnormal, minimize scene time. Continue treatment guidelines en route.

2. If trauma or possible spinal injury is suspected, initiate spinal motion restrictions; refer to the **SPINAL MOTION RESTRICTION** Policy. If spinal injury is not suspected, place the patient in a position of comfort. If evidence of shock, place the patient supine with the feet elevated and monitor airway closely. Treat shock according to the **SHOCK** Guidelines.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

4. Attempt to control any obvious external hemorrhage with direct pressure. If unable to control hemorrhage with direct pressure, apply a tourniquet. Refer to the **TOURNIQUET** Policy.
    a. Improvised tourniquets applied by bystanders and non-medical personnel prior to EMS arrival are not a substitute for a commercial device properly applied by UTSW/BioTel EMS providers.
        i. In such cases, a BioTel agency-approved commercial tourniquet should be applied (but not secured) proximal to the improvised device prior to its removal, if possible. If hemorrhage uncontrolled by direct pressure reoccurs after removal of the improvised device, the commercial tourniquet shall be deployed using the procedure described in the **TOURNIQUET** Policy.

5. Care of the amputated part:
    a. Remove gross contaminants by rinsing with Normal Saline.
    b. Wrap in moistened saline gauze and place in a plastic bag or container (sterile, if available).
    c. Seal the container tightly and place it in a solution of ice water, if available.
    d. Bring all amputated parts to the hospital, regardless of the condition of the part.
    e. If EMS personnel cannot locate the part immediately, transport the patient and instruct other field providers to search for and transport the part as soon as possible.

6. Begin transport as soon as possible: refer to the **DESTINATION** Policy.

Advanced Level

7. Consider establishing IV access at a TKO rate or use a saline lock.

8. Implement continuous ECG and $ETCO_2$ monitoring if shock is present, anticipated, or develops.

9. Follow **PAIN MANAGEMENT** Guidelines.

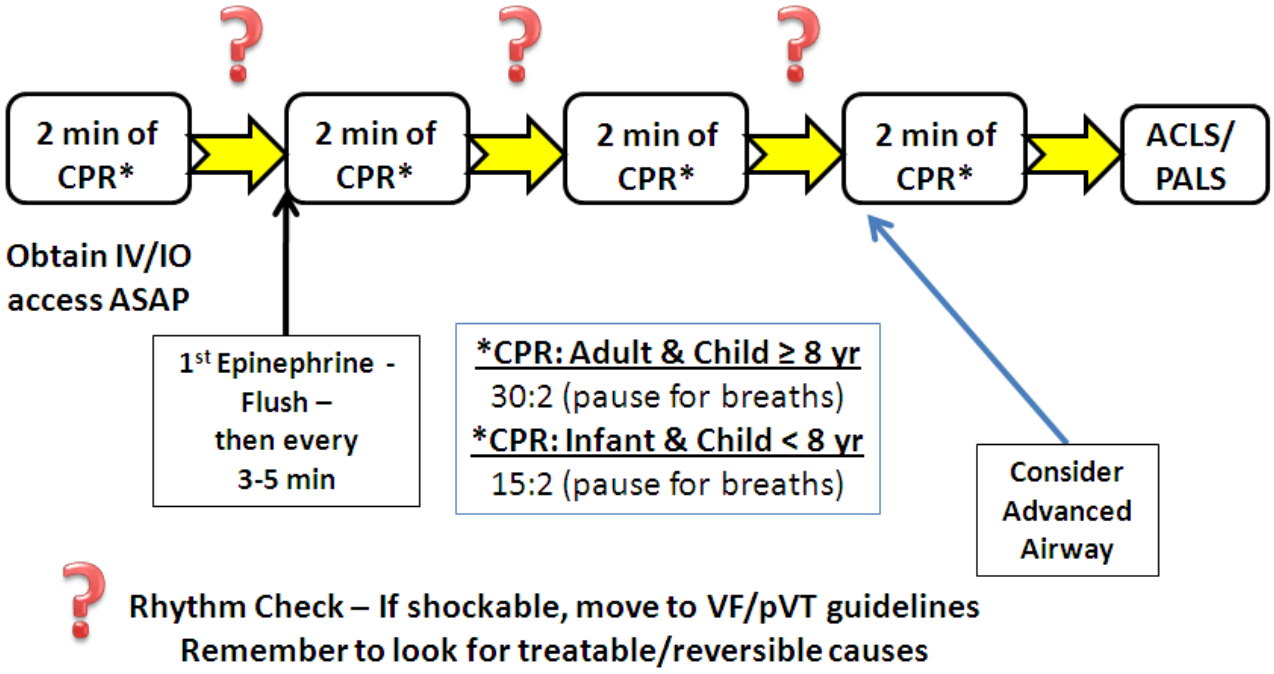
10. For guidance with tourniquet removal, refer to the **TOURNIQUET** Policy and consult BioTel.

11. For additional patient care considerations not covered under standing orders, consult BioTel.

ASYSTOLE/PULSELESS ELECTRICAL ACTIVITY (PEA)

Inclusion Criteria: Apneic, pulseless patients not in ventricular fibrillation or ventricular tachycardia. These guidelines do not apply to patients for whom a resuscitation attempt is not indicated (refer to **DETERMINATION OF DEATH IN THE FIELD** Policy). If the patient's cardiac rhythm changes at any time during resuscitation, refer to the appropriate, specific guidelines.

NOTE: ALS units may discontinue resuscitation attempts in victims of blunt or penetrating traumatic cardiac arrest if no signs of life are present **AND** the patient remains in asystole.



Advanced Level

1. Assess and support vital functions including provision of immediate and consistent high-quality CPR. Chest compressions are the first priority, consistent with the AHA's "C-A-B" resuscitation method. Apply ECG pads and $ETCO_2$ monitors. Perform all resuscitation maneuvers with the monitor/defibrillator in manual mode and the PADDLES lead.
    a. Some agencies may use the manual monitor-defibrillator in AED mode for ADULTS only, depending on proper AED mode configuration, agency MOP, and specific authorization from EMS Medical Direction.
    b. Obtain vascular access as soon as possible, but access does **NOT** take priority over chest compressions or application of the defibrillator.
    c. Avoid over-ventilation!
    d. Do not attempt placement of an advanced airway (supraglottic or endotracheal) for at least 6 minutes – not until completing three 2-minute CPR cycles – unless necessary because of regurgitation. Advanced airway insertion MUST NOT interrupt chest compressions.

2. Confirm asystole (if suspected) by checking for loose lead connections, monitor power, and signal gain. The AHA and the Medical Direction Team no longer recommend checking for asystole in multiple leads.

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3. **Administer epinephrine 1:10,000:**

Adult	Pediatric
• 1 mg IVP or IO every 3 to 5 minutes.	• 0.01 mg/kg IVP or IO (0.1 mL/kg) every 3 to 5 minutes.

4. If any of the following causes of asystole and PEA is suspected, initiate standing order treatment ASAP:
   a. **Hypoxia** – Ventilate with 100% oxygen; confirm proper advanced airway position with continuous waveform capnography ($ETCO_2$ monitoring).
   b. **Hypothermia** – Protect from further cooling; do not actively rewarm; administer only 1 round of resuscitation drugs.
   c. **Overzealous ventilation** – Provide only 8 to 10 breaths per minute over 1 second each, using a one-handed squeeze of the BVM. Low $ETCO_2$ may indicate both overzealous ventilation and/or ineffective chest compressions.

   d. **Hypovolemia - Infuse Normal Saline IV or IO:**

Adult	Pediatric
• 20 mL/kg boluses, as needed (up to 1,000 mL total cumulative volume).	• 20 mL/kg bolus. May repeat twice, as needed, unless DKA or unless signs of volume overload develop (e.g. rales, JVD). • Contact BioTel for additional boluses.

   e. **Hyperkalemia** (renal failure or dialysis) or **pre-existing acidosis** (renal failure, dialysis, methanol ingestion, aspirin overdose) or **tricyclic antidepressant overdose:**

Adult and Pediatric
Sodium bicarbonate 1 mEq/kg IV Push or IO

   f. **Narcotic overdose:**

Adult	Pediatric
• Naloxone 2 mg IV Push or IO.	• Naloxone 0.1 mg/kg IV Push or IO. • Contact BioTel for repeat dosing.

   g. **Beta-blocker overdose:**

Adult	Pediatric
• Glucagon 1 mg – 5 mg IV/IO/IM/IN. • May repeat once after 20 minutes.	• Glucagon 0.5 mg (under age 1 yr) or 1 mg (at least one year of age) IV/IO, IM, or IN. • May repeat once after 20 minutes.

   h. **Calcium channel blocker overdose**

Adult	Pediatric
• Calcium chloride (10%) solution: 10 mg/kg – 15 mg/kg IV Push or IO (0.1-0.15 mL/kg). (optional medication)	• Contact BioTel for authorization and dosing (risk of phlebitis). (optional medication)

   i. **Tension pneumothorax - Pneumothorax AND Hemodynamic Instability**

Adult	Pediatric
• Perform needle thoracostomy. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.	• Perform needle thoracostomy. • Contact BioTel as soon as possible. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.

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5. **If the resuscitation attempt is prolonged (greater than 15 minutes), consider:**

Adult	Pediatric
• Sodium bicarbonate 1 mEq/kg slow IVP or IO; *AND/OR* • Calcium chloride (10%) solution, 10 – 15 mg/kg (0.1 – 0.15 mL/kg) IV Push/IO. (optional medication)	• Sodium bicarbonate 1 mEq/kg slow IV Push or IO. • Contact BioTel for additional recommendations.

6. In the event of return of spontaneous circulation, refer to **POST-CARDIAC ARREST CARE** Guidelines.

7. If there is no response to therapy and no evidence of reversible causes of asystole or PEA, consider terminating all resuscitation efforts in the field. Refer to the **Termination of Resuscitative Efforts** section of the **DETERMINATION OF DEATH** Policy.

8. For additional patient care considerations not covered under standing orders, consult BioTel.

BRADYCARDIA

Inclusion Criteria: Patients with a heart rate less than 60 beats per minute. These guidelines are not intended for patients with compensated bradycardia who exhibit signs of increased intracranial pressure (refer to **STROKE** or **TRAUMA** Guidelines). Consider drug or other overdose, and refer to the **ALTERED LOC** Guidelines.

SPECIAL NOTE: In young, generally healthy patients, bradycardia may result from hypoxia. DO NOT use these guidelines unless hypoxia has been treated or excluded from the differential diagnosis.

Basic Level

1. Assess and support ABCs.
2. Place the patient in a position of comfort. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor airway status.
3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.
4. If chest pain is present or develops, treat the pain under the **CHEST PAIN** Guidelines while continuing these guidelines.
5. Once advanced level care arrives on scene, give report and transfer care.

Advanced Level

6. Continuous ECG monitoring. Use capnography if the patient is hypotensive. Obtain a 12-Lead ECG and consult with BioTel, as needed. (Do NOT delay care of the unstable patient to obtain a 12-lead ECG.)
7. Establish IV/IO access at a TKO rate or use a saline lock. (Do not delay care of the unstable patient to initiate vascular access.) Then, proceed to one of the following pathways below, either A, B or C:

A. FOR STABLE PATIENTS:

8. Monitor vital signs, neurologic status, and ECG, and transport as soon as possible.
9. For additional patient care considerations not covered under standing orders, consult BioTel.

B. FOR UNSTABLE PATIENTS (low BP, altered LOC, shock, chest pain, acute heart failure):

8. **If signs or symptoms of hypoperfusion are present or develop:**

Adult	Pediatric
• Begin transcutaneous pacing (TCP) immediately for 3rd-degree heart block. o Do NOT pace 1st- or 2nd-degree heart block, unless the patient shows signs and symptoms of hypoperfusion. o Refer to the Guidelines below (next page) for sedation and for pacer settings.	• Ventilate with 100% oxygen for one full minute at 12-20 breaths per minute. **Avoid over-ventilation.** • If the pulse rate is still less than 60 after adequate ventilation, perform chest compressions and administer: o Epinephrine (1:10,000) 0.01 mg/kg IV/IO push (0.1 mL/kg). o Consider atropine 0.02 mg/kg (minimum dose 0.1 mg) IV/IO push (0.2 mL/kg). o May repeat once to a maximum cumulative dose of 1 mg.

Transcutaneous Pacemaker Guidelines - ADULTS ONLY (Contact BioTel for pediatric patients.)

- If the patient is conscious, administer:
  - Diazepam 2.5 mg – 5 mg slow IV/IO/IM/IN prior to pacing. May repeat once.

  OR
  - Midazolam 2.5 mg – 5 mg slow IV/IO/IM/IN prior to pacing. May repeat once.
  - Contact BioTel for additional dosing authorization.

- Set TCP rate at 60 beats per minute.
  Set TCP milliamps. Increase until electrical capture achieved. Evaluate for mechanical capture (palpable carotid pulse). Once capture is achieved, increase milliamp setting by 5 milliamps. If TCP is unsuccessful, turn off TCP and continue this treatment guideline.

9. Continuously monitor vital signs, neurologic status, ECG, SPO_2, and ETCO2, and transport.

10. For additional patient care considerations not covered under standing orders, consult BioTel.

C. FOR PATIENTS WITH BRADYCARDIA SUSPECTED OF BEING CAUSED BY OVERDOSE OF A BETA-BLOCKER OR CALCIUM CHANNEL-BLOCKER:

8. **If altered mental status with bradycardia caused by beta-blocker toxicity, administer:**

Adult	Pediatric
• Glucagon 1 mg – 5 mg IVP/IO over 2 to 5 min, OR 1 mg IM or IN. • May repeat once after 20 minutes.	• Glucagon 0.5 mg (under age 1 yr) or 1 mg (at least one year of age) IV/IO, IM, or IN. • May repeat once after 20 minutes.

9. **If altered mental status with bradycardia caused by calcium-channel blocker toxicity, administer:**

Adult	Pediatric
• Calcium chloride, 10 – 15 mg/kg slow IVP/IO. (optional medication)	• Contact BioTel for authorization and dosing (risk of phlebitis). (optional medication)

10. Monitor vital signs, neurologic status, ECG, SpO_2, $ETCO_2$, and transport.

11. For additional patient care considerations not covered under standing order, consult BioTel.

12. Additional information on these agents may be found in the **PHARMACOLOGY** section.

BURNS

Inclusion Criteria: Adult or pediatric patients with thermal, chemical, and/or electrical burns, and/or those who have sustained inhalation injuries. Hypotension in the presence of burns suggests other trauma. Refer to the **TRAUMA** guidelines, as needed. Aggressive pain management, monitoring of airway patency and temperature control to prevent hypothermia are critical.

Basic Level

1. Assess and support ABCs. Look closely for evidence of inhalation injury (hoarseness, stridor, sooty sputum, facial burns, or singed nasal or facial hair) and be prepared to manage the airway aggressively.

2. Is spinal injury is suspected, initiate spinal motion restrictions; refer to the **SPINAL MOTION RESTRICTION** Policy. If spinal injury is not suspected, place the patient in a position of comfort. If there is evidence of shock, place the patient supine with the feet elevated, if tolerated, and closely monitor the airway. Treat shock according to the **SHOCK** Guidelines.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

4. Remove and secure any jewelry, belts, shoes and other items from burned areas. Remove burned or singed clothing that is not stuck to the skin. Remove contact lenses, if possible, especially for facial burns and/or chemical exposure.

5. Control any obvious external hemorrhage. Prevent hypothermia and initiate care for burn wounds:
   a. Chemical injury – Brush off dry chemical and flush with water to remove any residual chemical.
   b. Thermal injury – Apply dry sterile dressings.

6. Begin transport as soon as possible. Major and moderate burns require transport to a burn center*.

Advanced Level

7. IV fluid resuscitation, as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by BioTel. Contact BioTel for fluid orders in patients with congestive heart failure, cardiac disease, or age greater than 65 years.

8. Apply continuous ECG and $ETCO_2$ monitors, if respiratory distress or shock is present, anticipated or develops. Monitor carbon monoxide (SpCO) levels, if possible, especially for closed-space and suspected inhalation injury. ECG monitoring is mandatory if electrical injury is present or suspected.

9. Follow **PAIN MANAGEMENT** Guidelines.

10. For additional patient care considerations not covered under standing orders, consult BioTel.

***Patients Requiring Transport to a Burn Center**

- Burns greater than 10% of total body surface area (TBSA), regardless of the depth
- Burns of face, eyes, ears, hands, feet, genitalia, perineum, or involving major joints
- Full-thickness (3rd-degree) burns of any size in any age patient
- Electrical burns (including lightning)
- Chemical burns
- Inhalation injury (including smoke inhalation)
- Burns associated with traumatic injuries (e.g., fractures)
- Burns in patients with pre-existing medical conditions or comorbidities (e.g. elderly, immunosuppressed, diabetic, cardiac history, etc.)
- Burns in patients needing special social, emotional, or rehabilitative intervention

CARBON MONOXIDE EXPOSURE

Purpose: These guidelines will provide direction for EMS responders using transcutaneous carbon monoxide (CO) monitors (optional equipment) while treating patients, or while monitoring firefighter exposure at the fire ground.

SPECIAL NOTE: Some patients may exhibit low CO readings and yet may still be symptomatic to various degrees. Always treat according to the patient's symptoms. In cases of severe carbon monoxide intoxication, Texas Health Presbyterian Hospital Dallas is equipped with a hyperbaric chamber.

1. **INDICATIONS FOR MEASUREMENT OF CARBON MONOXIDE LEVELS:**
   - Smoke inhalation
   - Thermal burns
   - Altered level of consciousness with no clearly identifiable cause
   - Assessment of fire ground personnel (e.g. fires, hazardous materials incidents, hydrocarbon-powered equipment in a closed environment)

2. **CLINICAL PRESENTATION ACCORDING TO SpCO LEVEL:**

SpCO level	Clinical Manifestations	Fire Rehab Considerations
> 5%	Mild headache	Refer to your agency SOPs
10%	Mild headache, shortness of breath with exertion	
10% - 20%	Moderate headache, shortness of breath	
20% - 30%	Worsening headache, nausea, dizziness, fatigue	
30% - 40%	Severe headache, vomiting, vertigo, altered judgment	
40% - 50%	Confusion, syncope, tachycardia	
50% - 60%	Seizures, shock, apnea, coma	

3. **SPECIAL NOTE:**

   Always confirm a high reading by measuring on more than one finger on each hand. If the values differ significantly, use an average reading.

4. **CONCURRENT USE OF PULSE OXIMETRY AND CAPNOGRAPHY:**

   Transcutaneous carbon monoxide monitoring devices (carbon monoxide co-oximetry) may be used concurrently with both pulse oximetry (SpO_2) and capnography ($ETCO_2$) monitoring. The pulse oximetry device cannot discriminate between oxygen and carbon monoxide. **Therefore, a patient may exhibit a normal SpO_2 reading when serious carbon monoxide intoxication is present.**

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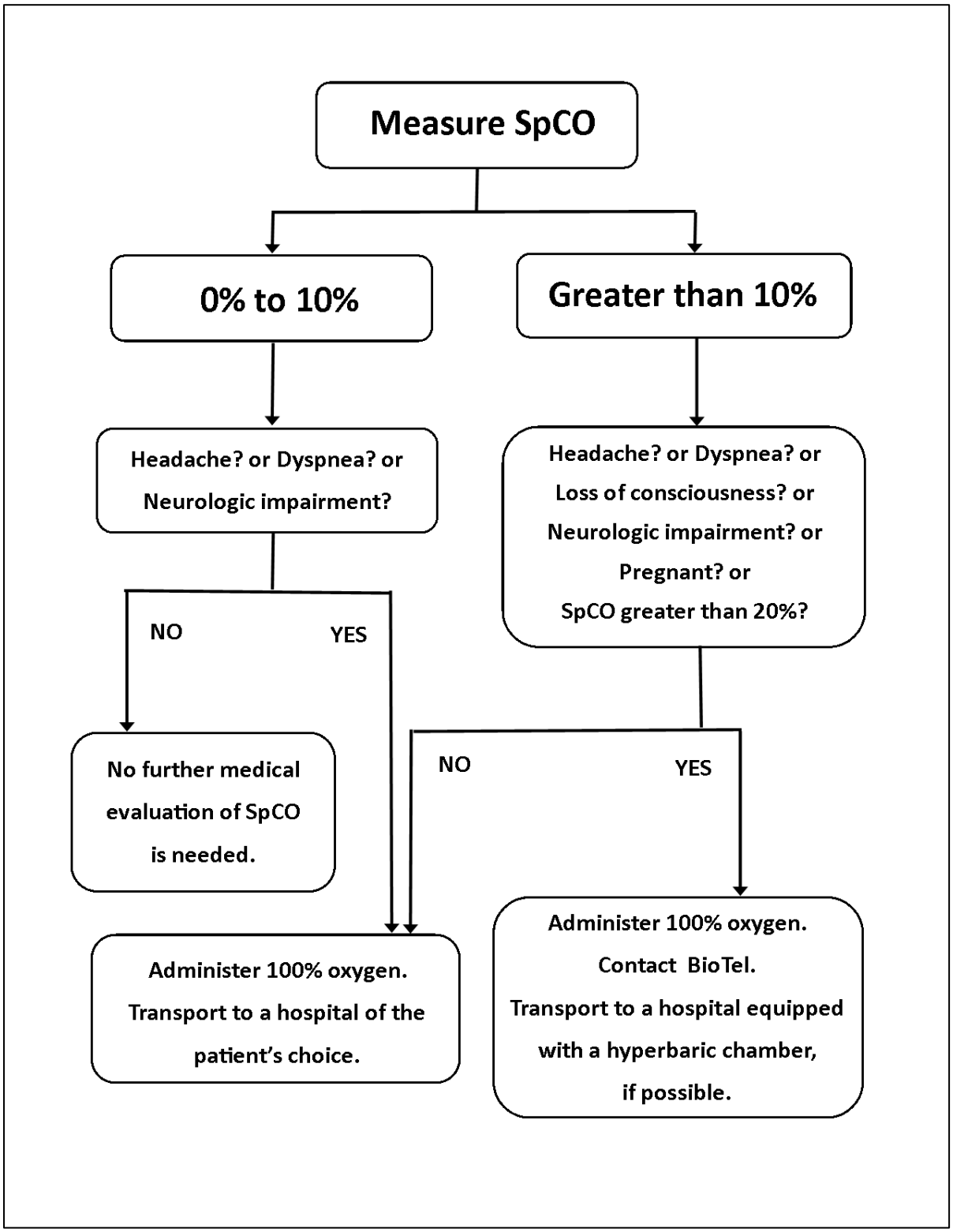
CARBON MONOXIDE EXPOSURE TREATMENT CONSIDERATIONS



Special Note: In all cases of severe carbon monoxide intoxication, Texas Health Presbyterian Hospital Dallas & Baylor University Medical Center are equipped with a hyperbaric chamber. Contact BioTel for further instructions.

CARDIAC ARREST

Inclusion Criteria: These guidelines help establish treatment priorities for all apneic and pulseless patients. Do not attempt resuscitation in patients who meet criteria outlined in the relevant section of the **DETERMINATION OF DEATH IN THE FIELD** Policy**.** The **NEONATAL CARE** Guidelines cover cardiac arrest in newborns or neonates. Other guidelines may also apply, including **ASYSTOLE/PEA, TRAUMA,** and **VENTRICULAR FIBRILLATION/pulseless VENTRICULAR TACHYCARDIA.** On-scene CPR is preferable (as long as the scene is safe) and is associated with higher survival rates to hospital discharge.

Basic Level

1. Assess for signs of responsiveness and signs of circulation (no more than 5 to10 seconds for pulse check). If the pulse is absent or if you are uncertain, begin high-quality chest compressions:
   a. Push hard at a rate of 100-120 compressions per minute.
   b. **Use a metronome for every cardiac arrest.**
   c. Allow full recoil of the chest after each compression.
   d. Minimize interruptions in compression.
   e. Avoid pausing compressions for more than 10 seconds for any reason.

2.

Perform CPR at a ratio of:	

Adults and Children age 8 or older
• 30 compressions and 2 ventilations (pause for breaths); compression depth – at least 2 inches.
	Infants and Children Younger than age 8
	• 15 compressions and 2 ventilations (pause for breaths); compression depth – at least ⅓ the diameter of the chest:
	  • About 1½ inches for infants under 1 year old;
	  • About 2 inches for children 1 to 8 years old.

3. Assess and support an open airway with a head-tilt chin-lift maneuver and an oropharyngeal airway.
   a. If you suspect spinal injury, use the jaw thrust maneuver and an oropharyngeal airway.

4. Assess and support breathing.
   a. Support ventilations with 100% oxygen, 1-hand squeezes of the BVM over 1.5 second each, and only enough tidal volume to produce visible chest rise.
   b. **DO NOT** over-ventilate.
   c. Use the compression-to-ventilation ratio as specified by age (above).

5. For cardiac arrest in cases of suspected trauma, initiate **SPINAL MOTION RESTRICTION**.
   a. BLS agencies should begin transport if transfer to the closest appropriate Trauma Center is faster than waiting for an ALS unit. Minimize scene time and continue treatment guidelines en route.
   b. Contact BioTel as early as possible so that they can notify the receiving Trauma Center to begin preparation for the patient's arrival.

6. **As soon as a defibrillator or AED arrives, apply hands-free defibrillation pads without interrupting CPR. For manual defibrillators, use pediatric defibrillation pads (if available) for patients up to 8 years old. For AEDs, use special pediatric dose-attenuating AED pads for patients between 1 and 8 years old. Do not apply the AED to infants under 1 year old. If using a manual defibrillator, perform all care while in the PADDLES mode.**

Continued on the next page…

- If using an AED, follow all voice and visual prompts. Continue defibrillation and CPR sequence until advanced providers place the patient on a manual defibrillator.
- If using a manual defibrillator, deliver one unsynchronized shock at a time, if needed, for VF or pVT.
- Do not place manual defibrillators in the AED Mode:
  - Unless specifically permitted by Medical Direction and agency MOP for adults.
  - At any time for children younger than the 8th birthday.
- Immediately after delivering a shock, resume high quality chest compressions for 2 full minutes without first checking the rhythm or pulse.
- At the end of the 2-minute CPR cycle, briefly pause chest compressions for no more than 10 seconds to check the rhythm:
  - If the rhythm is organized, check for the presence of a pulse.
  - If ROSC, refer to **POST-CARDIAC ARREST CARE** Guidelines**.**
  - If asystole or PEA is present, resume CPR, and refer to the **ASYSTOLE/PEA** Guidelines.
  - If the patient remains in a shockable rhythm, immediately resume CPR and refer to the **VENTRICULAR FIBRILLATION/PULSELESS VENTRICULAR TACHYCARDIA Guidelines**.

For All Defibrillation Attempts

- Consider pre-charging the defibrillator to the next energy level during CPR before the next shock.
- Perform chest compressions for 15-20 seconds while charging the defibrillator.
- Do not interrupt chest compressions for more than 5 seconds before or after shock delivery.

Advanced Level

7. For cardiac arrest in cases of suspected blunt or penetrating trauma, manage as follows:
   a. SIGNS OF LIFE: If the patient has EMS-witnessed signs of life (movement, vocalization, respiratory effort, swallowing, reactive pupils, reflexes, or measurable vital signs), initiate **SPINAL MOTION RESTRICTION** and immediately transport to the closest Trauma Center (Refer to the **DESTINATION** Policy).
   b. NO SIGNS OF LIFE: Use the **DETERMINATION OF DEATH IN THE FIELD** Policy when there are no signs of life **AND** the patient remains in asystole.

8. Do not attempt placement of an advanced airway (supraglottic or endotracheal) for at least 6 minutes after starting CPR (after three 2-minute cycles) unless necessary because of regurgitation:
   a. Advanced airway insertion attempts MUST NOT interrupt chest compressions.
   b. After securing the advanced airway, deliver ventilations without interrupting chest compressions:
      1. Medical etiology cardiac arrest: 8 to 10 ventilations per minute.
      2. Trauma etiology cardiac arrest: 6 ventilations per minute.
   c. Do **NOT** over-ventilate.

9. Establish IV or IO access with Normal Saline as soon as feasible during the resuscitation attempt.
   a. IV/IO access attempts MUST NOT interrupt chest compressions.
   b. Flow rate:
      1. TKO rate for medical cardiac arrests.
      2. Wide open rate for cardiac arrest caused by trauma. If ROSC is achieved, adjust rate to TKO.

10. **If mechanism of injury AND symptoms AND physical exam suggest a tension pneumothorax:**

Adult	Pediatric
• Perform needle thoracostomy. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.	• Perform needle thoracostomy. • Contact BioTel as soon as possible. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.

11. Identify the presenting dysrhythmia and proceed to the appropriate dysrhythmia treatment guidelines.

12. Refer to the **POST-CARDIAC ARREST CARE** Guidelines for a patient who achieves ROSC.

Continued on the next page…

13. **SUMMARY OF THERAPIES, BY AGE:**

Therapy	Adult	Child	Infant*
Definition of Age	8th birthday and above	1 year to 8th birthday	Before 1st birthday*
CPR	30 compressions to 2 ventilations (pause for ventilations)	15 compressions to 2 ventilations (pause for ventilations)	15 compressions to 2 ventilations (pause for ventilations)
Chest Compression Depth	At least 2 inches (5 cm)	About 2 inches (5 cm), or ⅓ the AP diameter of the chest	About 1½ inches (4 cm), or ⅓ the AP diameter of the chest
Defibrillation	Adult AED/defibrillator pads	**1st choice**: Manual defibrillator with pediatric defibrillator pads: 2 J/kg, 4 J/kg, 4-10 J/kg **2nd choice**: AED with special, dose-attenuating pediatric AED pads **3rd choice**: AED with adult pads	Manual defibrillator with pediatric defibrillator pads: 2 J/kg, 4 J/kg, 4-10 J/kg AED acceptable if approved by manufacturer and EMS provider agency
Drugs	Standard adult dosing for patients 14 and older; weight-based dosing for children 8 through 13	Weight-based dosing	Weight-based dosing

* For neonatal resuscitation, refer to the **NEONATAL CARE** Guidelines.

14. For additional patient care considerations not covered under standing orders, consult BioTel.

CHEST PAIN/DISCOMFORT

Inclusion Criteria: Chest pain suspected to be ischemic in nature, even when caused by stimulant toxicity. This may include classic presentations or anginal equivalents, e.g. epigastric pain/pressure, shoulder, neck or jaw pain/pressure, indigestion, shortness of breath, diaphoresis, or altered mental status. Acute coronary syndrome (ACS) in diabetic patients, women and the elderly may not present with classic symptoms. Ischemic chest pain is a very unusual presentation in pediatric patients. Contact BioTel for all pediatric care under this guideline.

SPECIAL NOTE: Do NOT administer nitroglycerin to any patient who has taken Viagra® (sildenafil), Levitra® (vardenafil), or Cialis® (tadalafil) within the past 36 hours.

Basic Level

1. Assess and support ABCs.

2. Place the patient in position of comfort. Minimize patient exertion. If the patient is hypotensive, place him/her supine, and treat according to **SHOCK** Guidelines.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

4. Administer aspirin 324 mg (4 baby aspirins) ***OR*** 325 mg (one adult aspirin) by mouth (chewed before swallowing), regardless of whether patient has taken aspirin prior to EMS arrival.

5. Begin transport as soon as possible.

Advanced Level

6. Continuously monitor ECG and $ETCO_2$ (if available) until patient care has been transferred to hospital staff. Treat arrhythmias under the appropriate guideline.

7. Obtain and transmit a 12-Lead ECG. Consult with BioTel, as needed. Obtain a 12-lead ECG BEFORE giving any nitroglycerin. **NOTE:** 3-lead ECG monitoring is not a substitute for a 12-lead ECG.

8. Establish IV/IO access at a TKO rate or use a saline lock. Do not delay nitroglycerin administration while attempting to establish vascular access. **However**, in patients with ECG evidence suggestive of an inferior wall MI, vascular access MUST be established before administering the first nitroglycerin dose.

9. 12-lead interpretation: Identify ST-elevation myocardial infarction (STEMI) patients.

    a. **Inferior Wall Infarction (ST elevation - leads II, III, aVF) with a systolic blood pressure (SBP):**
        i. **Less than 90 mmHg:**
            1. Position patient flat or with legs elevated.
            2. Administer 20 mL/kg fluid bolus IV/IO. If SBP remains below 90 mmHg and no pulmonary edema is present, repeat fluid bolus as needed to keep SBP greater than 90 mmHg. Paramedics may administer up to 1 liter total, cumulative fluid volume under standing orders.
            3. BioTel may authorize the administration of morphine or fentanyl in this patient.
        ii. **90 mmHg or greater:**
            1. Obtain IV/IO access prior to nitroglycerin administration.
            2. Administer nitroglycerin 0.4 mg SL; may repeat every 5 minutes for a total of 3 doses. Observe for hypotension.
            3. Morphine 2 mg to 4 mg increments, slow IVP, up to a total maximum cumulative dose of 8 mg for pain unrelieved by 3 doses of nitroglycerin. Do not administer morphine if SBP falls below 90 mmHg. **NOTE:** There is no uniform requirement for all agencies to carry morphine; it is an optional medication; ***OR***

4. Fentanyl 1 mcg/kg IN or slow IVP. May repeat every 15 minutes. Do not exceed 200 mcg as a total cumulative dose. **NOTE:** There is no uniform requirement for all agencies to carry fentanyl; it is an optional medication.

b. **Normal ECG and all other infarctions:**
   i. Do not delay nitroglycerin administration for vascular access attempts.
   ii. Administer nitroglycerin 0.4 mg SL; may repeat every 5 minutes, up to a maximum total of 3 doses, as long as SBP remains above 90 mmHg.
   iii. Morphine 2 mg – 4 mg increments, slow IVP, up to a maximum cumulative dose of 8 mg, for pain unrelieved by 3 doses of nitroglycerin, as long as SBP remains above 90 mmHg. **NOTE:** There is no uniform requirement for all agencies to carry morphine; it is an optional medication;
   iv. Fentanyl 1 mcg/kg via IN or slow IVP. May repeat every 15 minutes. Do not exceed 200 mcg total cumulative dose. **NOTE:** There is no uniform requirement for all agencies to carry fentanyl; it is an optional medication.

10. If the systolic blood pressure falls below 90 mmHg in response to nitroglycerin, morphine, or fentanyl:
    a. Position the patient supine or with the legs elevated, if tolerated.
    b. Do not administer additional nitroglycerin or morphine (under standing orders).
    c. Administer a 20 mL/kg Normal Saline bolus IV:
       i. If SBP remains below 90 mmHg and pulmonary edema is not present, repeat fluid bolus as needed to keep SBP greater than 90 mmHg. Paramedics may administer up to 1-liter total fluid volume under standing orders.
       ii. BioTel may authorize the administration of morphine or fentanyl for this patient.

11. If the chest pain is thought to be stimulant-induced (e.g. cocaine, amphetamine or ecstasy), administer:
    a. Diazepam 2.5 – 5 mg slow IVP/IO/IN/IM; May repeat up to a total, maximum, cumulative dose of 10 mg; **OR**
    b. Midazolam 2.5 – 5 mg slow IVP/IO/IN/IM; May repeat up to a total, maximum, cumulative dose of 10 mg.
    c. Monitor closely for respiratory depression.
    d. Contact BioTel for authorization for additional dosing.

12. Monitor the patient's temperature frequently. Be prepared to cool the patient aggressively, but do not cause shivering.

13. Transport patients with a suspected STEMI to a hospital with immediate cardiac catheterization lab capabilities. You **must** contact either BioTel or the receiving hospital as soon as possible, so that the cardiac catheterization lab can be activated promptly. When in doubt, consult with BioTel to confirm hospital capability.

14. For additional patient care considerations not covered under standing orders, consult BioTel.

CYANIDE TOXICITY

Inclusion Criteria: Any patient with smoke inhalation OR suspected cyanide ingestion, and severe symptoms suggesting cyanide toxicity, including ANY of the following: Altered mental state; Cardiac arrhythmia; Respiratory depression; Seizure; Hypotension without other clear etiology; Respiratory arrest; or Cardiac Arrest.

SPECIAL NOTE: Refer to the **CYANIDE ANTIDOTE ADMINISTRATION** Policy for additional guidance.

Basic Level

1. Scene safety:
   a. Do not enter a scene where a potential exposure to cyanide may be encountered until cleared by appropriate agencies.
   b. If there is a suspected significant cyanide exposure, appropriate BSI and patient decontamination techniques should be implemented.
2. Assess and support ABCs.
3. Airway management:
   a. Pulse oximetry (SpO_2 monitoring):
      i. Provide all patients with suspected cyanide toxicity with high-flow oxygen by tight fitting face mask.
      ii. **NOTE:** Pulse oximetry in the patient suffering from cyanide toxicity may be unreliable
   b. Carbon monoxide (CO) co-oximetry:
      i. If available, SpCO should be measured.

Advanced Level

4. Cardiac (ECG) monitoring:
   a. Implement continuous ECG monitoring for all patients being treated for cyanide toxicity.
5. Quantitative $ETCO_2$ monitoring:
   a. Implement continuous $ETCO_2$ monitoring for all patients being treated for cyanide toxicity.
6. Glucose:
   a. Perform a POC glucose analysis and treat accordingly on all patients being treated for cyanide toxicity.
7. Vascular access:
   a. Hydroxocobalamin administration requires a dedicated IV or IO line; as such, a second IV or IO access may be needed.
8. Hydroxocobalamin administration – this is an optional medication, to be administered, if available:
   a. If the patient meets criteria for administration of hydroxocobalamin as outlined above, dosing should be:
      i. ADULT: 5 g for adults, administered over 15 minutes.
      ii. PEDIATRIC: 70 mg/kg, administered over 15 minutes.
   b. A second dose may be given, if needed, after 30 minutes (Adult - full dose; Pediatric - 35 mg/kg).

On-line Medical Control Options

9. Any patient with smoke inhalation OR suspected cyanide toxicity and moderate symptoms may receive hydroxocobalamin in consultation with on-line medical direction.
10. Any patient with smoke inhalation or suspected cyanide ingestion AND the confirmed presence of cyanide on-scene may receive hydroxocobalamin in consultation with on-line medical direction.
11. Refractory hypotension:
    a. Vasoactive medications for refractory hypotension should be given in consultation with BioTel.

Additional considerations

12. Effect on body fluids:
    a. Hydroxocobalamin will change the color of urine, sweat and tears to red. This is normal, and the provider, patient and onlookers should be notified of this.
13. Effect on serum analysis:
14. Hydroxocobalamin will alter evaluation of blood samples drawn after medication administration. Hospital providers should be notified of this.
15. If there is a high suspicion for concomitant carbon dioxide exposure, proceed to the **CARBON MONOXIDE EXPOSURE** Guideline following completion of this guideline.

EXCITED DELIRIUM

Inclusion Criteria: Patients with an acute onset of altered mental status, manifesting as agitation, combativeness, and/or aggression.

SPECIAL NOTE: The cause of excited delirium is considered organic in nature until proven otherwise. Verbal de-escalation tactics, physical restraint, and chemical restraint are options to ensure the safety of patient and providers. For further information on physical restraints, please refer to **RESTRAINT OF PATIENT** Policy.
The use of ketamine is restricted to paramedics in agencies carrying this scheduled drug, who have undergone required training on its use, and who have received medical direction authorization.

Basic Level

1. Ensure scene safety.
2. Assess and support ABCs.
3. Attempt de-escalation methods.
4. Transport the patient.

Advanced Level

5. Perform POC glucose analysis.
6. Consider establishing IV access at a TKO rate or use a saline lock.
7. If necessary, restrain the patient. Refer to the **RESTRAINT OF PATIENT** Policy.
8. DO NOT restrain the patient in the prone position or interfere with ventilation in any way.
9. Continuously monitor ECG and SpO_2. Use continuous $ETCO_2$ monitoring, if available.
10. **CHEMICAL RESTRAINT:**

For acutely violent patients, for whom verbal re-direction and physical restraint are insufficient:	
Adult • Midazolam 5 mg slow IV/IO push, IM, or IN. • May repeat once; **OR** • Ketamine 2 mg/kg slow IVP/IO, **OR** 5 mg/kg IM. • Contact BioTel for authorization if additional dosing is required.	**Pediatric** • Contact BioTel. • BioTel may authorize midazolam 0.1 to 0.3 mg/kg IV/IO/IM/IN. • Do not administer ketamine to the pediatric patient with excited delirium.

EYE INJURY

Inclusion Criteria: Patients with blunt or penetrating trauma to the eye or patients with chemical substances in the eye. Refer also to **Trauma** guidelines, as needed. Treatment for adult and pediatric patients under this guideline is identical.

Basic Level

1. Assess and support ABCs.

2. Initiate **SPINAL MOTION RESTRICTION**, as needed. If spinal injury is not suspected, place the patient in a position of comfort. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor airway status. Treat shock according to the **SHOCK** Guidelines.

3. Conditions:

    a. If eye avulsion, ruptured globe, or impaled object:
        i. Do not administer anesthetic drops.
        ii. Do not attempt to remove the object.
            1. If the object large and protruding from the eye, attempt to stabilize it.
        iii. Carefully cover the affected eye (if possible) to protect it from further damage.
        iv. Cover the other eye to decrease eye movement.

    b. If a corneal burn or corneal abrasion has occurred – Remove contact lenses, if possible:
        i. May administer 1-2 drops ophthalmological anesthetic agent to affected eye(s): may repeat every 5 minutes to a maximum total of three doses, as needed for pain control.
        ii. Instruct the patient not to rub the eyes.

    c. For eyes injured by chemical exposure, tear gas, pepper spray or mace – Remove contact lenses, if possible:
        i. May administer 1-2 drops ophthalmological anesthetic agent to affected eye(s): may repeat every 5 minutes to a maximum total of three doses, as needed for pain control.
        ii. Irrigate with Normal Saline en route.
        iii. NOTE: Persistent symptoms 15 to 30 minutes or more post-exposure to crowd control agents (e.g. tear gas, pepper spray or mace) require ophthalmological evaluation in a medical facility, even if this is the patient's only injury.

4. Transport the patient with the head slightly elevated and BOTH eyes closed or loosely patched (unless specific treatment indicates otherwise).

Advanced Level

5. Consider establishing IV/IO access at a TKO rate or use a saline lock.

6. If pain persists, treat according to the **PAIN MANAGEMENT** Guidelines.

7. For additional patient care considerations not covered under standing orders, contact BioTel.

NEONATAL CARE

Inclusion Criteria: Term and pre-term newborn patients who fail to respond to initial stimulation and who need resuscitation efforts. This guideline also applies to all newborns and infants in the first four weeks of life. Refer to the **OBSTETRICAL/GYNECOLOGICAL** Guidelines and to the **EMERGENCY CHILDBIRTH** Special Procedures for additional guidance.

SPECIAL NOTE: Maternal estimates of "due date" may be inaccurate. Very premature infants and infants of certain other high-risk pregnancies may be very small. Determination of fetal viability is best left to trained hospital personnel. As such, attempts should be made to resuscitate all infants, unless BioTel or a Medical Command Physician advises otherwise.

Basic Level

1. Within the first 30 seconds:
   a. Warm and dry the infant – take care to avoid hypothermia (increased ambient temperature).
   b. Position the infant to facilitate drainage of airway secretions.
   c. Stimulate by gently rubbing the back.
   d. Clear the airway, if needed, for clear or meconium-stained amniotic fluid, if the infant cannot clear his/her own airway due to apnea or "drowning" in secretions:
      i. Perform deep tracheal suctioning before instituting other resuscitative measures. Refer to the **CHILDBIRTH-ABNORMAL** Special Procedures section or contact BioTel for detailed instructions.

2. Assess respirations:
   a. If respirations are inadequate or gasping after suctioning or heart rate is less than 100, gently assist ventilations at a rate of 40 to 60 per minute, using an infant BVM with room air.
   b. Monitor the infant's SpO_2 on the right hand or wrist – supplemental oxygen to achieve mean per-minute goal saturations** (see next page) is secondary to effective ventilation.

3. Assess heart rate:
   a. If the heart rate remains less than 100 after respiratory interventions, take corrective steps to improve ventilation, according to the "MRSOPA" algorithm:
      i. **M**ask: check the seal
      ii. **R**eposition: make sure infant is in the sniffing position (do not flex or hyper-extend the neck)
      iii. **S**uction (mouth before nose)
      iv. **O**pen the mouth
      v. **P**ressure increase (gentle!)
      vi. **A**lternative airway (either intubate or place LMA, if available: advanced level providers only)
   b. If heart rate remains less than 60, increase oxygen concentration to 100% and begin chest compressions:
      i. Use the 2-thumb/encircling hands technique (thumbs side by side, just below nipple line).
      ii. **Compression-to-ventilation RATIO for neonates is 3 to 1**.
      iii. The compression rate is 120 events per minute (90 compressions interspersed with 30 ventilations).

4. Assess skin color (for APGAR score only – see next page):
   a. Score: Blue/pale = 0 points; Body pink/extremities blue = 1 point; Completely pink = 2 points.
   b. Provide oxygen supplementation to maintain mean per-minute goal saturations** (see next page).

5. Clamp and cut the umbilical cord; place a vigorous infant skin-to-skin on the mother's chest to retain warmth.

6. Calculate and record the APGAR score at 1 minute **and** again at 5 minutes postpartum (see next page).

7. Once advanced level providers arrive on-scene, give report and transfer care.

Continued on the next page…

Advanced Level

8. Notify the receiving hospital or contact BioTel as early as possible for destination recommendations and early receiving hospital notification.

9. Monitor ECG and SpO_2 continuously on the infant's right hand or wrist until hospital arrival; prevent heat loss and hypothermia.
    a. Oxygen may be supplemented to achieve mean per minute goal saturations**, but this is secondary to effective ventilation.

10. If the infant does not respond to CPR, obtain vascular access with Normal Saline and perform POC glucose analysis:
    a. For hypoglycemia (POC glucose less than 45 mg/dL) administer:
        i. 10% dextrose @ 2 mL/kg IV/IO; OR
        ii. Glucose (40%) gel @ 0.5 mL/kg (0.2 g/kg), massaged into the mucosa of the cheek pocket:
            1. Exercise extreme caution administering to a depressed infant without a gag reflex
    b. For heart rate less than 100 bpm during CPR, administer epinephrine 1:10,000 0.01 mg/kg (0.1 mL/kg) IV/IO, followed by a flush with 5 mL Normal Saline; repeat every 3 to 5 minutes, as needed.
    c. For suspected narcotic toxicity, provide positive pressure ventilation with supplemental oxygen, as needed, to maintain mean per-minute saturation goals**, until transfer of care to hospital personnel.

11. Transport as soon as possible.

12. For additional patient care considerations not covered under standing orders, consult BioTel.

***APGAR Score:**

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

****Oxygen Saturation (SpO_2) 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%

OBSTETRICAL/GYNECOLOGICAL

Inclusion Criteria: Women of childbearing age with a chief complaint related to pregnancy, impending delivery, 1st month postpartum, or gynecological in nature. Unstable patients require aggressive resuscitation and stabilization measures before routine actions specified in these guidelines. Maternal resuscitation is the key to survival of both mother and fetus. (Pre-)eclampsia can occur as late as 4-6 weeks postpartum.

Special Note: High-risk pregnancy/delivery includes pre-term delivery, breech presentation, multiple births, meconium staining, placenta previa, placental abruption, shoulder dystocia, prolapsed cord, preeclampsia, eclampsia, drug abuse, or lack of prenatal care. Refer to the **EMERGENCY CHILDBIRTH** Special Procedures.

Basic Level

1. Assess and support ABCs. Monitor the pregnant patient closely for vomiting and risk of pulmonary aspiration.

2. Place the pregnant patient in position of comfort. Place a third-trimester patient on her left side. For trauma, immobilize the pregnant patient supine on a long spine board, but transport with the board at a 10° to 15° angle to the left (left lateral decubitus). Refer to the **SPINAL MOTION RESTRICTION** Policy.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%. If high-risk pregnancy/delivery, administer 100% oxygen by non-rebreather mask (100% NRBM).

4. If delivery is imminent, prepare for immediate childbirth.

Advanced Level

5. For hemorrhage, seizure, pre-term labor, or other high-risk pregnancy/delivery, contact BioTel as early as possible. Begin transport as soon as possible to a facility capable of handling a complicated obstetrical emergency. Refer to the **DESTINATION** Policy and the **EMERGENCY CHILDBIRTH** Special Procedures.

6. For cord prolapse, apply moist saline gauze to the exposed cord, insert gloved fingers into the vaginal canal and elevate the presenting part off the cord. Maintain elevation until a hospital provider takes over.

7. Continuously monitor ECG and $ETCO_2$.

8. Pain management: NON-high risk patient with severe pain – Consider IV/IO analgesia, per the **PAIN MANAGEMENT** Guidelines. High-risk patient with severe pain – Consult **PAIN MANAGEMENT** Guidelines, but use *extreme* caution administering IV/IO analgesia. Monitor all patients receiving IV/IO analgesia (and their infant(s)) for adverse effects, especially cardiorespiratory depression, sedation, & aspiration.

9. Consider establishing IV/IO access at a TKO rate or use a saline lock. Administer 20 mL/kg boluses as needed to maintain adequate perfusion. Do not exceed 1 liter of IV fluids unless authorized by BioTel. If needed, refer to the **SHOCK** Guidelines.

10. **For seizures related to eclampsia, refer to the SEIZURE Guidelines and administer:**

Adult	Pediatric
• Midazolam 2.5 – 5 mg slow IVP/IO/IN/IM. May repeat once. • Magnesium Sulfate 2 g in 250 mL Normal Saline IV/IO over 20 minutes. • Contact BioTel for additional anticonvulsants, as needed.	• Not Applicable.

PAIN MANAGEMENT

Inclusion Criteria: Patients suffering from severe pain or discomfort.
SPECIAL NOTE: Withholding analgesia from a patient in pain is considered negligence.

Basic Level

1. Assess and support ABCs. Offer comfort and reassurance.

2. Patient positioning:
   a. Initiate **SPINAL MOTION RESTRICTION**, if indicated.
   b. If no spinal injury is suspected, place the patient in a position of comfort.
   c. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor airway status. Treat shock according to the **SHOCK** Guidelines.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

4. Assess and document neurovascular status and perfusion of injured extremities. Splint injured extremities and apply cold packs. **SPECIAL NOTE:** Do NOT use a traction splint for patients under 14 years of age.

5. Once advanced level care arrives on scene, give report and transfer care.

Advanced Level

6. Consider establishing IV/IO access at a TKO rate or use a saline lock.

   a. For an adult or pediatric patient with sickle cell crisis, administer 10 mL/kg Normal Saline, then maintain TKO rate.

7. Once drug allergies have been verified, administer pain medication according to the following table:

Pain medications	
Adult • Fentanyl 1 mcg/kg slow IVP/IO, IM, or IN. o May repeat every 15 minutes. o Do not exceed 200 mcg total, cumulative dose. • Morphine 2 mg – 4 mg increments slow IVP or IO or IM, up to a total maximum, cumulative dose of 8 mg. Titrate to effect. • Contact BioTel before administering morphine or fentanyl if the patient: o Is older than 65 years of age; or o Is debilitated; or o Has altered mental status; or o Has a SBP less than 90 mmHg.	**Pediatric** • Fentanyl 1 mcg/kg via slow IVP/IO, IM or IN; o Maximum single dose 100 mcg. • May repeat once after 15 minutes, if needed; **OR** • Morphine 0.05 mg/kg slow IVP/IO or IM; o Maximum single dose 2 mg. • May repeat once after 15 minutes, if needed. • Monitor for cardiorespiratory depression. • Contact BioTel for authorization if the patient requires additional analgesic doses.
NOTE: Individual agencies may carry none, one, or both of these analgesics. There is no uniform requirement for all agencies to carry these medications.	

8. After analgesia administration, monitor for cardiorespiratory depression or excessive sedation.

9. For additional patient care considerations not covered under standing orders, consult BioTel.

POISONED PATIENT AND OVERDOSE

Inclusion Criteria: Patients with an acute overdose or intoxication. Paramedics must report to BioTel before leaving the scene all patients with a suspected suicide attempt or suicidal ideation. Treat patients with altered level of consciousness using the **ALTERED LEVEL OF CONSCIOUSNESS** Guidelines.

SPECIAL NOTE: EMS personnel should contact BioTel in order to coordinate care of the poisoned patient with the North Texas Poison Control Center and the receiving facility.

This BioTel contact also applies to the **asymptomatic** pediatric patient with known or suspected poisoning or overdose.

Basic Level

1. Assess and support ABCs.
2. Place the patient in a position of comfort. Place the patient supine, if hypotensive, and treat according to the SHOCK Guidelines.
3. If the patient requires restraint, follow the **RESTRAINT OF PATIENT** Policy.
4. Administer oxygen, as needed, to maintain a SpO2 of at least 94%.
5. Begin transport as soon as possible.
6. If carbon monoxide exposure is suspected, refer to the **CARBON MONOXIDE EXPOSURE** Guidelines.

Advanced Level

7. Continuously monitor ECG and $ETCO_2$.
8. If cyanide toxicity is suspected, refer to the **CYANIDE TOXICITY** Guidelines and to the **CYANIDE ANTIDOTE ADMINISTRATION** Policy.
9. Consider establishing IV/IO access at a TKO rate or use a saline lock.
   a. Administer 20 mL/kg boluses, as needed, to maintain adequate perfusion.
   b. Do not exceed 1 liter of IV fluids unless authorized by BioTel.
   c. If needed, refer to **SHOCK** Guidelines.
10. For additional patient care considerations (e.g. specific drug intoxications) not covered under standing orders, consult BioTel.

POST-CARDIAC ARREST CARE

Inclusion Criteria: These guidelines will establish treatment priorities for patients with a return of spontaneous circulation (ROSC) following cardiac arrest. BioTel defines ROSC as the return of an organized cardiac rhythm with a palpable pulse.

NOTE: Routine use of anti-arrhythmic medications (either bolus or infusion) to patients in ROSC is not recommended. Do not administer anti-arrhythmics during post-cardiac arrest care without BioTel authorization.

Advanced Level

1. Titrate supplemental oxygen delivery to maintain a SpO_2 of 94-99%.

2. If ROSC occurs before EMS insertion of an advanced airway and the patient does not regain consciousness, insert an advanced airway. Any approved supraglottic airway is a suitable alternative to endotracheal intubation.

3. After securing the advanced airway:

   a. **MEDICAL Etiology:** Provide assisted ventilations at no more than 10 to 12 breaths per minute. Paramedics should expect a transiently elevated $ETCO_2$ level after achieving ROSC. Do not attempt to aggressively correct this value by over-zealous assisted ventilation or hyperventilation.
   b. **TRAUMA Etiology:** Deliver 6 to 8 breaths per minute. Do not attempt to correct an elevated $ETCO_2$ level by over-zealous assisted ventilation or hyperventilation.

4. If the patient's systolic blood pressure is less than 90 mmHg (less than 70 mmHg for the pediatric patient):

   a. Medical Etiology

Adult	Pediatric
• Administer 20 mL/kg IV/IO fluid boluses as needed, to maintain a palpable radial pulse. o Assess for signs/symptoms of volume overload before each fluid bolus. • Norepinephrine bitartrate drip 8-12 mcg/min, if no response to 1000 mL total boluses.	• Administer a single 10-20 mL/kg IV/IO fluid bolus, if the patient shows signs/symptoms of shock: o Administer only 5-10 mL/kg if heart failure or respiratory etiology is suspected; • BioTel must approve additional fluid bolus(es).

   b. Trauma Etiology

Adult	Pediatric
• Administer 20 mL/kg fluid boluses as needed, to maintain a palpable radial pulse	• Administer 20 mL/kg IV/IO fluid bolus. • Repeat twice, if needed, unless signs of volume overload (e.g. JVD, rales). • Contact BioTel for additional boluses.

4. Obtain a 12-lead ECG for medical causes of cardiac arrest. Transport patients with STEMI to a hospital capable of immediate activation of a catheterization lab.

5. During transport of a patient either in cardiac arrest or after ROSC, two rescuers should be present in the back of the ambulance.

Continued on the next page…

6. If a patient begins to awaken with an advanced airway in place post-cardiac arrest, consider sedation if coughing, gagging, or movement might lead to inadvertent extubation – guidelines follow on the next page.

   a. Endotracheal tubes:

Adult	Pediatric
• Diazepam 2.5 – 5 mg IV/IO/IN/IM; **OR** • Midazolam 2.5 – 5 mg IV/IO/IN/IM. • May repeat once. • Contact BioTel if the patient requires additional doses.	• Midazolam 0.1 mg/kg IV/IO/IN/IM (maximum SINGLE dose 5 mg). • May repeat once. • Contact BioTel if the patient requires additional doses.

   b. Adult patients with supraglottic airway: Either remove the airway or use the sedation guidelines for endotracheally intubated patients.

7. For agencies with a field hypothermia protocol, initiate cooling:

Adult	Pediatric
• Administer 500 mL chilled saline IV/IO wide open. o Once initiated, continue chilled saline infusion even if the patient deteriorates back into cardiac arrest. o Upon completion, resume NS IV/IO at TKO rate. • If time permits, place cold packs at the patient's axillae and major vessels of the groin and neck. • Assess neurological and shivering status frequently. If the patient begins to awaken or shiver, administer midazolam 2.5 mg IV Push or IO; o May repeat once.	• Do NOT initiate cooling in the pediatric patient.

Do NOT initiate cooling if the patient	
• Is younger than 18 years old	• Is pregnant
• Regains consciousness with a GCS equal to or greater than 9	• Was hypothermic (less than 34° C or 93° F) when EMS arrived on the scene
• Suffered cardiac arrest as the result of trauma, including burns and/or electrocution	• Has evidence of florid pulmonary edema and/or volume overload

8. For additional patient care considerations not covered under standing orders, consult BioTel.

PSYCHIATRIC/BEHAVIORAL EMERGENCY

Inclusion Criteria: Patients exhibiting psychological disturbances that produce thoughts, feelings, and behaviors destructive to the patient or another person. Paramedics must report all patients with suspected suicide attempt or ideation to BioTel before leaving the scene. Treat patients suspected of taking an overdose using the **POISONED PATIENT AND OVERDOSE** Guidelines. Treat patients with an altered level of consciousness using the **ALTERED LEVEL OF CONSCIOUSNESS** Guidelines.

Special Note: For patients with a psychiatric emergency who are in police custody, refer to the **CUSTODY** policy.

SPECIAL NOTE: NEVER transport a patient in the prone position.
NOTE: Consider alternative, organic explanations for seemingly psychiatric or behavioral symptoms. (A-E-I-O-U-T-I-P-S; alcohol, epilepsy (or head injury), insulin (hypoglycemia), overdose, underdose, trauma, infection, psychosis, sepsis.)

Basic Level

1. Assess and support ABCs.
2. Position of comfort.
3. Reduce stimuli by isolating the patient from people or events causing his or her agitation.
4. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.
5. If the patient requires restraint, follow the **RESTRAINT OF PATIENT** Policy.
6. If the patient exhibits any seizure activity, follow the **SEIZURE** Guidelines.
7. Transport the patient to the nearest hospital for medical clearance.

Advanced Level

8. Consider continuous ECG and $ETCO_2$ monitoring.
9. Consider establishing IV/IO access at a TKO rate or use a saline lock.
10. Monitor vital signs during transport.
11. Refer to the **DESTINATION** Policy for all age groups; for pediatric and adolescent patients, contact BioTel for destination advice.
12. If excited delirium is suspected, refer to the **EXCITED DELIRIUM** Guidelines.
13. For additional patient care considerations not covered under standing orders, consult BioTel.

RESPIRATORY DISTRESS - ADULT

Inclusion Criteria: Patients complaining of shortness of breath or those who have labored respirations, dyspnea, wheezing, or rales. Respiratory distress can be caused by a number of conditions, including asthma, airway obstruction, and volume overload (as in congestive heart failure (CHF) and end stage renal disease). Treat patients with respiratory distress caused by trauma using the **TRAUMA** Guidelines and patients experiencing an allergic reaction using the **ALLERGIC REACTION** Guidelines.

SPECIAL NOTE: If fever is present, along with any respiratory signs or symptoms, or if the patient is coughing, sneezing, or generating airborne droplets, EMS personnel should wear a HEPA mask to reduce transmission of infection. A HEPA mask may be placed on the patient (if tolerated), or a 100% NRB mask may be used, if tolerated, to reduce transmission of infection.

Basic Level

1. Assess and support ABCs.

2. Place the patient in a position of comfort.

3. Administer oxygen, as needed, to maintain a SpO2 of at least 94%
   a. Exception – COPD with chronic hypoxia (home O_2 therapy): titrate oxygen flow to maintain SpO_2 90%:
      i. Observe for depressed ventilation, increased $ETCO_2$ and decreased level of consciousness
      ii. If $ETCO_2$ level rises in response to oxygen therapy, consider decreasing the concentration of supplemental oxygen.

4. If the patient is wheezing, administer albuterol 2.5 mg via nebulizer every 5 minutes up to 3 total doses.

Advanced Level

5. All patients treated under this guideline must have continuous ECG and $ETCO_2$ monitoring. If a dysrhythmia develops, treat under its specific guideline. Anticipate the need for a possible advanced airway (ET tube or SGA) using **PHARMACOLOGICALLY-ASSISTED INTUBATION** or awake **NASOTRACHEAL INTUBATION**.

6. Establish IV/IO access at a TKO rate or use a saline lock.

7. Assess breath sounds:

   a. **Signs of volume overload (rales, JVD, or peripheral edema):**

Adult

- Nitroglycerin 0.4 mg SL (may administer without IV/IO if SBP is at least 90 mmHg).
- May repeat twice, but only if SBP remains above 90 mm Hg.
- If no significant improvement following NTG therapy, apply CPAP at 5 cm H_2O pressure, if available.
  - o In severe distress, paramedics may apply CPAP with the initial nitroglycerin therapy.
  - o If no improvement and the patient is tolerating CPAP, increase CPAP pressure to 10 cm H_2O, if available.
- If wheezing is also present, BioTel may authorize albuterol.
- Obtain a 12-Lead ECG and consult with BioTel, as needed.

Continued on the next page…

b. **Wheezing:**

Adult

- Mild to moderate wheezing, administer nebulized albuterol 2.5 mg:
  If wheezing persists but the patient is:
  - Improving, administer up to two additional albuterol doses.
  - Not improving with the first albuterol dose, combine 2nd and 3rd albuterol doses with ipratropium 0.5 mg (ipratropium dose for infant less than 1 year of age is 0.25 mg).

If no significant improvement following nebulizer therapy:

Adult

- Apply CPAP at 5 cm H_2O pressure, if available:

  If the distress does not improve and the patient is tolerating CPAP, increase CPAP pressure to 10 cm H_2O, if available.

If no significant improvement following application of CPAP, simultaneously:

Adult

- Administer methylprednisolone 60-125 mg IV/IO/IM (optional medication); AND
- Add 2 grams magnesium sulfate to 250 mL Normal Saline and infuse IVPB over 20 minutes:
  - Dialysis patient: BioTel must authorize.

If no response to nebulizers, CPAP or magnesium sulfate, with impending respiratory failure, administer:

Adult

1:1,000 Epinephrine 0.3 – 0.5 mg IM (0.3 to 0.5 mL IM).

c. **For status asthmaticus, simultaneously:**

Adult

- Administer albuterol 2.5 mg with ipratropium 0.5 mg every five minutes, up to 3 doses.
- Administer 1:1,000 Epinephrine 0.3 – 0.5 mg IM (0.3 to 0.5 mL) (if not already done).
- Apply CPAP at 5 cm H_2O pressure, if available:
  - o If the distress does not improve and the patient is tolerating CPAP, increase CPAP pressure to 10 cm H_2O
- Administer methylprednisolone 60-125 mg IV/IO/IM (optional medication); AND
- Add 2 grams magnesium sulfate to 250 mL Normal Saline and infuse IV piggyback over 20 minutes (if not already done):
  - o BioTel authorization is required for patients on dialysis;
  - o Avoid if history of COPD.

8. For additional patient care considerations not covered under standing orders, consult BioTel.

For Pediatric Respiratory Distress, refer to the next three pages…

RESPIRATORY DISTRESS – PEDIATRIC

Inclusion Criteria: Patients complaining of shortness of breath or those who have labored respirations, dyspnea, wheezing, or rales. Respiratory distress can be caused by a number of conditions, including asthma, croup, airway obstruction, and volume overload (as in congestive heart failure (CHF) and end stage renal disease). Treat patients with respiratory distress caused by trauma using the **TRAUMA** Guidelines and patients experiencing an allergic reaction using the **ALLERGIC REACTION** Guidelines.

Special Note: If fever is present with any respiratory signs or symptoms, or if the patient is coughing, sneezing, or generating airborne droplets, EMS personnel should wear a HEPA mask to reduce transmission of infection. A HEPA mask may be placed on the patient (if tolerated), or a 100% NRB mask may be used, if tolerated, to reduce transmission of infection.

Basic Level

1. Assess and support ABCs. Suction the nose with a bulb syringe or mechanical suction, if excessive secretions are present.

2. Place the patient in a position of comfort.

3. Administer oxygen, as needed, by nasal cannula or non-rebreather mask (NRBM) to maintain a SpO_2 of at least 94%.

4. Assess breath sounds:
   a. If the patient is wheezing, administer albuterol 2.5 mg via nebulizer.
   b. If the patient has a barky cough or if stridor is present, do NOT administer albuterol. Proceed to the "Croup" section of these Guidelines, on the next page, as soon as possible.

Advanced Level

5. All patients treated under this guideline must have continuous ECG and $ETCO_2$ monitoring. If a dysrhythmia develops, treat it according to its specific guideline. Anticipate the need for a possible advanced airway (ETT or SGA) via **PHARMACOLOGICALLY-ASSISTED INTUBATION (PAI) (BioTel authorization required)**.

6. Consider establishing IV/IO access at a TKO rate, or use a saline lock.

7. Assess breath sounds:

   a.

Signs of volume overload (rales, JVD, peripheral edema or hepatomegaly):	
Pediatric Under 2 Years Old	**Pediatric At Least 2 Years Old**
• Contact BioTel. • Prepare to obtain a 12-Lead ECG. • Monitor closely and transport.	• Contact BioTel. • Prepare to obtain a 12-Lead ECG. • Monitor closely and transport.

Continued on the next page…

b. **Wheezing:**

Pediatric Patients – All Ages

- Mild to moderate wheezing, administer nebulized albuterol 2.5 mg

If no significant improvement following nebulizer therapy:

Pediatric Under 2 Years Old AND NO Asthma History	Pediatric At Least 2 Years Old AND/OR Asthma History
• Repeat nebulized albuterol 2.5 mg dose. • If the child improves somewhat, but is still in distress, repeat albuterol 2.5 mg once.	• Administer 2.5 mg albuterol combined with 0.5 mg ipratropium via nebulizer. • If the child improves somewhat, repeat with both albuterol and ipratropium. o Albuterol: contact BioTel for authorization if more than 3 doses are needed. o Ipratropium: maximum total of 3 doses.

If no significant improvement following 3 nebulizer treatments, add the following:

Pediatric Under 2 Years Old AND NO Asthma History	Pediatric At Least 2 Years Old AND/OR Asthma History
• Administer 1:1000 epinephrine 2 mg (2 mL) via nebulizer. • If the child improves somewhat, consider repeating the nebulized epinephrine once.	• If SpO_2 is still less than 94% & child is not improving, obtain IV/IO access at TKO rate. • Administer methylprednisolone IV/IO, if available (optional medication) – Reconstitute 125 mg in 2 mL (as supplied), then dilute with 8 mL Normal Saline to a final volume of 10 mL (12.5 mg/mL); Administer IVP/IO: • Age less than 1 yr: 12.5 mg (1 mL) • Age 1 to 3 yr: 25 mg (2 mL) • Age 3 to 5 yr: 37.5 mg (3 mL) • Age 5 to 9 yr: 50 mg (4 mL) • Age 9 to 13 yr: 62.5 mg (5 mL) • Consult BioTel for dosing confirmation if IM administration is required because of lack of vascular access: • Reconstitute, but do NOT dilute • Dose: 2 mg/kg (0.032 mL/kg) IM

If no response to albuterol or epinephrine nebulizers, with status asthmaticus or impending respiratory failure (altered mental status, severe difficulty ventilating), administer:

Pediatric Under 2 Years Old AND NO Asthma History	Pediatric At Least 2 Years Old AND/OR Asthma History
• Normal Saline 20 mL/kg IV/IO. • Contact BioTel.	• Dilute 2 g magnesium sulfate in 250 mL Normal Saline & contact BioTel for dose confirmation; then, • Administer 40 mg/kg (5 mL/kg) IV/IO over 30 minutes (Maximum dose: 2 g); **AND ALSO ADMINISTER** • 1:1000 epinephrine 0.01 mg/kg IM (0.01 mL/kg) (Maximum dose: 0.3 mg).

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c. **For respiratory distress with a history of a barking cough and/or stridor, assume Croup:**

- If stridor is present at rest, administer 1:1000 epinephrine 5 mg (5 mL) via nebulizer.
- Consider vascular access at a TKO rate or a saline lock, if not already done.
- Administer a Normal Saline 20 mL/kg IV/IO bolus for the patient with impending respiratory failure.
- Contact BioTel.

8. For additional patient care considerations not covered under standing orders, consult BioTel.

SEIZURE

Inclusion Criteria: All patients actively seizing on EMS arrival, or who have a history of seizure lasting at least 5 minutes prior to EMS arrival. Guidelines are included for patients whose seizure stopped prior to EMS arrival.

NOTE: Consider alternative, organic explanations for seizures. (A-E-I-O-U-T-I-P-S; alcohol, epilepsy (or head injury), insulin (hypoglycemia), overdose, underdose/uremia, trauma, infection, psychosis, sepsis.)

Basic Level

1. Assess and support ABCs.

2. Place the patient in a position of comfort or in left lateral recumbent position facing the rescuers. If there is evidence of shock, place the patient supine with the feet elevated and monitor airway closely. Treat shock according to the **SHOCK** Guidelines.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

4. Perform POC glucose analysis.
   a. If an adult patient is hypoglycemic but responsive AND can protect his or her airway, administer 1 tube (15 g) of oral glucose SL. (Pediatric patient age 1 to 13 years: administer ¼ - ½ tube SL.)
   b. If symptoms persist after 10 minutes AND the patient can protect his or her own airway, administer a second tube (15 g) of oral glucose SL. (Pediatric patient 1 to 13 years old: administer ¼ - ½ tube SL.)

Advanced Level

5. Consider establishing IV access at a TKO rate or use a saline lock. If the patient is hypotensive, treat according to the **SHOCK** Guidelines.

6. All patients treated under this guideline must have continuous ECG and $ETCO_2$ monitoring.

7. If the patient is hypoglycemic AND . . .

. . . the level of consciousness does not improve with oral glucose, or if oral glucose could not be given, administer:		
At least 14 years of age	**1 year to 13 years of age**	**Less than 1 year of age**
• Start IV/IO, and administer 50% dextrose, 50 mL (25 grams) IVP/IO; • If symptoms and/or hypoglycemia persist after 10 minutes, administer an additional 25 grams (50 mL).	• 25% dextrose 2 mL/kg IVP/IO (waste 25 mL of D50; replace with 25 mL Normal Saline). • If symptoms and/or hypoglycemia persist after 10 minutes, administer an additional 2 mL/kg IVP/IO.	• 10% dextrose 5 mL/kg IVP/IO (waste 40 mL of D50; replace with 40 mL Normal Saline). • Contact BioTel if additional dosing is required. • Newborn under 1 month of age: administer only 2 mL/kg.

. . . IV or IO access cannot be obtained, administer:		
At least 14 years of age	**1 year to 13 years of age**	**Less than 1 year of age**
• Glucagon 1 mg IM/IN/SQ. • May repeat once after 20 min.	• Glucagon 1 mg IM/IN/SQ. • May repeat once after 20 min.	• Glucagon 0.5 mg IM/IN/SQ. • May repeat once after 20 min.

8. Before administration of benzodiazepines, especially in the pediatric patient, prepare for assisted BVM ventilation with 100% oxygen and appropriately-sized equipment.

Continued on the next page…

9. **If the patient is actively seizing upon EMS arrival or seizes again after EMS arrival, administer a benzodiazepine until the seizure stops or until the maximum dose has been administered:**

Adult	Pediatric

• Diazepam: 2.5 – 5 mg slow IVP/IO/IN/IM;
  • May repeat, if needed, up to a maximum, total, cumulative dose of 5 mg IV/IO/IM or 10 mg IN.
OR
• Midazolam 2.5 – 5 mg slow IVP/IO/IN/IM;
  • May repeat, if needed, up to a maximum, total, cumulative dose of 10 mg IV/IO/IM or 10 mg IN.
• Closely monitor for cardiorespiratory depression and prepare for assisted ventilation.
	• Midazolam:
	  o **INTRANASAL:**
	  ▪ 1-6 months old: 0.2 mg/kg to a maximum initial dose of 1 mg.
	  ▪ More than 6 months old: 0.2 – 0.3 mg/kg to a maximum initial dose of 5 mg.
	  • Divide the dose between the two nostrils, if possible.
	  o **INTRAVENOUS** :
	  ▪ 0.15 to 0.2 mg/kg to a maximum single initial dose of 5 mg.
	---OR---
	• Diazepam 0.5 mg/kg per rectum, single dose (Maximum 10 mg).
	• BioTel may order additional doses beyond standing order doses.
	• Closely monitor for cardiorespiratory depression and prepare for assisted ventilation.

NOTE: Individual agencies may carry only one of these medications. They are not required to carry both.

10. For additional patient care considerations not covered under standing orders, consult BioTel.

SHOCK

Inclusion Criteria: Any patient experiencing signs and symptoms consistent with shock and hypoperfusion. Refer also to **TRAUMA,** specific arrhythmia, and **ALLERGIC REACTION** Guidelines, and to the **NEEDLE THORACOSTOMY** Special Procedure**.**

Basic Level

1. Assess and support ABCs.
2. Initiate **SPINAL MOTION RESTRICTION**, if indicated. Place the patient supine and elevate the legs, unless contraindicated.
3. Control any obvious external hemorrhage.
4. Cover the patient to avoid heat loss, but do not over-bundle.
5. Administer oxygen via non-rebreather mask at 10-15 lpm (100% NRBM) or assist ventilations via BVM, if indicated.
6. Begin transport as soon as possible.

Advanced Level

7. Continuously monitor ECG, SpO_2 and $ETCO_2$.
8. Establish one large bore IV and infuse Normal Saline according to the following guidelines:

Hypovolemic/Hemorrhagic shock:	
Adult	**Pediatric**
• Administer 20 mL/kg boluses, as needed, to maintain radial pulses (do not exceed systolic BP of 90 mmHg). • Examine area of controlled hemorrhage frequently to determine that hemorrhage remains controlled.	• Infuse Normal Saline bolus IV/IO: 20 mL/kg. • Repeat twice if systolic BP remains below 70 mm Hg *and* there are no signs of volume overload. • Contact BioTel if additional boluses are needed, especially for DKA. • If the patient is unconscious and peripheral IV access is unavailable, consider early use of IO infusion.

Cardiogenic Shock - Assure heart rate and rhythm are adequate, then;	
Adult	**Pediatric**
• Infuse a single 20 mL/kg IV/IO bolus, unless pulmonary edema is present. • Consider one repeat bolus while preparing norepinephrine drip, ***IF*** there is no evidence of pulmonary edema. • Norepinephrine bitartrate drip 8 to12 mcg/min, if there is no response to fluid bolus.	• Run fluid at TKO rate. • Contact BioTel for vasopressor dosing and possible IV/IO fluid bolus (5 to 10 mL/kg).

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All Other Forms of Shock (Except Tension Pneumothorax):	
Adult	**Pediatric**
• Infuse 20 mL/kg boluses and reassess, titrating to achieve a systolic BP of 90 mmHg. • Do not exceed 1 L under standing orders.	• Infuse Normal Saline bolus IV/IO: 20 mL/kg. • Repeat twice if systolic BP remains below 70 mm Hg *and* there are no signs of volume overload. • Contact BioTel if additional boluses are required, especially for DKA, cardiac history, or signs of pulmonary edema (e.g. rales). • If the patient is unconscious and peripheral IV access is unavailable, consider early use of IO infusion.

Obstructive Shock due to Tension Pneumothorax (Pneumothorax, with Hypotension and Severe Hemodynamic Compromise):	
Adult	**Pediatric**
• Perform needle thoracostomy. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.	• Perform needle thoracostomy. • Contact BioTel as soon as possible. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.

9. Continuously monitor vital signs, ECG, SpO_2, $ETCO_2$ and neurological status during transport.

10. For additional patient care considerations not covered under standing orders, consult BioTel.

STROKE

Inclusion Criteria: Patients suspected of having an acute stroke. Refer also to the **ALTERED LEVEL OF CONSCIOUSNESS, BRADYCARDIA, TACHYCARDIA** and **TRAUMA** Guidelines for assistance, as needed. Refer to the **DESTINATION** Policy for all patients.

NOTE: The most common type of stroke is ischemic stroke. Intracranial hemorrhage is less common. Be sure to obtain a thorough medical history, and inquire about the use of anti-coagulants or recent head injury. Significant hypertension is common in these patients. Consider the diagnosis in pediatric patients (e.g. Sickle Cell Disease).

Basic Level

1. Assess and support ABCs.

2. Place the patient in a position of comfort, preferably with the head of the bed elevated at 30 degrees. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor airway status. Treat shock according to the **SHOCK** Guidelines.

3. Administer oxygen, as needed, to maintain a SpO_2 of at least 92%.

4. **Perform POC blood glucose analysis** and treat hypoglycemia, if present, according to the **ALTERED LEVEL OF CONSCIOUSNESS** Guidelines.

5. **ASCERTAIN THE TIME WHEN THE PATIENT WAS LAST KNOWN TO BE NORMAL, OR AT HIS/HER BASELINE.** If the patient cannot communicate the time, or there is no witness present to report **"Last Known Normal"**, obtain a phone number for such a witness, if possible.

6. Consider the presence of ANY of these signs to be evidence of an acute stroke:
   a. Facial droop (ask the patient to smile - asymmetry of facial expression is abnormal);
   b. Sudden asymmetry in neurological exam;
   c. Weak grip or loss of grip;
   d. Arm (pronator) drift (Hold the patient's arms outstretched in front at shoulder level with the palms up. Have patient close eyes and let go of the arms. If one arm does not move or drifts downward, the result is abnormal);
   e. Sudden abnormal speech not believed to be due to drug or alcohol intoxication (Ask the patient to repeat a sentence or nursery rhyme. Slow or slurred speech or abnormal words or the inability to speak is abnormal);
   f. Sudden imbalance in walking;
   g. Acute arm or leg weakness;
   h. Sudden, non-traumatic, vision loss (vision loss may be unilateral and may be described as a "curtain").

Advanced Level

7. Apply ECG and monitor continuously until transfer of care to hospital staff. Treat arrhythmias under the appropriate guideline. Apply $ETCO_2$ monitor, if respiratory distress or shock is present or develops.

8. A 12-lead ECG should be obtained, but should NOT delay transport.

9. Establish IV/IO access at a TKO rate or use a saline lock.

10. Regardless of the symptom duration, for **adult** patients, you ***must*** contact either BioTel or the Stroke Center destination for pre-notification as soon as possible. For **pediatric** patients, you ***must*** contact BioTel as soon as possible for destination instructions and pre-notification. Minimize on-scene time (less than 15 minutes).

11. For additional patient care considerations not covered under standing orders, consult BioTel.

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IMPORTANT: An appropriate report to the receiving facility staff should include the pertinent past medical history, the current vital signs & GCS, and the **TIME** of last normal or baseline for the patient (**"Last Known Normal").**

PRE-HOSPITAL STROKE ASSESSMENT TOOLS

The assessment of a patient who may be having an acute stroke shall be based upon the signs listed in "Basic Level #6" on the preceding page. Paramedics MAY utilize either of the following two methods to assist in determining if a patient is having an acute stroke. Paramedics shall contact BioTel with any questions regarding the assessment, management or destination decision-making for patients who might be having an acute stroke.

CINCINNATI PREHOSPITAL STROKE SCALE

FACIAL DROOP (Have patient show teeth or smile)
o NORMAL: Both sides of face move equally
o 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)
o NORMAL: Both arms move the same, *or* both arms do not move at all
o 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")
o NORMAL: Patient uses correct words with no slurring
o ABNORMAL: Patient slurs words, uses wrong words, *or* is unable to speak

Jauch EC, et al. 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science. Part 11: Adult Stroke. Circulation. 2010; 122: S818-S828; Adapted from Kothari RU, et al. Cincinnati Prehospital Stroke Scale: reproducibility and validity. Ann Emerg Med. 1999;33:373–378.

LOS ANGELES PREHOSPITAL STROKE SCREEN (LAPSS)

Los Angeles Prehospital Stroke Screen (LAPSS)

1. Patient Name: _____ (Last) _____ (First)
2. Information/History from:
   [ ] Patient
   [ ] Family Member _____ (Name) Phone: _____
   [ ] Other
3. Last known time patient was at baseline or deficit free and awake: *Military Time:* _____ *Date:* _____

SCREENING CRITERIA:

	Yes	Unknown	No
4. Age > 45	[ ]	[ ]	[ ]
5. History of seizures or epilepsy **absent**	[ ]	[ ]	[ ]
6. Symptom duration **less than** 24 hours	[ ]	[ ]	[ ]
7. At baseline, patient is **not** wheelchair bound or bedridden	[ ]	[ ]	[ ]

	Yes	No
8. Blood glucose between 60 and 400:	[ ]	[ ]

9. Exam: **LOOK FOR OBVIOUS ASYMMETRY**

	Normal	Right	Left
Facial Smile/Grimace:	☐	☐ Droop	☐ Droop
Grip:	☐	☐ Weak Grip ☐ No Grip	☐ Weak Grip ☐ No Grip
Arm Strength:	☐	☐ Drifts Down ☐ Falls Rapidly	☐ Drifts Down ☐ Falls Rapidly

	Yes	No
Based on exam, patient has **only unilateral** (and not bilateral) weakness:	[ ]	[ ]
10. ***Items 4,5,6,7,8,9 all YES's (or unknown) → LAPSS screening criteria met:***	[ ]	[ ]

11. If LAPSS criteria for stroke met, call receiving hospital with a "code stroke", if not then return to the appropriate treatment protocol. (Note: the patient may still be experiencing a stroke even if LAPSS criteria are not met.)

Kidwell CS, et al. Identifying Stroke in the Field: Prospective Validation of the Los Angeles Prehospital Stroke Screen (LAPSS). Stroke. 2000; 31(1):71-76.

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Stroke Patient Destination Decision-Making:

1. **Onset of symptoms less than 3.5 hours:** Transport to the closest designated stroke center. If the EMS provider is not certain that the desired destination hospital is a designated stroke center, contact BioTel for consultation.
2. **Onset of symptoms at least 3.5 hours, but less than 12 hours:** Unless immediate intervention (e.g. ABCs, cardiac arrest, etc.) is required, these stroke patients should be preferentially transported to a comprehensive-capable stroke facility, if such a facility is available with less than 15 minutes of additional transport time. If the EMS provider is not certain that the desired destination hospital is a comprehensive-capable stroke center, contact BioTel for consultation.
3. **Onset of symptoms at least 12 hours, or unknown last-known-normal time:** Transport to the closest designated stroke center.

TACHYCARDIA WITH PULSE – STABLE

Inclusion Criteria: Adult patients who present with a *palpable pulse* rate greater than 150 bpm, and pediatric patients with a heart rate greater than normal for their age, ***and*** both of the following two criteria are met: 1) sinus tachycardia is NOT suspected, *and* 2) there are NO signs or symptoms of hypoperfusion (hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort or acute heart failure).

Basic Level

1. Assess and support ABCs.
2. Place the patient in a position of comfort.
3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.
4. If chest pain/discomfort is present or develops, treat the pain under the **CHEST PAIN** Guidelines while continuing these guidelines.
5. Once advanced level care arrives on scene, give report and transfer care.

Advanced Level

6. Continuously monitor ECG and SpO_2. Continuously monitor $ETCO_2$ if the patient is hypotensive.
7. Obtain a 12-Lead ECG and consult with BioTel, as needed. **NOTE:** 3-lead ECG monitoring is not a substitute for a 12-lead ECG.
8. Always attempt to rule out sinus tachycardia as a potential cause of the symptoms. (220 minus the patient's age [in years] is the upper limit of sinus tachycardia; for infants, HR greater than 220, and for children 1-8 years old, HR greater than 180 is most likely SVT, *not* sinus tachycardia.)
9. Establish IV/IO access at a TKO rate or use a saline lock, then proceed with one of these three pathways:

STABLE PATIENT WITH NARROW-COMPLEX TACHYDYSRHYTHMIA (>>NOT Sinus Tachycardia!!<<)

10. **If NO signs or symptoms of hypoperfusion are present or develop:**

Adult	Pediatric
• Attempt Valsalva maneuver, if the QRS complex is narrow and the rhythm is regular. • Administer adenosine: o First dose: 12 mg RAPID IVP. o Flush with 10 – 20 mL Normal Saline. o May repeat once, if no conversion after 1 – 2 minutes. o Flush with 10 – 20 mL Normal Saline. • ECG monitor must run continuously during Valsalva maneuver, adenosine administration, and response.	• Consider vagal maneuver, if the QRS complex is narrow and the rhythm is regular. • Contact BioTel and prepare for IV/IO access. • BioTel may authorize adenosine administration: o 0.1mg/kg RAPID IVP (maximum 6 mg). o Flush with 5 – 10 mL Normal Saline. o May repeat once at 0.2 mg/kg (maximum 12 mg). o Flush with 5 – 10 mL Normal Saline. • ECG monitor must run continuously during Valsalva maneuver, adenosine administration, and response.

Continued on the next page…

STABLE PATIENT WITH NON-SUSTAINED, WIDE-COMPLEX TACHYCARDIA (QRS at least 0.12 second)

10. **If NO signs or symptoms of hypoperfusion are present or develop:**

Adult and Pediatric

- Initiate transport and monitor closely, especially continuous ECG monitoring.
- Consider establishing IV/IO access at TKO rate.
- Prepare for clinical deterioration and the need for possible synchronized cardioversion.

STABLE PATIENT WITH SUSTAINED, WIDE-COMPLEX TACHYCARDIA (QRS at least 0.12 second)

10. **If NO signs or symptoms of hypoperfusion are present or develop:**

Adult	Pediatric
• Consider amiodarone infusion – Contact BioTel.	• Contact BioTel. • Prepare for: o Possible IV/IO access for anti-arrhythmic or sedation administration; and/or o Possible synchronized cardioversion. • ECG monitor must run continuously before and during treatment and response.

11. Initiate transport and closely monitor vital signs, ECG, SpO_2 and $ETCO_2$.

12. For additional patent care considerations not covered under standing orders, consult BioTel.

TACHYCARDIA WITH PULSE – UNSTABLE

Inclusion Criteria: Adult patients with heart rate greater than 150 bpm with sustained or non-sustained wide complex tachycardia, and pediatric patients with a heart rate greater than normal for their age, ***and*** **both of the following two criteria are met:** 1) sinus tachycardia is NOT suspected, ***and 2) there <u>are</u> signs or symptoms of hypoperfusion*** (hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort or acute heart failure).

Basic Level

1. Assess and support ABCs.
2. Place the patient in a position of comfort. If there is evidence of shock, place the patient supine with the feet elevated, if tolerated.
3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.
4. If chest pain/discomfort is present or develops, treat the pain according to the **CHEST PAIN** Guidelines while continuing these guidelines.
5. Once advanced level care arrives on scene, give report and transfer care.

Advanced Level

6. Continuously monitor ECG. Continuously monitor $ETCO_2$ if the patient is hypotensive.
7. Obtain a 12-Lead ECG and consult with BioTel, as needed. ***(12-lead acquisition MUST NOT delay care of the unstable patient.)***
8. Establish IV/IO access at TKO rate or use saline lock. ***(Vascular access MUST NOT delay care of unstable patient.)*** Then proceed with one of the two following pathways, depending on the rhythm (width of QRS complex):

Continued on the next page….

UNSTABLE PATIENT WITH NARROW-COMPLEX TACHYCARDIA (probable SVT)

9. **If signs or symptoms of hypoperfusion are present or develop:**

Adult	Pediatric
• Immediate synchronized cardioversion at 50 J, 70 J, 100 J, 150 J, 200 J, or per manufacturer recommendations. • If the patient is conscious, sedate prior to cardioversion attempt: o Diazepam, 2.5 mg – 5 mg slow IVP/IO/IN/IM (may repeat once); OR o Midazolam, 2.5 mg – 5 mg slow IVP/IO/IN/IM (may repeat once). • If the patient is conscious, sedate prior to cardioversion attempt: • If the QRS complex is regular and the rhythm is regular, consider adenosine 12 mg RAPID IVP followed immediately by 20 mL Normal Saline RAPID IVP.	• Prepare to administer adenosine: o 0.1mg/kg RAPID IVP (maximum 6 mg) o Flush with 5 – 10 mL Normal Saline. o May repeat once at 0.2 mg/kg RAPID IVP (maximum 12 mg). o Flush with 5 – 10 mL Normal Saline. • AND Contact BioTel for authorization. • ECG monitor must run continuously before and during adenosine administration and response. • If IV/IO access is unavailable, or if adenosine is unavailable or ineffective, prepare for immediate synchronized cardioversion: o Dose: 0.5 – 1.0 J/kg. o May repeat once at 2 J/kg. o BioTel may authorize sedation with midazolam or diazepam.

NOTE: Individual agencies may carry only one sedative - they are not required to carry both.

UNSTABLE PATIENT WITH WIDE-COMPLEX TACHYCARDIA (possible Ventricular Tachycardia)

9. **If signs or symptoms of hypoperfusion are present or develop:**

Adult	Pediatric
• Immediate synchronized cardioversion at 100 J or 150 J; (repeat 200 J, 300 J or 360 J), or per manufacturer recommendations. • If the patient is conscious, sedate prior to cardioversion attempt o Diazepam, 2.5 mg – 5 mg slow IV/IO/IN/IM (may repeat once); OR o Midazolam, 2.5 mg – 5 mg slow IV/IO/IN/IM (may repeat once). • Following cardioversion, consider amiodarone infusion for frequent PVCs – Contact BioTel. • If wide complex tachycardia could be torsades de pointes, add 2 grams Magnesium Sulfate to 250 mL Normal Saline bag and infuse IV piggyback over 20 minutes. ▪ BioTel authorization required if dialysis patient	• Prepare to perform immediate synchronized cardioversion: o Dose: 0.5 – 1.0 J/kg. o May repeat once at 2 J/kg. • AND Contact BioTel for authorization. • ECG monitor must run continuously before and during treatment and response. • Establish precautionary IV/IO access: o Vascular access should not delay treatment of the unstable patient. o BioTel may authorize antiarrhythmic administration (adenosine and/or amiodarone) or sedation (diazepam or midazolam).

NOTE: Individual agencies may carry only one sedative - they are not required to carry both.

10. Initiate transport and monitor closely.

11. For additional patient care considerations not covered under standing orders, consult BioTel.

TRAUMA

Inclusion Criteria: Patients with traumatic injuries. If patient suffers a cardiac arrest due to trauma, refer to **CARDIAC ARREST** Guidelines. Treat pain according to the **PAIN MANAGEMENT** Guidelines.

NOTE: Notify BioTel as soon as possible when encountering serious or critical trauma patients. BioTel can then advise the receiving Trauma Center to prepare for the patient's arrival.

Basic Level

1. Assess and support ABCs while controlling the cervical spine. If the initial survey is abnormal, minimize scene time. Continue this treatment guideline en route.

2. Initiate **SPINAL MOTION RESTRICTION**, as indicated. If no spinal injury suspected, place the patient in a position of comfort.

3. If there is evidence of shock, place the patient supine with the feet elevated and closely monitor airway status. Treat shock according to the **SHOCK** Guidelines.

4. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.

5. Control any obvious external hemorrhage. Initiate basic care for specific injuries (ALL PATIENTS):
   a. Open abdominal wound: Saline soaked dressing, cover with waterproof material, maintain body heat
   b. Open, "sucking" chest wound: Seal with an occlusive dressing on three sides
   c. Hyperthermia: Place the patient in a cool environment; place cold packs at the head, neck, axillae, and groin
   d. Hypothermia: Protect patient from further cooling
   e. Flail chest: Closely monitor the respiratory status
   f. Stable fractures: Splint as they lie, if not grossly angulated – Do NOT use traction splints for patients under 14 years of age
   g. Impaled objects: Use bulky dressings to stabilize and secure the object

6. Begin transport as soon as possible.

Advanced Level

7. When traumatic brain injury is suspected:
   a. Attempt to maintain an $ETCO_2$ reading between 35 mmHg and 40 mmHg, if assisting ventilation.
   b. If seizures develop, administer anticonvulsants as directed in the **SEIZURE** Guidelines.

8. Establish IV/IO access at a TKO rate. If the patient is hypotensive, refer to the **SHOCK** Guidelines.

9. Continuously monitor ECG, SpO_2 and $ETCO_2$.

10. **If Tension Pneumothorax is suspected (Pneumothorax with Hypotension and Shock):**

Adult	Pediatric
• Perform needle thoracostomy. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.	• Perform needle thoracostomy. • Contact BioTel as soon as possible. • Refer to the **NEEDLE THORACOSTOMY** Special Procedure.

Continued on the next page…

11. For additional patient care considerations not covered under standing orders, consult BioTel.

12. For adult and pediatric trauma destination criteria, refer to the **DESTINATION** Policy and to the **PREHOSPITAL TRAUMA TRIAGE CRITERIA** below**.**

NOTE: Hospital capabilities change. EMS Providers are advised to contact BioTel or to consult the current version of BioTel Hospital Capabilities Matrix for updated receiving hospital/Trauma Center capabilities.

Prehospital Trauma Triage Criteria – Adult (at least 14 years of age):

Age 14 years and older: Adult patients meeting any of the prehospital trauma triage criteria listed below should be transported to the closest Level I or Level II ADULT Trauma Center. These centers include:

1. Parkland Hospital (LEVEL I)
2. Baylor University Medical Center (LEVEL I)
3. Methodist Dallas Medical Center (LEVEL II)
4. Medical Center of Plano (LEVEL II) – this facility can receive all trauma patients, EXCEPT:
    a. Pediatric patients under 14 years of age;
    b. Neurotrauma under 18 years of age;
    c. Penetrating eye injuries;
    d. Amputations requiring re-implantation;
    e. Burns.
    f. NOTE: Medical Center of Plano will arrange transfer, if indicated, of any patient with any of the above criteria who might be transported to this facility.

Trauma patients meeting ANY of these criteria shall be transported to either a Level I or a Level II Accredited Trauma Center

a. **Airway:**
    i. Endotracheal intubation/advanced airway placement **or** attempted placement prior to arrival
b. **Breathing:**
    i. Respiratory compromise (obstruction, use of accessory muscles/respiratory distress or inhalation injury)
    ii. Respiratory rate less than 10 or greater than 29
c. **Circulation:**
    i. Post-traumatic cardiac arrest
    ii. Heart rate less than 50 or greater than 140
    iii. Systolic BP less than 90 mm Hg (adult)
        1. Patients at least 65 years of age may be in shock with SBP less than 110 mm Hg
d. **Disability:**
    i. GCS 13 or less secondary to trauma
    ii. Decreasing level of consciousness
e. **Event – Anatomic Criteria:**
    i. Penetrating wound to head, neck or torso, or proximal to the elbow or knee
    ii. Chest wall instability of deformity (e.g. flail chest)
    iii. Multiple (2 or more) long-bone fractures
    iv. Mangled, crushed, degloved or pulseless extremity (including suspected compartment syndrome)
    v. Amputation proximal to the wrist or ankle
    vi. Pelvic fracture
    vii. Open or depressed skull fracture
    viii. Paralysis (including new weakness or paralysis), or suspected spinal cord injury or spinal fracture
    ix. Evisceration
f. Event – History/High-Energy Mechanism Within 72 Hours of Presentation:
    i. Fall at least 20 feet (2 stories)
    ii. Drowning
    iii. Hanging

iv. Pedestrian hit by automobile WITH ANY identified injury
v. Bicyclist hit by automobile WITH ANY identified injury
vi. Motorcycle crash WITH ANY identified injury
vii. High-risk Motor Vehicle Crash (MVC), such as: significant intrusion, including roof (at least 12 inches at occupant site or at least18 inches at any site), or ejection (partial or complete), or death in the same passenger compartment

g. Special Patient or System Considerations:

i. Age at least 55 years WITH ANY identified injury and/or criteria (including ground-level fall)
ii. Pregnancy at least 20 weeks estimated gestational age
iii. Burns:
    i. Greater than 20% TBSA (Burns greater than 10% should be transported directly to Parkland Hospital, if possible)
    ii. Patients with any of the following criteria should be transported directly to Parkland Hospital, if possible (refer to the BURNS Treatment Guideline):
        1. Burns of face, eyes, ears, hands, feet, genitalia, perineum, or major joints
        2. Full-thickness (3rd-degree) burns of any size in any age patient
        3. Electrical burns (including lightning)
        4. Chemical burns
        5. Inhalation injury (including smoke inhalation)
        6. Burns with traumatic injuries (e.g. fractures)
        7. Burns in patients with pre-existing medical conditions or comorbidities
        8. Burns in patients needing special social, emotional or rehabilitative intervention
iv. **EMS Provider or Medical Control Physician discretion – When in doubt, transport to a Trauma Center**
v. **Transport of any patient with any of the above criteria to a destination other than an Accredited Trauma Center (e.g. because of patient preference) requires prior approval by an Online Medical Control Physician**

Prehospital Trauma Triage Criteria – Pediatric:
Refer to the Children's Medical Center's Trauma Activation Criteria on the next page

Age 0 to 13 years (up to 14th birthday): Patients should be transported to Children's Medical Center Dallas.

Age 14 years and older: Patients meeting Trauma Center Criteria should be transported to the closest Level I or Level II ADULT Trauma Center. These Centers include:

1. Parkland Hospital (LEVEL I)
2. Baylor University Medical Center (LEVEL I)
3. Methodist Dallas Medical Center (LEVEL II)
4. Medical Center of Plano* (LEVEL II) – this facility can receive all trauma patients, EXCEPT:
    a. Pediatric patients under 14 years of age;
    b. Neurotrauma under 18 years of age;
    c. Penetrating eye injuries;
    d. Amputations requiring re-implantation;
    e. Burns.
    f. NOTE: Medical Center of Plano will arrange transfer, if indicated, of any patient with any of the above criteria who might be transported to this facility.

Continued on the next page…

Children's Medical Center Dallas
Trauma Activation Criteria

Trauma Stat Activation Criteria	
Criteria	**Further Information**
Traumatic cardiopulmonary arrest from penetrating trauma	
Traumatic injury with signs of shock	
Penetrating injuries to the head, neck, chest, abdomen or pelvis	Excludes lacerations in the stable patient
Respiratory distress secondary to trauma, respiratory compromise/obstruction and/or intubation on scene	
Neurological injury with a GCS equal to or less than 8 without sedation	
Suspected spinal cord injury	Associated with flaccidity, areflexia or unexplained hypotension
Crush or Amputation proximal to the wrist or ankle with signs of shock	
Any trauma transfer with respiratory and/or hemodynamic instability and/or GCS equal to or less than 8 without sedation or paralytics and/or patients receiving blood to maintain vital signs	
Any intubated trauma transfer	
Emergency physician's discretion	
Trauma Alert Criteria	
Criteria	**Further Information**
Traumatic cardiopulmonary arrest from blunt trauma	
Motor Vehicle Crashes (includes ATV's) with reported history of:	Ejection of the patient from the vehicle
	Prolonged extrication (> 20 minutes)
	A rollover collision
	Death of an occupant in same vehicle
Neurological injuries with a GCS of 9 to 14	
Hanging or strangulation mechanisms	
Auto-Pedestrian or Auto-Bike Crashes involving speeds equal to or greater than 20 mph	
Falls greater than 2nd story or 20 feet	
Bilateral femur fractures or 3 or more long bone fractures	
Crush injuries to chest or abdomen	
Crush or Amputation injuries proximal to the wrist or ankle in the stable patient	With fracture or significant tissue loss
Significant lacerations to head or neck in the stable patient	Lacerations that are deep or with significant tissue loss
Any transfer with a grade IV solid organ injury or two or more solid organ injuries	
Trauma Evaluation/Consult	
Criteria	**Further Information**
Child abuse cases to be admitted	
Any trauma related injury where two or more systems are involved	
Any patient that has a single system injury that requires admission and the mechanism is an MVC, MPC, ATV	

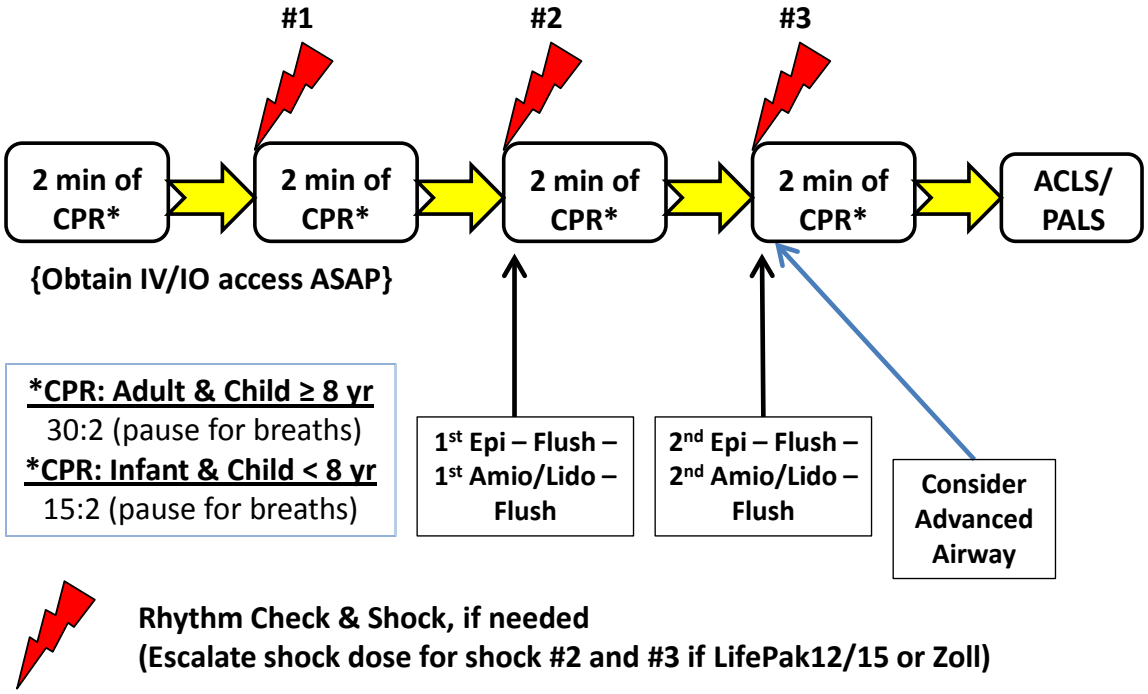
Definition of Shock

Age Group	Heart Rate (beats/min)	Pulse Character	Blood Pressure (mm Hg)	Respiratory Rate (breaths/min)	CNS
Birth to 6 months	> 190	Weak thready central pulses Absence of peripheral pulses	< 60	>70	Change in level of consciousness, dulled response to pain, or comatose
Infant	>176	Same	<75	>50	Same
Preschool	>132	Same	<85	>40	Same
Adolescent	>120	Same	<95	>30	Same

Updated 11.12

VENTRICULAR FIBRILLATION
(And Pulseless Ventricular Tachycardia)

Inclusion Criteria: Apneic, pulseless patients with ventricular fibrillation or pulseless ventricular tachycardia treated by advanced level personnel. Basic-level personnel will use the **CARDIAC ARREST** Guidelines.



NOTE:
- Below are the energy protocols for each brand and model of manual defibrillator.
- If rescuers deliver one or more shocks to the patient prior to arrival of Advanced Level personnel, remember to increase the energy level accordingly on the manual defibrillator. In other words, do not start the shock sequence at the 1st (lowest) setting.
- DO NOT administer consecutive or back-to-back shocks.

Adult (dose in Joules)

	1st	2nd	3rd & after
LifePak12	200	300	360
LifePak 15	200	300	360
LifePak 11	360	360	360
Philips	150	150	150
Zoll	120	150	200

Pediatric (younger than 8th birthday)
- All devices:
  - First shock - 2 J/kg
  - Second shock – 4 J/kg
  - Subsequent shocks – at least 4 J/kg (no more than 10 J/kg)
- For manual defibrillators, use pediatric defibrillation pads.
- For AEDs, use special pediatric, dose-attenuating AED pads (if available) for patients between 1st and 8th birthday.
- Do not use an AED on infants under 1 year old.

NOTE: Following any countershock, do not pause to check the rhythm on the monitor. Instead, immediately resume CPR (starting with effective chest compressions) at a rate of 100-120 per minute for two minutes before the next rhythm check (or shock, if needed). Use a metronome.

1. Follow the **CARDIAC ARREST** Guidelines for patients in cardiac arrest, with attention to maintaining high quality, uninterrupted chest compressions at all times.

2. At the end of **EACH** two-minute period of CPR, check the ECG rhythm and pulse.
   a. In the event of return of spontaneous circulation (ROSC), refer to the **POST-CARDIAC ARREST CARE** Guidelines.
   b. If asystole or PEA develops, resume CPR and refer to the **ASYSTOLE/PEA** Guidelines.
   c. If the patient is in VF or pVT, resume chest compressions while charging the defibrillator to the appropriate energy level and deliver the **FIRST, SINGLE SHOCK**.
      i. Immediately after the shock, resume CPR for 2 full minutes.
      ii. During this 2-minute period, apply the $ETCO_2$ monitor and establish vascular access (if not already done), without interrupting chest compressions.

3. If the patient remains in VF or pVT, resume chest compressions while charging the defibrillator to the appropriate energy level and deliver the **SECOND, SINGLE SHOCK**. Immediately after the second shock, resume CPR for 2 full minutes. During this 2-minute period, administer epinephrine 1:10,000 IVP or IOP with a flush, and an antiarrhythmic with a flush*, as soon as possible after shock delivery, as follows*:

Adult	**Pediatric**
• Epinephrine 1:10,000: 1 mg IVP or IO; flush with 20 mL Normal Saline; AND • Amiodarone 300 mg IVP or IO; immediate flush with 20 mL Normal Saline. • If the etiology of the arrest is trauma, administer lidocaine 1 mg/kg - 1.5 mg/kg IV/IO push, **instead of** amiodarone. • If the rhythm could be Torsades de Pointes, add 2 grams magnesium sulfate to 250 mL Normal Saline & infuse IV piggyback wide open. • BioTel authorization required if dialysis patient.	• Epinephrine 1:10,000: 0.01 mg/kg IVP or IO (0.1 mL/kg); flush with 10 mL Normal Saline; AND • Amiodarone 5 mg/kg IVP or IO; immediate flush with 10 mL Normal Saline: • Maximum single dose = 300 mg.

4. If the patient remains in VF or pVT, resume chest compressions while charging the defibrillator to the appropriate energy level and deliver the **THIRD, SINGLE SHOCK**. Immediately after the shock, resume CPR for 2 full minutes. During this 2-minute period, administer epinephrine 1:10,000 IVP or IOP with a flush, and an antiarrhythmic drug with a flush, *as soon as possible after shock delivery, as follows*:

Adult	**Pediatric**
• Epinephrine 1:10,000: 1 mg IVP or IO; flush with 20 mL Normal Saline; AND • Amiodarone 150 mg IVP or IO; immediate flush with 20 mL Normal Saline. • If the etiology of the arrest is trauma, administer lidocaine 1 mg/kg - 1.5 mg/kg IV/IO push, **instead of** amiodarone.	• Epinephrine 1:10,000: 0.01 mg/kg IVP or IO (0.1 mL/kg); flush with 10 mL Normal Saline; AND • Amiodarone 5 mg/kg IVP or IO; immediate flush with 10 mL Normal Saline: o Maximum single dose = 300 mg.

5. At the end of the two-minute period of CPR, check a pulse and the ECG rhythm.
   a. In the event of return of spontaneous circulation (ROSC), refer to **POST CARDIAC ARREST MANAGEMENT** Guidelines.
   b. If asystole or PEA develops, resume CPR and refer to the **ASYSTOLE/PEA** Guidelines.
   c. If the patient remains in ventricular fibrillation or pulseless ventricular tachycardia, attempt defibrillation again with a **SINGLE** shock at the highest energy level recommended for that device, and immediately resume CPR for two minutes. Repeat this cycle if the patient either remains in VF/pVT or at any time returns to these rhythms.
   d. Consider placement of an advanced airway.

e. **NOTE:**
The 2nd dose of amiodarone/lidocaine may be administered at any subsequent rhythm check after the first interval of CPR, as needed, for recurrent or persistent VF/pVT.
Do NOT administer more than 2 total doses of amiodarone or lidocaine.
Do NOT administer additional doses of amiodarone or lidocaine, either during the resuscitation, or after ROSC has been achieved, unless authorized by BioTel (rarely, if ever, indicated).
Epinephrine may be repeated every 3 to 5 minutes after the first dose, as needed.

6. If any of these possible causes of VF/pVT is suspected, initiate standing order treatment ASAP:

Hyperkalemia (renal failure or dialysis) or **pre-existing acidosis** (e.g. renal failure, dialysis, methanol ingestion, aspirin overdose) or **tricyclic antidepressant overdose**	
Adult and Pediatric • Sodium bicarbonate 1 mEq/kg IVP/IO; flush with at least 10 mL of Normal Saline.	
If mechanism of injury AND symptoms AND physical exam suggest a **tension pneumothorax:**	
Adult • Perform needle thoracostomy.	**Pediatric** • Perform needle thoracostomy. • Contact BioTel as soon as possible.
If **beta blocker** toxicity, administer:	
Adult • Glucagon 1 mg – 5 mg IVP/IO Push. • May repeat once after 20 minutes.	**Pediatric** • Glucagon 0.5 mg (under age 1 yr) or 1 mg (at least one year of age) IV/IO, IM, or IN. • May repeat once after 20 minutes.
If **calcium channel blocker** toxicity, administer	
Adult • Calcium chloride (10% solution) 10 – 15 mg/kg IVP/IO Push. (optional medication)	**Pediatric** • Contact BioTel for authorization and dosing (risk of phlebitis). (optional medication)

7.

If the resuscitation attempt is prolonged (greater than 15 minutes), consider [not required]:	
Adult • Sodium bicarbonate 1 mEq/kg IV/IO Push, and/or • Calcium chloride (10% solution) 10 – 15 mg/kg IV/IO Push (0.1 – 0.15 mL/kg). (optional medication)	**Pediatric** • Sodium bicarbonate 1 mEq/kg IVP/IO Push.

8. For additional patient care considerations not covered under standing orders, consult BioTel.

VOMITING

Inclusion Criteria: Patients with nausea or prolonged vomiting, or those actively vomiting after EMS arrival, with no other symptoms or complaints.

Basic Level

1. Assess and support ABCs.
2. Place the patient in a position of comfort or in the left lateral position. If there is evidence of shock, place the patient supine with the feet elevated, if tolerated, and monitor the airway closely. Treat shock according to the **SHOCK** Guidelines.
3. Administer oxygen, as needed, to maintain a SpO_2 of at least 94%.
4. Perform a POC glucose analysis and treat hypoglycemia according to the **ALTERED LEVEL OF CONSCIOUSNESS** Guidelines.

Advanced Level

5. Apply ECG and $ETCO_2$ monitors if respiratory distress or shock is present or develops.
6. **Consider establishing IV access at a TKO rate or use a saline lock. If fluid resuscitation is needed:**

Adult	Pediatric
• Normal Saline 20 mL/kg boluses IV/IO, as needed. • Do not exceed a cumulative total of 1 L – consult BioTel if additional boluses are needed.	• 20 mL/kg Normal Saline IV/IO bolus. • May repeat twice. • Contact BioTel if additional boluses are required, especially if DKA, cardiac history or signs of volume overload (e.g. JVD, rales).

7. **For nausea and/or vomiting:**

Adult	Pediatric
• Promethazine 12.5 mg – 25 mg IM only. • Ondansetron HCl 4 mg Slow IV or IO (given over 1 minute), or IM or IN; **OR** • Ondansetron 4 mg tablet (Zofran® ODT) sublingual (SL); • Do not administer additional doses; • Do not administer both promethazine and ondansetron to the same patient.	• Do not administer promethazine to the pediatric patient. • Ondansetron HCl 0.1mg/kg SLOW IV or IO (given over 1 minute), or IN. Maximum total dose = 4 mg. Do not administer IM, or to children less than two years of age; **OR** • Ondansetron 4 mg tablet (Zofran® ODT) sublingual (SL): o 2 to 5 years of age & less than 20 kg: 2 mg. o At least 5 years of age & at least 20 kg: 4 mg. o Do NOT administer repeat doses; o Do NOT administer to children less than 2 years of age.

NOTE: Individual agencies may carry only one of these medications. They are not required to carry both.

8. Monitor vital signs during transport.
9. For additional patient care considerations not covered under standing orders, consult BioTel.

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UTSW/BioTel EMS System: Special Procedures

Table of Contents

CONTINUOUS POSITIVE AIRWAY PRESSURE VENTILATION (CPAP)

Indications: Any patient complaining of shortness of breath for reasons other than pneumothorax AND:

- Is awake, oriented, and able to cooperate
- Has the ability to maintain an open airway (GCS greater than 10)
- Has a respiratory rate greater than 25 breaths per minute
- Has a systolic blood pressure above 90 mmHg
- Uses accessory muscles during respirations

Contraindications:

- Children under 13 years of age (unless prior Medical Direction authorization has been granted)
- Facial deformities or patient too small for mask to seal - If the mask doesn't fit, CPAP cannot be used
- Agonal respirations or respiratory arrest
- Pneumothorax
- Tracheostomy
- Unconsciousness or Altered Mental Status

Precautions: Exercise extreme caution when administering CPAP if the patient has:

- Impaired mental status (GCS 10 or less) and is not able to fully cooperate with the procedure
- Failed at past attempts at noninvasive ventilation
- Active vomiting, upper GI bleeding or a history of recent gastric surgery
- Complaints of nausea
- Inadequate respiratory effort
- Excessive secretions

Procedure:

1. Explain the procedure to the patient. Place the patient on continuous pulse oximetry and waveform capnography. Ensure adequate oxygen supply to ventilation device (100% when starting and until SpO_2 is at least 94%).

2. Place the delivery device over the mouth and nose. Secure the mask with provided straps or the other provided devices.

3. Use 5 cm H_2O of PEEP. Check for air leaks. If the distress does not improve and the patient is tolerating CPAP, increase CPAP pressure to 10 cm H_2O, if available.

4. Monitor and document the patient's respiratory response to the treatment Continue to coach the patient to keep the mask in place and readjust as needed

5. If the patient's respiratory status deteriorates, remove the device and provide BVM ventilation and/or an advanced airway (SGA or endotracheal intubation).

Continued on the next page…

Removal Procedure:

- Remove CPAP therapy ***ONLY*** when the patient cannot tolerate the mask or experiences continued or worsening respiratory failure.
- Consider BVM ventilation and/or an advanced airway (SGA or endotracheal intubation), CPAP therapy must be removed.

Special Notes:

- Contact BioTel as soon as the decision is made to use CPAP, so that the receiving hospital can prepare for the patient.
- Upon hospital arrival, do ***NOT*** remove CPAP until hospital therapy is ready to be placed on patient.
- Most patients will improve within 5 to 10 minutes. If there is no improvement within this time, consider assisted ventilation with a BVM.
- Monitor the patient for gastric distention.

CRICOTHYROTOMY (NEEDLE, WITH JET INSUFFLATION)

INDICATIONS:

- Inability to establish or maintain airway patency, oxygenation, and/or ventilation by BVM, by supra-glottic airway, or by orotracheal or nasotracheal intubation, e.g. a patient with massive facial trauma.

LIMITATIONS:

- Provides short-term (less than 30 minutes) oxygenation, but very little ventilation. Hypercarbia will develop quickly. As such, this may be a life-saving procedure, but it is not a substitute for definitive airway management. Intermittent ventilation with high-flow oxygen is required.

CONTRAINDICATIONS:

- Ability to oxygenate and ventilate the patient by BVM, supra-glottic airway or endotracheal intubation.

MATERIALS:

• Oxygen tubing, with a hole cut near one end, and the other end connected to a high-flow, 50 psi oxygen source • Iodine skin cleanser	• 12-gauge or 14-gauge IV catheter, connected to a 10 mL syringe • ET Tube adapter from a 3 Fr. or 3.5 Fr ET Tube, to fit the end of the IV catheter

PROCEDURE:

1. Place the patient supine and cleanse the skin with iodine.
2. Continuously monitor ECG, SpO_2 and $ETCO_2$.
3. Palpate the cricothyroid membrane on the midline, between the thyroid cartilage and the cricoid cartilage.
4. Stabilize the trachea with the non-dominant thumb and finger.
5. Puncture the skin/syringe on the midline, directly over the cricothyroid membrane.
6. With a 45-degree angle towards the patient's feet, insert the needle through the cricothyroid membrane into the trachea while continuously, gently aspirating the syringe.
7. **Aspiration of air confirms entry into the tracheal lumen.**
8. Remove the syringe and withdraw the stylet/needle, while simultaneously advancing the catheter downward into position.
9. Take care not to puncture the posterior tracheal wall and not to inadvertently withdraw the catheter itself.
10. Secure the oxygen tubing to the catheter, using the 3 Fr. or 3.5 Fr. EET adapter, if needed.
11. Secure the catheter to the patient's neck.
12. Provide intermittent ventilation:
    a. **Occlude the open hole cut into the oxygen tubing for 1 second, then release for 4 seconds.**
        i. Upon release of the tubing hole, passive exhalation will occur.
        ii. Repeat: 1 second "on", followed by 4 seconds "off", and so on.
    b. Adequate oxygenation can be provided for no more than 30 to 45 minutes; CO_2 accumulation will be even more rapid.
13. Monitor the patient for lung inflation, breath sounds, heart rate, blood pressure, SpO_2 and $ETCO_2$.

COMPLICATIONS:

- Inadequate ventilation and/or oxygenation, leading to hypoxia and death
- Aspiration of blood
- Esophageal laceration
- Hematoma
- Posterior tracheal laceration
- Subcutaneous and/ or mediastinal emphysema
- Thyroid perforation
- Pneumothorax

EMERGENCY CHILDBIRTH: NORMAL

1. **OBTAIN FOCUSED HISTORY (Refer to the OBSTETRICAL/GYNECOLOGICAL Guidelines):**
   - Estimated date of confinement ("EDC" or "due date")
   - Contractions: Frequency, duration, intensity
   - Amniotic sac rupture (time and presence of meconium)
   - Previous pregnancies and deliveries (especially multiple births, complications, vaginal or C-section)
   - "AMPLE" history (especially hypertension, pre-eclampsia, diabetes, seizures, cardiac)
     - Medications taken prior to labor, including over-the-counter
     - Prenatal care (especially any identified pregnancy complications)
   - Vaginal bleeding and/or abdominal pain

2. **ASSESS MATERNAL VITAL SIGNS & IMPLEMENT CONTINUOUS MONITORING:**
   - Heart Rate (HR), BP, Respiratory Rate, SpO_2, Temperature
   - ECG and SpO_2 monitoring

3. **PREPARE FOR DELIVERY:**
   - Prepare delivery area and open OB kit: prepare bulb syringe, cord clamps, towels, newborn blanket
   - Remove patient's clothing and place clean pad under patient

4. **DELIVER THE NEWBORN:**
   - During contractions, urge patient to push
   - Deliver and support the emerging fetal head
   - Check for and manage nuchal cord, if present
   - Assess for and document presence of meconium
   - Deliver the shoulders, then the rest of the body
   - Place newborn on mother's abdomen or level with the mother's uterus
   - Note the time of birth (and the time of placenta delivery)
   - Control maternal hemorrhage, if needed, and document the mother's vital signs; continue continuous monitoring

5. **NEWBORN CARE – Refer to the NEONATAL CARE Guidelines**
   - **Birth to 30 seconds postpartum:**
     - Warm and dry; clear the airway, if needed (because of apnea or "drowning" in secretions)
     - Stimulate the newborn by rubbing the back & wrap in blankets or towels to prevent hypothermia
   - **30 to 60 seconds postpartum:**
     - If HR less than 100 bpm and or respirations are absent or gasping, initiate PPV with room air. Monitor SpO_2 on the infant's right hand or wrist. Oxygen may be supplemented to achieve mean per minute goal saturations**, but this is secondary to effective ventilation.
     - Clamp and cut the umbilical cord
     - Place the newborn on the mother's chest to retain warmth
     - *Calculate and document the 1-Minute APGAR score*
   - **More than 1 minute postpartum:**
     - If HR less than 100 despite PPV, take corrective steps to improve ventilation, per "MRSOPA":
       - **M**ask: check the seal
       - **R**eposition: make sure infant is in sniffing position
       - **S**uction (mouth before nose)
       - **O**pen the mouth
       - **P**ressure increase (gentle!)
       - **A**lternative airway (either intubate or place LMA, if available)
     - If no improvement, begin 2-person CPR at a rate of 120 events per minute (90 compressions, 30 ventilations); compression-to-ventilation ratio of 3-to-1; use 2-thumb-encircling-hands compressions
     - If no improvement, consider 1:10,000 epinephrine 0.01 mg/kg (0.1 mL/kg) IV/IO (rarely needed)

Continued on the next page…

- **5 Minutes postpartum:**
  - *Calculate and document the 5-Minute APGAR score*

6. **Continue to monitor maternal and newborn vital signs; prepare for transport to an appropriate facility.**

7. For patient care considerations not covered by this procedure, consult BioTel.

Oxygen Saturation (SpO_2) 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%

EMERGENCY CHILDBIRTH: ABNORMAL

1. **OBTAIN FOCUSED HISTORY (Refer to the OBSTETRICAL/GYNECOLOGICAL Guidelines):**
   - Estimated date of confinement ("EDC" or "due date")
   - Contractions: Frequency, duration, intensity
   - Amniotic sac rupture (time and presence of meconium)
   - Previous pregnancies and deliveries (especially multiple births, complications, vaginal or C-section)
   - "AMPLE" history (especially hypertension, pre-eclampsia, diabetes, seizures, cardiac)
   - Medications taken prior to labor, including over-the-counter
   - Prenatal care (especially any identified pregnancy complications)
   - Vaginal bleeding and/or abdominal pain

2. **ASSESS MATERNAL VITAL SIGNS & IMPLEMENT CONTINUOUS MONITORING:**
   - Heart Rate (HR), BP, Respiratory Rate (RR), SpO_2, Temperature
   - ECG and SpO_2 monitoring
   - Administer 100% oxygen by NRBM to the mother, and obtain IV/IO access, if time permits

3. **PREPARE FOR DELIVERY:**
   - Prepare delivery area and open OB kit: prepare bulb syringe, cord clamps, towels, newborn blanket
   - Remove patient's clothing and place clean pad under patient

4. **DELIVER THE NEWBORN – For additional specific guidance refer to the next page or contact BioTel:**
   - During contractions, urge patient to push (exception: cord prolapse)
   - Deliver and support the emerging fetal presenting part, if not the head
   - Recognize ***abnormal presentation requiring immediate care and immediate transport***, e.g. prolapsed cord, hand/foot presentation, shoulder dystocia:
     - **Must be delivered by Emergency C-section:** prolapsed cord, breech presentation when the head does not deliver within 3 minutes, shoulder presentation ("transverse lie"), cephalopelvic disproportion ("CPD" – fetal head is too large or woman's pelvis is too small for normal delivery)
   - Deliver legs and body, if possible and continue to support the fetus
   - Deliver head
   - If the fetal head is not promptly delivered, insert gloved fingers/hand into the vagina to establish a space for breathing and/or to relieve pressure on the umbilical cord:
     - Special circumstances for inserting a gloved hand into the vagina during active labor:
       - Breech presentation when the head does not deliver immediately to prevent suffocation
       - Umbilical cord prolapse to lift the presenting part off the cord
     - In both instances, this position must be maintained en route, until C-section delivery
   - Assess for and document the presence of meconium
   - *Initiate rapid transport to an appropriate Obstetrical Specialty Care facility*
   - Deliver the shoulders, if not previously delivered
   - Deliver the remainder of the body, if not previously delivered
   - Place newborn on mother's abdomen or level with the mother's uterus
   - Note the time of birth, and the delivery details (and the time of placenta delivery)
   - Control maternal hemorrhage, if needed and document mother's vital signs; continue continuous monitoring of both mother and fetus/newborn

5. **NEWBORN CARE – Refer to the NEONATAL CARE Guidelines:**
   - **REFER to the EMERGENCY CHILDBIRTH: NORMAL** Procedure on the preceding page for newborn care procedures

6. **Continue to monitor maternal vital signs and fetal viability/newborn vital signs en route to an appropriate Obstetrical Specialty Care facility.** (Refer to the DESTINATION Policy or contact BioTel.)

7. For patient care considerations not covered by this procedure, consult BioTel.

EMERGENCY CHILDBIRTH: ABNORMAL
ADDITIONAL RESOURCES

1. **<u>These abnormal conditions cannot be safely managed in the field and require immediate C-section:</u>**

- **Cephalopelvic Disproportion ("CPD"):** fetus's head is too large or mother's pelvis is too small
  - Associations: Primigravida with prolonged, excessively strong contractions for a long time
  - Risks: Uterine rupture, fetal demise
- **Umbilical Cord Prolapse:** fetal part compresses the cord, causing anoxia
  - Associations: breech presentation, PROM, large fetus, multiple gestation, long cord, preterm labor
  - Risk: Fetal anoxic brain injury
  - EMS treatment different from normal childbirth:
    - Position the mother with her hips elevated, or in Trendelenburg or knee-chest position
    - Administer 100% oxygen via NRBM to the mother
    - Instruct mother to "pant" with each contraction – instruct her NOT to bear down
    - Apply moist, sterile gauze to the exposed cord: handle the cord carefully
    - With a gloved hand, gently attempt to push the fetus back into the vagina and elevate the presenting fetal part off the cord
      - If the cord spontaneously retracts, allow it do so without attempting to reposition it
    - This position must be maintained en route, until emergency C-section can be performed
    - Periodically reassess and document fetal viability (palpable pulse in the cord)
- **Shoulder Presentation ("Transverse Lie"):** fetal arm or shoulder may be the presenting part
  - Associations: Rare, except in second twins

2. **<u>These abnormal conditions may require C-section delivery and require immediate transport:</u>**

- **Breech Presentation:** If the head does not deliver within 3 minutes, the infant cannot be safely delivered in the field
  - Three types:
    - Most common: "frank" or "frontal" – hips flexed, legs extended, buttocks presentation
    - 2nd most common: "incomplete" – foot presentation
    - Least common: "complete" – both hips & knees flexed, buttocks presentation
  - Associations: Multiple gestation, preterm labor
  - EMS treatment different from normal childbirth:
    - Contact BioTel for instructions, while permitting the fetus to deliver spontaneously up to the level of the umbilicus
      - During delivery, ensure that the fetal face is turned away from the maternal symphysis pubis
      - Avoid excessive traction or manipulation of the fetal head or spine
    - If the head does not deliver immediately, take action to prevent suffocation:
      - Insert a gloved hand into the vagina, palm towards the fetus's face
      - Form a "V" around the nose with the index and middle fingers
      - Gently push the vaginal wall away from the fetal face until the head is delivered
      - This position must be maintained en route, until emergency C-section
- **Shoulder Dystocia:** fetal shoulders blocked by maternal symphysis pubis, causing the head to deliver but then to pull back tightly against the mother's perineum
  - Associations: increased birth weight (e.g. infant of diabetic mother)
  - Risks: brachial plexus injury, fractured clavicle, fetal anoxia from cord compression
  - EMS treatment different from normal childbirth:
    - Contact BioTel for instructions while positioning the mother on her back in a knee-chest position
    - Avoid excessive traction on the fetal head or spine

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3. **<u>These conditions may complicate delivery – EMS Providers should prepare for immediate transport:</u>**

- **Multiple Gestation: NOTE** – women with no prenatal care may be unaware of multiple pregnancies
  - Risks: prematurity, PROM, placental abruption, postpartum hemorrhage, abnormal presentation
  - EMS treatment different from normal childbirth:
    - 1st twin: identical to singleton with the same presentation
    - Uterine contractions usually resume within 5 to 10 minutes
    - Delivery of the 2nd fetus usually occurs within 30 to 45 minutes
    - Both twins usually deliver before the placenta(s)
    - BioTel may advise transport prior to delivery of the 2nd fetus
    - Increased newborn risks after delivery: hypothermia, hypoxia, hypoglycemia, sepsis
    - Postpartum maternal hemorrhage may be severe, requiring vigorous fluid resuscitation and uterine massage
- **Precipitous Delivery:** Rapid, spontaneous delivery within 3 hours of onset of labor
  - Associations: Grand multipara (woman with 7 or more prior deliveries)
  - Risks: fetal head trauma, fetal hypoxia, hemorrhage due to tearing of the umbilical cord
  - EMS treatment different from normal childbirth:
    - Apply *gentle* counterpressure to the fetal head, but do NOT attempt to detain fetal descent
    - Examine the maternal perineum for tears or hemorrhage
      - Control maternal perineal hemorrhage with firm pressure on gauze pads
- **Pulmonary Embolism & Amniotic Fluid Embolism ("AFE"):** Common causes of maternal mortality before, during, and after delivery
  - Associations:
    - Pulmonary Embolism: more common after C-section than after vaginal delivery
    - AFE: Multiparous women in 1st stage of labor; maternal trauma; placenta previa, placental abruption, intrauterine fetal demise
  - Risk: Maternal death
  - Signs and Symptoms:
    - Sudden, severe dyspnea; pleuritic, localized chest pain; tachycardia; tachypnea; hypotension; shock; cyanosis; cardiopulmonary arrest
  - EMS treatment different from normal childbirth:
    - Refer to relevant Treatment Guidelines for **CARDIAC ARREST, SHOCK, DYSRHYTHMIA**
    - Continuous ECG, SpO_2, and $ETCO_2$ monitoring
    - IV/IO at TKO rate
    - 12-Lead ECG
- **Abnormal Maternal Hemorrhage:** Examples: placenta previa, placental abruption, multiple gestation, uterine rupture, uterine inversion
  - Associations: Trauma
  - Risks: Maternal and/or fetal death
  - NOTE: Absence of vaginal bleeding does NOT exclude placental abruption
    - Mandatory transport to an Obstetrical Special Care facility for any pregnant woman with abdominal pain after MVC or other trauma (Refer to DESTINATION Policy)
  - EMS treatment different from normal childbirth:
    - Continuous ECG, SpO_2, and $ETCO_2$ monitoring
    - Large-bore IV/IO access and fluid resuscitation to treat hypovolemic **SHOCK**
- **Uterine Inversion:** uterus turns "inside out"
  - #1 cause: personnel placing excessive traction on the cord or excessive pressure on the uterine fundus
    - Other causes: Forceful uterine contraction; maternal cough or sneeze
  - Two types: incomplete and complete
  - Signs/symptoms: postpartum hemorrhage; sudden, severe lower abdominal pain; shock
  - EMS treatment different from normal childbirth
    - Monitor and resuscitate as for other causes of maternal hemorrhage
    - Do NOT attempt to remove the placenta

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        - If the uterus is freshly inverted AND the placenta has already separated, apply pressure with gloved fingertips and palm, and push the uterine fundus upward through the cervical canal
            - If this is ineffective, or if the placenta has NOT already separated, cover all protruding tissues with moist, sterile dressings and transport
        - If the uterus has been inverted for a prolonged period, or if in doubt, cover all protruding tissues with moist, sterile dressings and transport
- **Meconium Staining:** Fetal stool in the amniotic fluid, indicative of fetal distress
    - **NOTE:** Meconium staining cannot be determined until after rupture of fetal membranes, when delivery may be imminent
    - Associations: Post-term delivery, small-for-gestational-age (SGA) infants
    - Risks: perinatal mortality, hypoxemia, aspiration pneumonia, pneumothorax and Meconium Aspiration Syndrome (generally only with thick meconium)
    - Signs and symptoms: spectrum from minimal symptoms to severe cardiorespiratory depression
    - EMS treatment different from normal childbirth:
        - During delivery, as the head delivers and before shoulder delivery, if possible:
            - Clear the airway and suction the mouth, then pharynx, and then nose
        - After delivery:
            - Vigorous infant: remove residual meconium from the hypopharynx by suctioning under direct vision
            - Depressed infant:
                - Perform direct ET suctioning, using the ET tube as a suction catheter
                - Quickly intubate the trachea, preferably before the infant takes 1st breath
                - Apply suction to the ET tube, while withdrawing it
                - Monitor HR
                - If the HR drops below 100 BPM, ventilate with an infant BVM
                - Repeat the intubation-suction for 3 seconds-extubation cycle until no further meconium is removed, *as long as the HR remains at least 100 BPM*
                - If the HR remains above 100 BPM, do not ventilate between cycles
                - If the ET tube occludes with meconium, replace it with a fresh tube
        - Refer to the **NEONATAL CARE** Guidelines for resuscitation and other treatments

EZ-IO® INTRAOSSEOUS INFUSION

Inclusion criteria: This procedure description is intended to supplement the standard, symptom-based UTSW/BioTel EMS Treatment Guidelines. The Vidacare® EZ-IO® may be attempted on any critically ill patient weighing at least 3 kg, when peripheral intravenous (IV) access is unavailable or unsuccessful or may result in excessive treatment delay. The proximal tibia is the standard insertion site; the proximal humerus or other sites may be used by providers trained to use these insertion sites.

1. **Contraindications:**

- Fracture of the selected bone
- Infection at the insertion site
- Excessive tissue at the insertion site
- Inability to locate anatomic landmarks
- Vascular compromise of the extremity
- IO insertion or orthopedic procedure within prior 24 hours at the same site
- Hypertonic (3% or greater) saline infusion

2. **Indications for critical illness/injury requiring fluid resuscitation and/or medications:**

- **After 1 or 2 peripheral IV attempts or 90 seconds:**
  - Any critical illness or injury
- **Consideration for insertion PRIOR to IV attempts:**
  - Cardiac arrest
  - Profound hypovolemia or shock, with altered mental status

3. **Equipment:**

- Vidacare® EZ-IO® driver
- Vidacare® EZ-IO® needle set correct for age***
- Iodine (or alcohol) swab
- 1 or 2 10 mL syringes of Normal Saline
- Standard IV infusion set (any age patient) – ***flushed and primed***
- Pressure bag
- 1 Liter bag of Normal Saline
- 3-way stopcock, if available (pediatric patient)
- Primed IV extension set (or EZ-Connect®)
- Vidacare® EZ-IO® Stabilizer or gauze/tape
- 1 pre-filled syringe of 2% lidocaine (optional)

4. **Procedure:**

- Wear approved BSI protective gear and garments
- Locate and cleanse the insertion site using aseptic technique
- Prepare the driver and needle set
- Stabilize the limb: use towels, blankets, bags of normal saline or other items, NOT a provider's hand(s)
- Insert the needle set
- Remove the driver
- Remove the stylet from the catheter
- Confirm placement and attach extension tubing or EZ-IO® Connect, if used
- Consider administration of 40 mg (2 mL) of 2% lidocaine in the **adult**, conscious patient; wait 15 seconds
  - For conscious, pediatric patients sensitive to pain, contact BioTel for lidocaine dosing
- IMMEDIATELY flush with at least 10 mL of Normal Saline – "No Flush = No Flow"
- Connect IV infusion set and pressure bag
- Administer fluid, adjusting flow rate, as needed
- Secure the tubing and catheter using EZ-IO® stabilizer or gauze/tape
  - Provide tubing slack to prevent dislodgement with patient movement
  - Avoid excessive or circumferential tape or gauze (risk of infiltration/compartment syndrome)
- Document procedure details in ePCR
- Monitor insertion site frequently for dislodgement, leak/extravasation, infiltration/compartment syndrome

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5. Considerations:

- Flow rates:
  - Due to intraosseous space anatomy, fluid flow rates will be slower than those achieved through a peripheral IV catheter.
  - Regular IV infusion sets must be used, regardless of patient age (no micro-drip set!)
  - IO needle must be flushed with 10 mL of Normal Saline immediately after insertion to prevent clotting and obstruction.
  - A pressure bag will be needed for continuous infusion.
  - Use of a 3-way stopcock is preferred for medication administration in pediatric patients.
  - Excessive tape, gauze or other dressings can hinder fluid flow, lead to tissue infiltration, and cause limb-threatening compartment syndrome.

- Pain:
  - EZ-IO® insertion in conscious patients causes transient, mild-to-moderate discomfort that is typically no more painful than insertion of a large-bore, peripheral IV.
  - Intraosseous infusion can be painful in conscious patients.
  - In the conscious, adult patient, slow infusion of 2 mL (40 mg) of 2% cardiac lidocaine through the needle hub, followed by a 15-second pause before the Normal Saline flush can reduce that pain:
    - **IMPORTANT NOTE:** Avoid excessive delay after lidocaine infusion – flush immediately with 10 mL Normal Saline to avoid clotting of the IO catheter.
  - For conscious, pediatric patients sensitive to pain, contact BioTel for lidocaine dosing.

6. Possible Complications:

- Extravasation
- Dislodgement
- Compartment Syndrome
- Fracture
- Pain
- Reduced flow
- Infection

7. Removal:

- The EZ-IO® catheter should be removed within 24 hours of insertion
- Removal instructions:
  - Stabilize the extremity
  - Connect a sterile, Luer-Lock syringe to the catheter hub
  - Rotate the catheter ***clockwise***, while gently pulling straight back
    - Do NOT rock or bend the catheter during removal
    - Rocking or bending the catheter with a syringe may cause the catheter to separate from the hub
  - Immediately after removal, place the catheter in an appropriate biohazard container
  - Apply a sterile bandage to the insertion site

*****EZ-IO® Needle Sizes (Note: all needles are 15 g. - only the length differs among sizes):**

Color/Size	Patient Weight Range	Notes
PINK / 15 mm	**3 to 39 kg.**	Also: patients with minimal tissue at insertion site
BLUE / 25 mm	**At least 39 kg.**	Also: patients with too much tissue at insertion site for pink/15 mm needle set
YELLOW / 45 mm	**At least 39 kg. AND Excessive Tissue**	Examples: edema, large musculature, or obesity. Also: humeral site for patients at least 39 kg.

NASOTRACHEAL INTUBATION (NTI)

INDICATIONS:

- Adult patients requiring definitive airway management for whom orotracheal intubation is impossible or contraindicated, due to patient presentation or condition:
  - Conscious, spontaneously breathing patients with intact gag reflex (e.g. COPD, asthma, burns)
  - Unconscious patients with GCS less than 8 due to trauma or medical conditions
  - Patients with possible C-spine trauma whose injuries may be aggravated by neck movement

CONTRAINDICATIONS:

ABSOLUTE CONTRAINDICATIONS	RELATIVE CONTRAINDICATIONS
• Apnea • Age less than 13 years • Severe midface congenital or traumatic deformity • Nasal airway obstructions	• Suspected basilar skull fracture (raccoon's eyes, Battle's sign, CSF leakage from ears or nose) • Coagulopathy (e.g. hemophilia or liver disease) • Anti-coagulants (e.g. aspirin, heparin Coumadin, Pradaxa®, Plavix®, etc.) • Acute hypertension • Suspected elevated intracranial pressure

EQUIPMENT:

• ET Tube 0.5 to 1 size smaller than that for oral intubation – or select a tube slightly smaller than the patient's nostril • Lidocaine jelly (or sterile lubricant): if time allows, apply lidocaine jelly to an NPA and insert several minutes prior to intubation	• BAAM® "whistle-tip" device • 10 mL syringe • Soft suction catheter • $ETCO_2$ detection device, preferably continuous waveform capnography • Tape or commercial tube holder

PROCEDURE (Observe Body Substance Isolation Precautions):

1. Prepare the tube: wrap into a circular shape for 1 minute and attach the BAAM® device; lubricate with lidocaine jelly (or sterile lubricant).
   a. If BAAM® device unavailable: remove stethoscope bell and insert tubing into the ETT for auscultation.
2. Place the patient in a "sniffing" position, ***IF CERVICAL SPINE TRAUMA IS NOT SUSPECTED***.
3. Insert the tube straight back into the right nostril, parallel to the floor, anterior to posterior:
   a. Do not angle the tip upwards towards the skull, or downwards.
   b. Insert with the tube bevel facing the nasal septum.
   c. Use a slight back-and-forth rotation of the tube, if minor resistance is felt.
   d. If significant resistance is encountered, remove the tube and insert into the left nostril.
4. Once the tube tip reaches the pharynx, listen for breath sounds through the BAAM® device and observe for condensation in the tube.
5. Advance the tube:
   a. Conscious patient: ask the patient to take a deep breath, and gently advance the tube during inhalation.
      i. Asking the patient to protrude the tongue during this step reduces risk of esophageal insertion.
   b. Unconscious patient: advance the tube during inhalation.
6. Confirm tube placement:
   a. Patient coughs; condensation appears in the tube; $ETCO_2$ detection; conscious patient is unable to speak; auscultation of symmetrical, bilateral breath sounds; and stable/improving SpO_2.
7. If tube placement is confirmed, advance the tube another 1-1½ inches and remove the BAAM® device.
8. Inflate the cuff and secure the tube.

COMPLICATIONS:

- Bleeding (common), nasal fracture, vomiting or aspiration; intracranial placement (theoretical).

NEEDLE THORACOSTOMY
(PLEURAL DECOMPRESSION)

INDICATIONS:
- Patient with Suspected Tension Pneumothorax:
  - Decreased/Absent Breath Sounds on the Affected Side, Dyspnea, Hypoxia, Poor Chest Wall Excursion, Hyperresonance to Percussion on the Affected Side, and Pallor/Cyanosis, PLUS
    - Hypotension
    - Shock
    - Increased airway resistance to assisted ventilation ("hard to bag")
    - Jugular Venous Distention (JVD) – may be absent if the patient is hypovolemic
    - Tracheal Deviation – late sign, detected only by palpation in suprasternal notch

COMMON SETTINGS:
- Trauma
- Cardiac Arrest & Severe Dysrhythmias (e.g. PEA, Bradycardia with Poor Perfusion)
- Asthma, COPD
- Any patient on positive pressure ventilation (BVM or advanced airway)

DIFFERENTIAL DIAGNOSIS:
- Massive Hemothorax (dullness to percussion, no JVD)
- Cardiac Tamponade (symmetrical breath sounds, symmetrical chest excursion, muffled heart tones)
- Right Mainstem Intubation (no hypotension/shock, no hyperresonance, no JVD)
- Simple Pneumothorax (no hypotension/shock, usually no cyanosis, no tracheal deviation)

PROCEDURE (Observe Body Substance Isolation Precautions):
1. Equipment needed:
   a. Large, long, non-needle-guard IV catheter (Adult: 14 g or 16 g., at least 2½" long; Pediatric: 18 g.)
   b. Iodine skin cleanser
2. Locate anatomic landmarks: 2nd intercostal space at the mid-clavicular line on the affected side
   a. Prepare the area with betadine
   b. Palpate the clavicle, then 2nd rib, then 3rd rib (1st rib is not palpable under the clavicle)
   c. Insertion site: mid-clavicular line, over the top of the 3rd rib (2nd intercostal space)
   d. Alternate site: mid-axillary line, 4th intercostal space (no lower than the nipple line), over the top of the 5th rib, in the relatively thin area between the pectoralis and the latissismus dorsi muscles
3. Remove the cotton plug from the IV catheter (if present) and insert the catheter over the top of the 3rd rib, perpendicular to the chest wall (do not angle the tip of the catheter towards the patient's head):
   a. When the catheter enters the pleural cavity, there will be a palpable "pop" and a rush of air through the needle:
      i. Conscious patients may report immediate resolution of dyspnea, with improved vital signs
      ii. Unconscious patients may become easier to ventilate, with improved vital signs
   b. Advance the catheter over the needle into the pleural space until the catheter hub is flush with the skin, withdrawing and removing the needle
4. Reassess and document the patient's HR, BP, respiratory rate, cardiac rhythm, $ETCO_2$, SpO_2, bilateral breath sounds, JVD, level of consciousness, and chest wall excursion
5. Prepare for transport
6. Reassess and document the patient's HR, BP, respiratory rate, cardiac rhythm, $ETCO_2$, SpO_2, bilateral breath sounds, JVD, level of consciousness, and chest wall excursion frequently en route:
   a. Catheter displacement, kinking or clotting can cause reoccurrence of the tension pneumothorax
   b. If this occurs, leave the catheter in place, and repeat the insertion procedure with a 2nd catheter in the same intercostal space, adjacent to the first one

COMPLICATIONS:
- Local hematoma, pneumothorax, lung or blood vessel laceration

PHARMACOLOGICALLY-ASSISTED INTUBATION (PAI) – (OPTIONAL PROCEDURE)

Inclusion Criteria: It may be necessary on occasion to sedate and/or utilize neuromuscular blockade before or during transport in order to facilitate intubation of the patient with a compromised airway when standard methods have failed or would delay care. Only adequately trained Paramedics with Medical Director clearance may perform this procedure. At least three rescuers are necessary to perform this procedure safely.

INDICATIONS:

- Trauma patient with GCS less than or equal to eight (8) with an intact gag reflex
- Trauma patient with significant facial trauma and poor airway control
- Closed head injury or hemorrhagic stroke needing **mild** hyperventilation
- Burn patient with airway involvement and anticipated airway loss
- Severe asthma or COPD with hypoxia and respiratory exhaustion
- Overdoses, (i.e. tricyclic anti-depressants) where loss of airway is anticipated
- Any combative, agitated, or confused patient who needs definitive airway control
- Any other patient approved by a Medical Command Physician at BioTel

Special Note:

A quick, but detailed, notation of pre-intubation neurological status is required for head injury and stroke patients.

CONTRAINDICATIONS:

When any of the indications is present, there are no contraindications.

PROCEDURE:

THREE (3) MINUTES PRIOR TO INTUBATION:

1. Pre-oxygenate and Prepare:
   a. Allow the patient to breathe 100% oxygen by mask (assist ventilation only if absolutely necessary).
   b. Institute continuous monitoring of ECG (monitor for dysrhythmias), pulse oximetry, and waveform capnography.
   c. Ensure functioning and secure IV access (functioning IO is acceptable).
   d. Assemble required equipment and personnel:
      i. Pharmacologically-Assisted Intubation Checklist
      ii. Oral airway, suction, O_2, ET tube, stylet, laryngoscope, BVM, device to secure tube, and an appropriately sized cervical collar
      iii. PAI and pretreatment medications (two rescuers MUST confirm the appropriate drug dosages)
      iv. At least three rescuers are necessary (1 for intubation, 1 for medication administration and possible Sellick maneuver (if needed), and 1 time keeper/monitor)

TWO (2) MINUTES PRIOR TO INTUBATION:

2. Premedicate (as appropriate) – administer:
   a. Lidocaine 1 mg/kg, if head injury or stroke is suspected and no contraindications exist; AND
   b. Atropine 0.01 mg/kg (0.1 mL/kg), if the patient is less than 13 years of age and no contraindications exist

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ONE (1) MINUTE PRIOR TO INTUBATION:

3. Sedate:
   a. Etomidate, 0.3 mg/kg slow IV/IO push over 30 seconds, if no contraindications exist
      i. If sufficient sedation does not occur within three minutes, administer one additional etomidate dose of 0.1 mg /kg as needed to achieve sedation, up to a maximum, cumulative, total dose of 40 mg.
      ii. Pediatric dose: 0.6 mg/kg IV/IO cautiously over 30 seconds.

Alternatively

3. Sedate:
   a. Ketamine, 2 mg/kg IV/IO, if etomidate is unavailable and if no contraindications exist
      i. Pediatric dose: 2 mg/kg IVP/IO cautiously over 1 minute, or 3 to 5 mg/kg IM

Alternatively

3. Sedate:
   a. Midazolam, 2.5 to 5 mg slow IV/IO, up to a maximum single dose of 5 mg;
      i. Pediatric dose: 0.1 mg/kg slow IV/IO, up to a maximum of 5 mg.
   b. **AND**
   c. Fentanyl, 1.0 mcg/kg slow IV/IO, up to a maximum single dose of 200 mcg;
      i. Pediatric dose: 1.0 mcg/kg IV/IO, up to a maximum of 100 mcg

NOTE: Agencies are not required to carry medications for all sedation procedures.

INTUBATION TIME:

4. Perform orotracheal intubation within 30 seconds:
   a. If unsuccessful, ventilate with BVM and 100% oxygen with slow steady ventilation.
   b. Abandon intubation attempt and ventilate with 100% oxygen if ANY of the following events occur:
      i. Heart rate falls by 10 beats per minute below baseline
      ii. SpO_2 falls by 10 percentage points below baseline
      iii. $ETCO_2$ rises by 5 mmHg above baseline
   c. If unable to intubate the trachea in one attempt, insert an approved supraglottic airway device.

THIRTY (30) TO SIXTY (60) SECONDS FOLLOWING INTUBATION:

5. Confirm tube placement with physical exam techniques and waveform capnography.
6. Secure tube and restrict movement of the patient's head with a cervical collar and tape.
7. Acquire rhythm strip of ECG rhythm, current vital signs, and capnography waveform.
8. Complete post-sequence checklist.

DURING TRANSPORT:

9. Implement continuous ECG, SpO_2 and $ETCO_2$ monitoring until care is transferred to the ED staff.
10. If the patient exhibits movement, coughing or other activity that might lead to extubation, administer:
    a. Diazepam 2.5 mg to 5 mg IV/IO/IM/IN (May repeat once after 15 minutes);
       i. Pediatric dose: 0.1 mg/kg IV/IO/IM/IN (May repeat once, after 15 minutes);
    b. ***OR***
    c. Midazolam 2.5mg to 5 mg IV/IO/IM/IN (May repeat once after 15 minutes);
       i. Pediatric dose: 0.1 mg/kg IV/IO/IM/IN (May repeat once, after 15 minutes);
    d. For additional dosing authorization, contact BioTel.

TASER BARB REMOVAL

Purpose: Law enforcement personnel may request a medical assessment after TASER deployment, and/or to have EMS personnel remove TASER barbs lodged in someone's skin. All EMS providers in the BioTel system may utilize this procedure. Be aware that TASER deployment may result in falls that can produce secondary injuries. They do not, however, normally produce altered mental status. The patient may require additional restraint as defined in the **RESTRAINT OF PATIENT** Policy.

Patient Assessment Following TASER Deployment:

1. Confirm that the officer deactivated the TASER and disconnected the barb cartridge from the device.

2. Obtain vital signs as soon as possible. Violent and combative behavior may be caused by intoxication, psychosis, hypoxia, hypoglycemia, head injury, overdose or CNS infection. Obtain pulse oximetry, capnography, lead II ECG, and POC glucose analysis as soon as possible. Treat **EXCITED DELIRIUM, TRAUMA** or **SEIZURES** according to the specific guidelines.

3. Evaluate the anatomical location of the barb's puncture zone(s). High-risk/sensitive zones will require transport to a medical facility for removal. Do not attempt to remove the barb(s) if they are lodged in the:

    a. Eyes, ears, nose, mouth, face, or neck
    b. Genitals
    c. Spine
    d. Hands, feet, or joints

Barb Removal:

1. Utilize appropriate PPE (gloves.) Inform all caregivers of the intent to remove the contaminated sharp.

2. Remove one barb at a time. Stabilize the skin surrounding the TASER barb. Firmly grasp the barb and, with one smooth, firm jerk, remove the barb from patient's skin.

3. Visually examine the barb tip to ensure that it is intact. If any part of the barb remains embedded in the patient, transport the patient to the closest appropriate medical facility for removal.

4. Observe precautions to avoid accidental needle sticks during barb removal.

5. Place the barb in an appropriate container and return it to the law enforcement officer for evidence.

6. Provide wound care by cleansing the site with antiseptic and covering with an adhesive bandage.

7. Inform the patient of basic wound care and the need to seek additional care in the event that signs of infection occur (redness-pain-drainage-swelling-fever.) The patient will need a tetanus immunization, if he or she has not received one within the previous 5 years.

Disposition:

1. Transport to the closest appropriate hospital any patient meeting any of the following criteria:
    a. Barb(s) is/are lodged in any of the above-listed sensitive areas;
    b. Patient has a previous cardiac history;
    c. Patient appears intoxicated;
    d. Patient is non-compliant with direct instructions;
    e. Patient meets criteria for other BioTel Treatment Guidelines requiring transport (e.g. chest pain, altered mental status, electrical injury, age older than 65 years, etc.).

2. Complete medical documentation is required, whether or not EMS transports the patient.

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UTSW/BioTel EMS System: POLICIES

Table of Contents

UTSW/BioTel Policy: BioTel Mandatory Contact

Purpose: The purpose of this policy is to ensure that UTSW/BioTel paramedics contact BioTel or the receiving hospital directly under appropriate circumstances.

1. It is mandatory that receiving hospital emergency departments receive essential patient information on critical patients, and on those patients meeting "specialty care criteria. UTSW/BioTel paramedics SHALL ALWAYS contact BioTel or the receiving hospital directly under the following circumstances:

    a. When transporting a patient "Code 3".
    b. When transporting a patient who:
        i. Meets Trauma Center triage criteria (Refer to the **DESTINATION** Policy).
        ii. Is felt to be experiencing an acute STEMI.
        iii. Is felt to be experiencing an acute stroke.
        iv. Is felt to be suffering from "Excited Delirium".
        v. Has an unstable airway.
        vi. Is having CPR performed.
        vii. May have been exposed to a toxic/hazardous substance, whether or not the patient has been decontaminated in the field.
        viii. Has been incompletely assessed or combative, en route to the receiving hospital emergency department.
    c. When paramedics encounter a physician on-scene of a medical emergency incident who wishes to direct the care of a patient. (Refer to the **PHYSICAN ON-SCENE COORDINATION** Policy.)

2. Paramedics MAY contact BioTel at ANY time, either by radio or by cellular phone by calling 214-590-8848. UTSW/BioTel paramedics SHOULD contact BioTel when they believe that consultation with BioTel is in the patient's best interests. Examples include the need for:
    i. Clinical advice or direction.
    ii. Physician consultation regarding clinical care or the decision to transport.
    iii. Destination determination assistance.
    iv. Medication orders or dosage assistance.
    v. Assistance with determination of death or termination of resuscitative efforts.
    vi. Possible activation of the Emergency Legal Assistance Program (ELAP).
    vii. Consultation with the North Texas Poison Control Center.
    viii. Specialty team activation (e.g. Parkland Hospital Trauma Amputation Team).

3. If the clinical, operational or logistical circumstances do not permit paramedics to directly contact BioTel or the receiving hospital to give a full report, then the medic's communication center shall be contacted, so that communications personnel may relay basic information to BioTel regarding the condition of the patient, the destination hospital, and the ETA.

UTSW/BioTel EMS System Policy: Initial Credentialing As a Paramedic

Purpose: The purpose of this policy is to ensure consistency in the initial credentialing of paramedics to work in the UTSW/BioTel EMS system.

1. Credentialing is the process whereby paramedics obtain **system authorization** to practice as paramedics within the UT Southwestern BioTel EMS system.

2. EMTs and Paramedics must comply with Texas Department of State Health Services (DSHS) EMS certification *or* licensure rules in order to practice in the UT Southwestern/BioTel EMS system. State certification or licensure now requires successful completion of the National Registry of EMT (NREMT) examination.

3. Credentialing as a paramedic in the UT Southwestern/BioTel EMS System requires that an individual must EITHER:
    a. Successfully graduate from the UT Southwestern/El Centro College Paramedic program, successfully pass NREMT exams, and become certified or licensed in Texas. Any individual who fails the NREMT written exam on the first time will also need to take and successfully pass the BioTel Guidelines Exam with a score of at least 75% once he/she has passed the NREMT exam. Any student who fails the BioTel Guidelines Exam will need to meet with the Admission/Readmission Committee for directions.
    -OR-
    b. Attend and successfully complete the UT Southwestern/BioTel Transfer Credentialing Course and successfully pass both a UT Southwestern BioTel Guidelines Exam and a Capstone Exam. This option applies to individuals who graduated from a paramedic program other than UT Southwestern Medical Center. The passing score for these exams is a 75%. For an individual who fails the UT Southwestern BioTel Guidelines Exam, one automatic retest is granted with a passing score of 80%. Individuals who fail the Capstone Exam will need to request to meet with the Admission/Readmission Committee for directions. The individual awaiting the UT Transfer course can be credentialed on a probationary basis. He/she may function as a second or third paramedic, working under BioTel Guidelines, until he/she successfully completes the UT Transfer Course. The paramedic in question will be able to participate as a second or third paramedic when responding to ALS calls, and to provide BLS care in the back of an ambulance, if a credentialed paramedic is unable to provide active patient care in the back of an ambulance.

4. Any individual who has failed to complete and graduate from the UT Southwestern/El Centro Paramedic Program on two attempts shall not be eligible for credentialing in the UT Southwestern BioTel/EMS system. The UT Southwestern/BioTel Medical Direction Council may consider exceptions to this rule on an individual basis. The Council may choose to meet with the individual once he/she has successfully passed a paramedic course and NREMT exams.

5. Any graduate of the UT Southwestern/El Centro paramedic program who fails the first 3 attempts on NREMT written exam has one option to become certified in the UT Southwestern BioTel system:
    a. Reenter and successfully complete an initial paramedic class (all components)

6. Admission to the UT Southwestern/BioTel Transfer Credentialing Course is limited to current paramedic employees of UT Southwestern/BioTel EMS system agencies who want to be credentialed to practice in the UT Southwestern/BioTel EMS system. Individuals must be NREMT-certified in order to take the course, unless they became a paramedic PRIOR to the NREMT requirement in Texas and have maintained DSHS certification.

UTSW/BioTel Policy: Evaluation & Management of a Patient in Custody

Purpose: The purpose of this policy is to assist paramedics in providing the best possible prehospital care for persons who are in the custody of police or other public safety officials.

DEFINITIONS:

1. **Custody:** A person who has been arrested or detained by a peace officer for a specific reason or offense.
2. **Under Arrest:** Action by a peace officer which may be either on view or pursuant to a warrant issued by a judge, whereby an individual is taken into physical restraint with the intent to take to jail or some other area of confinement as authorized by the law.
3. **Emergency Detention (Apprehension by a Peace Officer Without a Warrant (APOWW)):** An arrest made by a peace officer in which the peace officer has probable cause to believe that the subject arrested is an immediate threat to him/herself or others and requires mental health services.
4. **Detained:** An individual for whom freedom of movement has been restricted by a peace officer for a limited time and under limited circumstances, although the person is not formally under arrest. This sometimes includes asking a person to wait while a peace officer checks for outstanding warrants, for wanted status or to verify some specific account given by the person.
5. **Court Order:** An order issued by a judge whereby a person is ordered by the Court to do or not to do something. In EMS application, the only court of record we deal with is a district court, which is a state judicial office. The judge may have either criminal, civil, or both joint civil and criminal jurisdiction.
6. **Mental Health Hold:** A non-legal term sometimes used by physicians or other healthcare professionals to indicate that a person in the hospital has been cleared for medical purposes but nonetheless requires psychiatric evaluation prior to release.

In EMS, “Custody” most frequently involves persons who are either “Under Arrest”, or “Emergency Detention”. For questions regarding other “Custody” issues that are not covered in this policy, contact BioTel for assistance.

1. **Evaluation of Patients Who Are “Under Arrest” or “Emergency Detention”**
   a. If a public safety official requests that a UTSW/BioTel paramedic evaluates a person who is under arrest or Emergency Detention, then, by definition, that person is a PATIENT.
   b. The evaluation of patients who are under arrest or Emergency Detention is no different from the evaluation of any other patient, assuming that the patient consents to the evaluation and it is safe to evaluate the patient. The minimum assessment and documentation requirements for patients may be found in the **EVALUATION AND TRANSPORT** Policy.
   c. These patients RETAIN the right to self-determination with regard to assessment and treatment. Paramedics shall not initiate treatment against a patient’s will, UNLESS failure to do so would likely result in imminent death or permanent disability. If there is ANY question regarding whether to assess or treat a patient against their will, contact BioTel immediately.
   d. Persons who are simply detained have the right to refuse BOTH evaluation and transport.
   e. Patients who are under arrest or Emergency Detention DO NOT have the right to refuse ambulance transport. If a police officer requests that one of these patients be transported by ambulance, paramedics SHALL transport the patient to a receiving hospital emergency department. If there is a disagreement regarding the need to transport the patient by ambulance, contact an EMS supervisor or BioTel immediately.
   f. If transporting an incompletely assessed patient because the patient would not allow assessment OR because it was unsafe to assess the individual, notify BioTel as early as possible so that appropriate resources can be ready and available at the receiving hospital.

2. **Transport and Destination Decision-Making**
   a. **Paramedics shall follow their respective City and EMS Agency policies regarding transport destination decision-making for patients who are “under arrest”.**

b. Emergency Detention patients should be transported to the closest appropriate receiving hospital emergency department for medical clearance.
c. If there are any questions regarding the appropriate destination for an Emergency Detention patient or a patient who is under arrest or from jail, contact BioTel immediately.

3. Medical Clearance

a. ONLY a physician in a hospital emergency department OR jail medical staff can "medically clear" a patient who is in custody.
b. **UTSW/BioTel paramedics CANNOT "medically clear" a patient**. They may, after complete assessment, report that a patient's vital signs appear to be stable and that in the paramedic's judgment the patient does not warrant ambulance transport to a receiving hospital emergency department. If the police are comfortable transporting the patient either to jail for medical clearance or to a hospital emergency department for medical clearance, the ePCR shall be completed and the reasons for allowing the police to transport the patient should be clearly documented.
c. Patients who are in custody who meet ANY of the criteria for "Mandatory Offer of Transport" in the "Prehospital Evaluation & Transport Policy" MUST be transported by ambulance.
d. If a public safety officer requests that paramedics transport a patient by ambulance, paramedics shall honor this request OR shall immediately contact an EMS Supervisor or BioTel for assistance.

4. Patient Restraints & Handcuffs

a. For detailed information, see the "UTSW/BioTel Patient Restraint Policy".
b. Patients who are assessed to be a potential harm to themselves or others shall be restrained in the safest, least restrictive manner possible.
c. At no time shall UTSW/BioTel paramedics utilize handcuffs.
d. At no time, shall a patient who is handcuffed, be transported in a BioTel agency ambulance without the presence of a law enforcement officer in the back of that ambulance, who has the key to release those handcuffs. If local city policy dictates, a restraint system may be used that allows immediate release of patient, in lieu of handcuffs.
e. When transporting a patient who is in the custody of law enforcement, a law enforcement officer shall accompany the patient in the back of the ambulance.
f. **A patient shall never be transported in a prone position. A patient shall NEVER be "hogtied".**
g. **Restrained patients shall have their cardiorespiratory status CONTINUOUSLY monitored.**

5. Excited Delirium (Refer to the **EXCITED DELIRIUM** Guidelines**)**

a. Persons in custody may exhibit wild or combative behavior and altered mental status. This condition is referred to as "Excited Delirium" and is often associated with drug ingestions, particularly, cocaine, PCP, and/or amphetamines. These patients are often tachycardic, tachypneic, and hyperthermic.
b. A number of medical conditions including brain injury or hypoglycemia may mimic drug-induced "Excited Delirium", and only sophisticated testing in an emergency department can determine the exact cause of this patient presentation. This CANNOT be differentiated in the field.
c. Paramedics should be aware that this represents a true medical emergency and these patients are at extremely high risk of SUDDEN DEATH.
d. These patients MUST be transported by ambulance to a hospital emergency department.
e. If it is unsafe to assess any combative patient, that patient shall be placed in an ambulance along with as many law enforcement officers as necessary to control the patient during transport to an appropriate emergency department.
f. If safe to do so, paramedics shall obtain vital signs and a blood glucose determination, initiate cardiac monitoring, administer oxygen and perform any other assessment or treatment that is indicated. Continuous assessment of airway, breathing and circulation is CRITICAL.
g. BioTel shall be notified as early as possible during transport that an incompletely assessed combative patient is en route.

6. Mace/Pepper Spray

a. Refer to the **MACE/PEPPER SPRAY** section in the **EYE INJURY** Guidelines.

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7. Taser Barb Removal
   a. Refer to the **TASER BARB REMOVAL** Policy

8. Juveniles in Custody
   a. Juveniles in custody shall be managed just as any other in-custody patient would be managed. They maintain the right to refuse assessment and treatment but they do not have the right to refuse transport. In general, juveniles in custody shall be transported to Parkland Hospital. If there are any questions regarding the assessment, treatment, transport or destination for a juvenile in custody, contact BioTel.

9. Transporting Prisoners From Jail
   a. Paramedics may be required to provide transportation for prisoners when requested by medical personnel at a penal facility. Paramedics shall follow their respective City and EMS agency policies regarding transport of prisoners from jail.
   b. An officer must ride in the back of the ambulance with the prisoner.
   c. Contact BioTel and an EMS Supervisor if there are any questions or concerns regarding the evaluation, treatment or transport of a jail patient.
   d. In general, jail patients in cardiac arrest should be transported to the closest appropriate facility, unless they meet the criteria for **DETERMINATION OF DEATH IN THE FIELD**. BioTel shall ALWAYS be contacted regarding determination of death for jail patients. Patients in cardiac arrest from the Lew Sterrett Justice Center (jail) shall ALWAYS be transported to Parkland Hospital.

10. Overdose Patients
   a. When assessing a patient who has possibly intentionally overdosed on medications or other drugs, that patient should be considered a potential harm to himself or herself, even if they deny that they have overdosed.
   b. If a third party reports that a patient ingested drugs or medications in an attempt to harm himself or herself, OR if the third party reports that the patient has expressed suicidal thoughts, the patient **MUST** be transported by ambulance.
   c. Such patients must be transported to a receiving hospital emergency department for assessment of potentially life-threatening complications of an overdose AND whether they pose a threat to themselves and warrant psychiatric assessment.
   d. Paramedics cannot determine this risk in the field. If such a patient declines assessment or transport, the local police agency should be called to assess the situation and determine if the patient should be placed under Emergency Detention. If the patient is not under Emergency Detention, paramedics shall contact BioTel for possible activation of the Emergency Legal Assistance Program (ELAP).

11. Acute Adult Psychiatric Patients
   a. Nearly all patients who have 911 called for evaluation of acute psychiatric illness require “medical clearance” before they can be evaluated by psychiatric emergency services and therefore shall be transported to an appropriate receiving hospital emergency department for “medical clearance”.
   b. Paramedics cannot “medically clear” these patients in the field.
   c. Paramedics shall perform a standard patient evaluation unless the patient refuses consent for such an evaluation or if the patient is combative and it is deemed unsafe to evaluate the patient. In such cases, BioTel shall be contacted immediately.
   d. Paramedics may not transport patients directly to Green Oaks, Timberlawn Hospital or any other primary psychiatric facility.
   e. Patients who are under Emergency Detention or under arrest may be transported to any appropriate hospital emergency department for medical clearance.
   f. Psychiatric patients maintain the right to determine treatment and therefore may refuse evaluation and treatment. They CANNOT refuse transport without BioTel Physician approval.
   g. Patients under Emergency Detention or under arrest can also refuse evaluation and treatment, but they CANNOT refuse transport.
   h. Any patient exhibiting signs and symptoms of “Excited Delirium” MUST be transported by ambulance to a hospital emergency department and early notification through BioTel is mandatory.

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12. Pediatric Psychiatric Patients

a. Age 0 to 12 years (up to 13th birthday): shall be transported to Children's Medical Center (CMC). CMC can evaluate patients 13 to 18 years of age who are NOT violent or in custody.
   i. Children's Legacy criteria are the same as Children's Dallas
b. Age 13 or greater who are violent or in custody: should be transported to Parkland Hospital.

13. Green Oaks

a. UTSW/BioTel paramedics shall NOT transport patients directly to Green Oaks Psychiatric Hospital.
b. Dallas Fire-Rescue paramedics shall refer to their Standard Operating Procedure regarding EMS response to Green Oaks.

14. Timberlawn Hospital

a. UTSW/BioTel paramedics shall NOT transport patients directly to Timberlawn Hospital.
b. Dallas Fire-Rescue paramedics shall refer to their Standard Operating Procedure regarding EMS response to Timberlawn Hospital.

15. Parkland Hospital's Psychiatric Emergency Service

a. Parkland Hospital's Psychiatric Emergency Service no longer accepts patients directly from the field.
b. When a UTSW/BioTel Agency EMS unit transports a patient for urgent psychiatric evaluation to Parkland Hospital, paramedics will enter the main emergency department EMS triage entrance.
c. Parkland Hospital EMS triage staff will determine if an EMS patient should be seen in the main emergency department or can be transported by paramedics down the hallway to be evaluated first by the Psychiatric Emergency Department.

16. The Dallas City Detention Center (CDC)

a. The Dallas City Detention Center is run by the City Marshal's Office and can accept persons who are assessed to be simply intoxicated with drugs and alcohol that are transported by police officers or other law enforcement officials but NOT by paramedics.
b. EMS units may NOT transport directly to the CDC.
c. If paramedics are asked by police to evaluate a person for possible transport by police to the CDC, follow the instructions in "Section 17", below.

17. Persons Detained For Simple Public Intoxication

a. Patients with conditions including but not limited to epilepsy, diabetes or brain injury may appear to be simply intoxicated. Thus, paramedics shall perform a complete assessment of any patient with alteration in mental status (AMS) to assess for possible causes other than drug and/or alcohol intoxication.
b. If paramedics are not reasonably certain that a patient's AMS is due ONLY to alcohol or drug intoxication, then that patient must be transported by ambulance to an emergency department for further evaluation.
c. Paramedics MUST transport via ambulance to a receiving hospital emergency department any patient thought to be simply intoxicated and meeting ANY of the following criteria:
   i. Glasgow Coma Score of less than 13;
   ii. Pulse rate less than 60 or greater than 120;
   iii. Systolic blood pressure less than 90;
   iv. Diastolic blood pressure greater than 110;
   v. Respiratory rate less than 12 or greater than 24;
   vi. Oxygen saturation less than 95%;
   vii. Capillary blood glucose analysis (BGA) level less than 60 or greater than 300;
   viii. Active hemorrhage;
   ix. Bruising or hematoma above the clavicles indicating the need for spinal immobilization;
   x. Witnessed seizure within the last hour;
   xi. ANY signs or symptoms of Excited Delirium;
   xii. Inability to ambulate with limited assistance;
   xiii. A law enforcement officer reports that he/she is NOT comfortable transporting the patient by means other than ambulance.

d. Persons thought to be intoxicated from alcohol or street drug intoxication who - after complete evaluation - have no obvious, acute medical condition or co-existing medical complaints and who meet NONE of the criteria in Section "c" above may be transported by DPD either to jail or to the City's Detention Center (CDC).
e. Ambulances shall NEVER transport patients to the CDC or to jail.
f. If law enforcement personnel are not comfortable transporting a patient to the CDC, jail or the emergency department, then the patient shall be transported by ambulance to a hospital emergency department.
g. If a patient with AMS thought to be due to alcohol or drugs refuses transport and cannot be convinced by law enforcement officers to accept ambulance transport to an emergency department, paramedics shall immediately contact BioTel and their EMS supervisor for further assistance and direction.
h. If a patient is thought to be simply intoxicated with drugs/alcohol, requires ambulance transport and their location is roughly equidistant to more than one hospital, and one of those hospitals is Parkland Hospital, the patient should be transported to Parkland Hospital. (Parkland Hospital will soon have a novel program to assist patients with chronic drug/alcohol problems-see below.)

18. The Dallas Serial Inebriate Project ("SIP")

a. The City and County of Dallas are currently developing a program designed to attempt to break the cycle of alcohol and drug addiction and homelessness. The goal of the Dallas Serial Inebriate Project (SIP) is to develop and implement a series of integrated and coordinated behavioral health crisis services that can be accessed by persons suffering from chronic addiction and homelessness.
b. These "high utilizers" of emergency services would be offered enrollment into the program at Parkland Hospital and other sites throughout the City and County.
c. Once fully developed and implemented, UTSW/BioTel paramedics would assist in the identification of potential enrollees to the program.
d. This will benefit not only these persons but also the UTSW/BioTel EMS System and our individual EMS agencies' and receiving hospital partners' operations.

19. BioTel Emergency Legal Assistance Program ("ELAP")

a. Parkland Hospital/BioTel's Emergency Legal Assistance Program ("ELAP") provides on-call attorneys who are licensed to practice law in the State of Texas, are board-certified by the Texas Board of Legal Specialization, and have certification in Civil Trial Law and Personal Injury Trial Law.
b. These attorneys are intimately familiar with the delivery of Emergency Medical Services and applicable laws pertaining to the Texas Medical Practice Act, the Health and Safety Code and other applicable laws.
c. The ELAP is available to UTSW/BioTel EMS Providers 24-hours a day, 7 days a week for emergency legal consultation. The attorneys can obtain a court order to transport a patient when indicated, and can provide advice on any legal subject, such as out-of-hospital DNRs, as well as provide additional legal assistance.
d. Paramedics shall contact BioTel for possible activation of the ELAP. The attorneys shall NOT be contacted directly by paramedics.

UTSW/BioTel Policy: Cyanide Antidote Administration

Purpose: The purpose of this policy is to allow for the administration of cyanide antidote to patients with suspected cyanide poisoning.

1. **Background:**
   a. Cyanide
      i. Cyanide is a cellular toxin that inhibits mitochondrial cytochrome oxidase, thereby arresting cellular respiration. This results in severe metabolic acidosis, hemodynamic and respiratory collapse, and, ultimately, death. Symptom onset can be within minutes, depending on level of exposure.
   b. Hydroxocobalamin (Cyanokit®)
      i. Hydroxocobalamin binds to cyanide ions in the bloodstream, creating the cyanocobalamin molecule. Cyanocobalamin is in turn excreted into the urine.
2. **Signs/Symptoms:**
   a. Signs and symptoms of cyanide toxicity can be grouped into three general categories, as follows.
   b. Mild symptoms
      i. Headache
      ii. Tachypnea/dyspnea
      iii. Flushing/diaphoresis
      iv. Tachycardia
   c. Moderate symptoms
      i. Altered mental state
      ii. Hypertension
      iii. Respiratory depression
   d. Severe symptoms
      i. Seizure
      ii. Cardiac arrest
      iii. Cardiac arrhythmia
      iv. Hemodynamic collapse / hypotension without other clear etiology
      v. Respiratory arrest
3. **Criteria for hydroxocobalamin administration:**
   a. Hydroxocobalamin may be carried by, but not required of, the following units for administration:
      i. Battalion Commanders/Chiefs and EMS Chiefs/Supervisors
      ii. Medical Directors
      iii. HAZMAT
   b. Immediate administration
      i. Any patient with smoke inhalation or suspected cyanide ingestion/exposure AND the confirmed presence of cyanide on scene should be given hydroxocobalamin
      ii. Any patient with smoke inhalation OR suspected cyanide ingestion and severe symptoms should be given hydroxocobalamin
   c. Administration in consultation with on-line medical control
      i. Any patient with smoke inhalation OR suspected cyanide toxicity and moderate symptoms may receive hydroxocobalamin in consultation with on-line medical direction
4. **Administration:**
   a. Scene safety:
      i. Health care provider safety is paramount. Responders should not enter a scene where a potential exposure to cyanide may be encountered until cleared by appropriate agencies (fire, HazMat, etc.)
      ii. If there is a suspected significant cyanide exposure, appropriate BSI and patient decontamination techniques should be observed
   b. Standard care, standard treatment guidelines:
      i. All patients should receive standard care commensurate with their condition. This includes, but is not limited to, seizure care, cardiopulmonary resuscitation, management of trauma, etc.
   c. Notification of EMS Administration:
      i. The paramedic administering hydroxocobalamin shall immediately notify his/her EMS Supervisor.
      ii. The EMS Supervisor shall notify EMS Administration through the usual communication channels.

d. Airway considerations:
   i. Pulse oximetry:
      1. Pulse oximetry in the patient suffering from cyanide toxicity may be unreliable.
      2. All patients with suspected cyanide toxicity should receive high-flow oxygen by tight fitting face mask.
   ii. Carbon monoxide co-oximetry:
      1. If available, SpCO should be measured.
      2. This value should not be used to inform clinical decisions in the field, but may be useful to hospital providers.
   iii. Quantitative end-tidal carbon dioxide ($ETCO_2$):
      1. All patients being treated for cyanide toxicity should have continuous $ETCO_2$ monitoring.
e. Cardiac monitoring:
   i. All patients receiving treatment for cyanide toxicity should have continuous ECG monitoring.
f. Glucose:
   i. All patients should receive capillary blood glucose analysis (BGA).
g. Vascular access:
   i. Hydroxocobalamin administration requires a dedicated IV or IO line; as such, a second IV or IO access may be required.
h. Dosing and administration:
   i. If the patient meets the above criteria for administration of hydroxocobalamin, dosing should be:
      1. 5 g for adults over 15 minutes.
      2. 70 mg/kg for pediatrics over 15 minutes.
      3. A second dose may be required if the patient is still symptomatic after 30 minutes.
         a. For pediatric patients, the second dose is half the first: 35 mg/kg over 15 minutes.
   ii. The Cyanokit® comes in two 2.5g vials:
      1. Each vial should be reconstituted with 100 mL of sterile 0.9% sodium chloride (Normal Saline).
      2. If Normal Saline is unavailable, Ringer's Lactate or 5% dextrose solutions may be used.
      3. After reconstitution, the vial should be gently rocked, not shaken, until no particulate matter exists and the solution is a dark red color.

5. Additional considerations/medical control options:
   a. Refractory hypotension:
      i. Vasoactive medications should be given in consultation with on-line medical control.
   b. Discoloration of body fluids:
      i. Hydroxocobalamin will change the color of urine, sweat and tears to red. This is normal. The provider, patient and onlookers should be made aware of this.

UTSW/BioTel Policy: Destination

Purpose: The purpose of this policy is to guide paramedics in the determination of the appropriate destination hospital for their patients. Refer to the attached Hospital Destination Matrix.

Policy: UTSW/BioTel paramedics shall transport patients only to approved hospital emergency departments and shall utilize the guidelines within this policy to assist in their determination of the appropriate receiving hospital. Should there be any question as to the appropriate destination hospital for a given patient, BioTel shall be contacted for consultation.

1. **GENERAL DESTINATION DECISION-MAKING**
   Hospital destination decisions for EMS patients shall be prioritized based on the following:
   a. Patient medical need;
   b. Patient preference;
   c. Family or on-site private physician preference (if the patient is unable to provide information).
   d. Paramedics shall follow their respective City and EMS agency guidelines when determining hospital destination. UTSW/Bio Tel paramedics shall transport patients only to approved hospital emergency departments as outlined by each agency's respective policy concerning patient transport decision-making. If no such guideline exists, adhere to the guidelines in this policy or contact BioTel for assistance.

2. **Patients With Minor, Non-Emergent Medical Conditions**
   Patients who do not meet specialty hospital criteria, such as Trauma Centers, Stroke Centers and STEMI Centers, who have normal vital signs and who do not meet any of the "exceptions" listed below, MAY be informed that they will be transported to the **closest open and appropriate** hospital emergency department. If that patient refuses transport to the closest open and appropriate ED, then they may be considered to be a "Patient Declining Transport" or "PDT".

   Exceptions:

   a. Pregnant patients who report receiving prenatal care shall be transported to the ED that is associated with their prenatal care provider.
   b. Patients who are post-op/post-procedure within 90 days and have a chief complaint that could be related to their surgery/procedure shall be transported to the ED of the hospital that performed their surgery/procedure.
   c. Patients undergoing chemotherapy or radiation treatment shall be transported to the ED that is associated with their cancer treatment center.
   d. Consider "sister hospital" relationships. For example, if a patient wants to go to a Baylor Hospital emergency department that is far away, but they have a minor medical condition and normal vital signs, you do not have to take them to the closest ED, but rather, take them to the closest Baylor campus.
   e. Use good judgment. If there are other unique or extenuating circumstances, transport the patient to the hospital you believe is most appropriate, report those circumstances to the receiving hospital staff upon arrival, and document your decision-making process on the ePCR.

3. **Emergent Medical Adult:**
   Patients with one or more of the following conditions should be transported to the closest hospital emergency department:
   a. Airway obstruction or respiratory insufficiency with inadequate ventilation;
   b. Status epilepticus;
   c. NON-TRAUMATIC cardiac arrest or post cardiac arrest.

Continued on the next page…

4. Emergent Medical Pediatric: (including Overdose patients)

b. Age 0 to 18 years (up to 19th birthday): Patients should be transported to Children's Medical Center, Medical City Children's Hospital or to the closest appropriate facility, if there is an unstable airway requiring immediate intervention. (Children's Legacy uses the same criteria as Children's Dallas.)

c. Age 19 years and older: Patients should be transported to the closest appropriate facility

5. Prehospital Trauma Center Triage Criteria – Adult:

NOTE: Hospital capabilities change. EMS Providers are advised to contact BioTel or to consult the current version of BioTel Hospital Capabilities Matrix for updated receiving hospital/Trauma Center capabilities.

a. **Age 14 years and older:** Patients meeting Major Trauma Criteria listed below should be transported to the closest Level I or Level II ADULT Trauma Center. These centers include:

1. Parkland Hospital (LEVEL I)
2. Baylor University Medical Center (LEVEL I)
3. Methodist Dallas Medical Center (LEVEL II)
4. Medical Center of Plano (LEVEL II) – this facility can receive all trauma patients, EXCEPT:
    a. Pediatric patients under 14 years of age;
    b. Neurotrauma under 18 years of age;
    c. Penetrating eye injuries;
    d. Amputations requiring re-implantation;
    e. Burns.
    f. NOTE: Medical Center of Plano will arrange transfer, if indicated, of any patient with any of the above criteria who might be transported to this facility.

Trauma patients meeting ANY of these criteria shall be transported to either a Level I or Level II Accredited Trauma Center

a. **Airway:**
    i. Endotracheal intubation/advanced airway placement **or** attempted placement prior to arrival
b. **Breathing:**
    i. Respiratory compromise (obstruction, use of accessory muscles/respiratory distress or inhalation injury)
    ii. Respiratory rate less than 10 or greater than 29
c. **Circulation:**
    i. Post-traumatic cardiac arrest
    ii. Heart rate less than 50 or greater than 140
    iii. Systolic BP less than 90 mm Hg (adult)
        1. Patients at least 65 years of age may be in shock with SBP less than 110 mm Hg
d. **Disability:**
    i. GCS 13 or less secondary to trauma
    ii. Decreasing level of consciousness
e. **Event – Anatomic Criteria:**
    i. Penetrating wound to head, neck or torso, or proximal to the elbow or knee
    ii. Chest wall instability of deformity (e.g. flail chest)
    iii. Multiple (2 or more) long-bone fractures
    iv. Mangled, crushed, degloved or pulseless extremity (including suspected compartment syndrome)
    v. Amputation proximal to the wrist or ankle
    vi. Pelvic fracture
    vii. Open or depressed skull fracture
    viii. Paralysis (including new weakness or paralysis), or suspected spinal cord injury or spinal fracture
    ix. Evisceration

f. Event – History/High-Energy Mechanism Within 72 Hours of Presentation:

i. Fall at least 20 feet (2 stories)
ii. Drowning
iii. Hanging
iv. Pedestrian hit by automobile WITH ANY identified injury
v. Bicyclist hit by automobile WITH ANY identified injury
vi. Motorcycle crash WITH ANY identified injury
vii. High-risk Motor Vehicle Crash (MVC), such as: significant intrusion, including roof (at least 12 inches at occupant site or at least18 inches at any site), or ejection (partial or complete), or death in the same passenger compartment

g. Special Patient or System Considerations:

i. Age at least 55 years WITH ANY identified injury and/or criteria (including ground-level fall)
ii. Pregnancy at least 20 weeks estimated gestational age
iii. Burns:
    i. Greater than 20% TBSA (Burns greater than 10% should be transported directly to Parkland Hospital, if possible)
    ii. Patients with any of the following criteria should be transported directly to Parkland Hospital, if possible (refer to the BURNS Treatment Guideline):
        1. Burns of face, eyes, ears, hands, feet, genitalia, perineum, or major joints
        2. Full-thickness (3rd-degree) burns of any size in any age patient
        3. Electrical burns (including lightning)
        4. Chemical burns
        5. Inhalation injury (including smoke inhalation)
        6. Burns with traumatic injuries (e.g. fractures)
        7. Burns in patients with pre-existing medical conditions or comorbidities
        8. Burns in patients needing special social, emotional or rehabilitative intervention
iv. **EMS Provider or Medical Control Physician discretion – When in doubt, transport to a Trauma Center**
v. **Transport of any patient with any of the above criteria to a destination other than an Accredited Trauma Center (e.g. because of patient preference) requires prior approval by an Online Medical Control Physician**

6. Prehospital Trauma Center Triage Criteria – Pediatric:
*****Refer to the Children's Medical Center's Trauma Activation Criteria on the next page.*****

Age 0 to 13 years (up to 14th birthday): Patients should be transported to Children's Medical Center Dallas.

Age 14 years and older: Patients meeting Trauma Center Criteria should be transported to the closest Level I or Level II ADULT Trauma Center. These Centers include:

1. Parkland Hospital (LEVEL I)
2. Baylor University Medical Center (LEVEL I)
3. Methodist Dallas Medical Center (LEVEL II)
4. Medical Center of Plano* (LEVEL II) – this facility can receive all trauma patients, EXCEPT:
    a. Pediatric patients under 14 years of age;
    b. Neurotrauma under 18 years of age;
    c. Penetrating eye injuries;
    d. Amputations requiring re-implantation;
    e. Burns.
    f. NOTE: Medical Center of Plano will arrange transfer, if indicated, of any patient with any of the above criteria who might be transported to this facility.

Children's Medical Center Dallas
Trauma Activation Criteria

Trauma Stat Activation Criteria	
Criteria	**Further Information**
Traumatic cardiopulmonary arrest from penetrating trauma	
Traumatic injury with signs of shock	
Penetrating injuries to the head, neck, chest, abdomen or pelvis	Excludes lacerations in the stable patient
Respiratory distress secondary to trauma, respiratory compromise/obstruction and/or intubation on scene	
Neurological injury with a GCS equal to or less than 8 without sedation	
Suspected spinal cord injury	Associated with flaccidity, areflexia or unexplained hypotension
Crush or Amputation proximal to the wrist or ankle with signs of shock	
Any trauma transfer with respiratory and/or hemodynamic instability and/or GCS equal to or less than 8 without sedation or paralytics and/or patients receiving blood to maintain vital signs	
Any intubated trauma transfer	
Emergency physician's discretion	
Trauma Alert Criteria	
Criteria	**Further Information**
Traumatic cardiopulmonary arrest from blunt trauma	
Motor Vehicle Crashes (includes ATV's) with reported history of:	Ejection of the patient from the vehicle
	Prolonged extrication (> 20 minutes)
	A rollover collision
	Death of an occupant in same vehicle
Neurological injuries with a GCS of 9 to 14	
Hanging or strangulation mechanisms	
Auto-Pedestrian or Auto-Bike Crashes involving speeds equal to or greater than 20 mph	
Falls greater than 2nd story or 20 feet	
Bilateral femur fractures or 3 or more long bone fractures	
Crush injuries to chest or abdomen	
Crush or Amputation injuries proximal to the wrist or ankle in the stable patient	With fracture or significant tissue loss
Significant lacerations to head or neck in the stable patient	Lacerations that are deep or with significant tissue loss
Any transfer with a grade IV solid organ injury or two or more solid organ injuries	
Trauma Evaluation/Consult	
Criteria	**Further Information**
Child abuse cases to be admitted	
Any trauma related injury where two or more systems are involved	
Any patient that has a single system injury that requires admission and the mechanism is an MVC, MPC, ATV	

Definition of Shock

Age Group	Heart Rate (beats/min)	Pulse Character	Blood Pressure (mm Hg)	Respiratory Rate (breaths/min)	CNS
Birth to 6 months	> 190	Weak thready central pulses Absence of peripheral pulses	< 60	>70	Change in level of consciousness, dulled response to pain, or comatose
Infant	>176	Same	<75	>50	Same
Preschool	>132	Same	<85	>40	Same
Adolescent	>120	Same	<95	>30	Same

Updated 11.12

7. Acute Stroke:

Patients at least 14 years of age with signs and symptoms of acute stroke shall be transported according to the following criteria:

a. **Onset of symptoms less than 3.5 hours:** Transport to the closest designated stroke center. If the EMS provider is not certain that the desired destination hospital is a designated stroke center, contact BioTel for consultation.
b. **Onset of symptoms at least 3.5 hours, but less than 12 hours:** Unless immediate intervention (e.g. ABCs, cardiac arrest, etc.) is required, these stroke patients should be preferentially transported to a comprehensive-capable stroke facility, if such a facility is available with less than 15 minutes of additional transport time. If the EMS provider is not certain that the desired destination hospital is a comprehensive-capable stroke center, contact BioTel for consultation.
c. **Onset of symptoms at least 12 hours, or unknown last-known-normal time:** Transport to the closest designated stroke center.

Pediatric patients less than 14 years of age with signs and symptoms of acute strokes should be transported to Children's Medical Center Dallas (not Legacy) or to Medical City Children's Hospital: contact BioTel for destination instructions.

8. Acute ST-Elevation MI:

Patients with signs and symptoms of acute STEMI shall be transported to the closest hospital with catheterization lab capabilities, according to the following hierarchy:

a. Patients who are unstable and would experience a significant delay in their care by transport to a *preferred* hospital with catheterization capabilities shall be transported to the closest hospital with those capabilities.
b. Patient preference for transport to a specific Receiving hospital that has cath lab capabilities.
c. Family or private physician preference (if patient unable to provide information) for transport to a specific Receiving hospital that has cath lab capabilities.
d. Patients without a preference shall be transported to the closest Receiving hospital that is has cath lab capabilities.

9. Amputations and Devascularization Injuries:

Patients with the following injuries may be transported to the Microsurgical Specialty Care Facility of their choice or to the closest microsurgical center, if the patient has no preference:

a. Isolated amputation or partial amputation distal to the ankle or wrist
b. Extensive facial, lip, or ear avulsion
c. Penile amputation

NOTE: If the patient meets any Prehospital Trauma Triage Criteria, transport to a Trauma Center.

Patients with simple avulsion lacerations of the distal phalanx will be transported to any open Receiving hospital, or the closest open Receiving hospital, if the patient has no preference.

10. Burns:

Patients OF ANY AGE with any the following criteria shall be transported to the Parkland Hospital Burn Center:

a. Burns greater than 10% of the total body surface area (TBSA), regardless of depth
b. Burns involving the face, eyes, ears, hands, feet, perineum, genitalia or major joints
c. Full thickness or 3rd-degree burns in any age patient
d. Electrical burns (including lightning)
e. Chemical burns
f. Inhalation injury, including smoke inhalation
g. Burns associated with traumatic injuries (e.g. fractures)
h. Burns in patients with pre-existing medical conditions or comorbidities (e.g. elderly, immunosuppressed, diabetic, cardiac history)
i. Patients who meet Prehospital Trauma Triage Criteria and who have burns and/or smoke inhalation
j. Pediatric burn patients who do not meet Pediatric Trauma Triage Criteria.

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11. Obstetrics:

Pregnant patients with the following conditions should be transported to the closest Obstetrics Specialty Care facility:

a. Breech presentation partially delivered
b. Limb presentation
c. Vaginal hemorrhage with shock
d. Cord prolapse or nuchal cord
e. Actively seizing or status-post seizure
f. No prenatal care during pregnancy
g. All other pregnant patients with a pregnancy related medical problem should be transported to the Obstetrics Specialty Care Facility of their choice, or the closest open Obstetrics Specialty Care Facility, if the patient has no preference.

***12. VA Patients:**

Patients who report that they are Veterans, who do not meet specialty care criteria (e.g. STEMI, Stroke, Trauma), and who express the preference to be transported to the VA Hospital **may** be transported there.

However, it may not be necessary to transport Veterans directly to a Veteran's hospital:

a. Veterans may call 911 for emergency transport to the closest non-VA hospital. If hospitalization is required, the hospital will contact the nearest VA hospital within 24 hours to arrange transfer.
b. The VA may be able to arrange and pay the health care of eligible Veterans outside of VA medical facilities-but only in certain, limited circumstances:
    i. When the Veteran meets eligibility criteria:
    ii. When there is a medical need;
    iii. When VA medical facilities (or "sharing agreement" facilities) are unavailable.

Patients who are not Veterans shall **NOT** be transported to the VA, unless they have an unstable airway and the VA hospital is by far the closest emergency department.

13. Psychiatric Patients:

a. Nearly all patients for whom 911 is called for evaluation of an acute psychiatric disorder will require "medical clearance" before they are evaluated by psychiatric emergency services and may be transported to any receiving hospital emergency department for medical clearance.
b. Paramedics cannot "medically clear" patients in the field.
c. Paramedics shall perform a standard patient evaluation unless the patient refuses consent for such an evaluation, or unless the patient is combative and it unsafe to evaluate the patient.
d. Paramedics may not transport patients directly to Green Oaks Hospital or to any other primary psychiatric facility.
e. Patients under Emergency Detention may be transported to any hospital emergency department for medical clearance; however, patients under police arrest should be transported to Parkland Hospital.
f. Psychiatric patients maintain the right to determine treatment and therefore they may refuse evaluation and treatment. They CANNOT refuse transport without BioTel MD consultation.
g. Patients under Emergency Detention can also refuse evaluation and treatment, but they CANNOT refuse transport.
h. Any patient exhibiting signs and symptoms of **EXCITED DELIRIUM** MUST be transported by ambulance to a hospital emergency department.

14. Pediatric Psychiatric Patients:

a. Age 0 to 12 years (up to 13th birthday): Patients should be transported to Children's Medical Center**
    i. NOTE: **CMC Dallas can evaluate patients up to 18th birthday, if they are NOT violent or in custody.
    ii. Children's Legacy: same criteria as CMC Dallas
b. Age 13 years or older: Patients should be transported to closest appropriate facility.
    i. NOTE: Texas Health Resources Plano can evaluate patients at least 12 years of age.

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15. Alleged Sexual Assault Patients:

State Bill 1191 states that all hospitals must have the ability either to conduct a forensic exam on an alleged Sexual Assault patient, or to make arrangements to transfer the patient to the nearest, designated treatment facility, or to a "Center of Excellence", such as Parkland Hospital or Texas Health Presbyterian Hospital Dallas.

a. **Dallas County Available Resources**
   i. **Females 0 to 13 years of age** (up to 14th birthday): Patients may be transported to CMC Dallas.
   ii. **Females 14 years of age and older**: Patients may be transported either of these hospitals:
      a. Parkland Hospital ED (OB ICC), or
      b. Texas Health Presbyterian Hospital Dallas
   iii. **Males 0 to 16 years of age** (up to 17th birthday): Patients may be transported to CMC Dallas.
   iv. **Males 17 years of age and older**: Patients may be transported to either of these hospitals:
      a. Parkland Hospital ED, or
      b. Texas Health Presbyterian Hospital Dallas

b. **Collin County Available Resources**
   i. **Females 0 to 13 years of age** (up to 14th birthday): Patients may be transported to CMC Legacy.
   ii. **Females 14 years of age and older**: Patients may be transported either of these hospitals:
      a. Medical Center of Plano, or
      b. Texas Health Presbyterian Hospital Plano
   iii. **Males 0 to 16 years of age** (up to 17th birthday): Patients may be transported to CMC Legacy.
   iv. **Males 17 years of age and older**: Patients may be transported to either of these hospitals:
      a. Medical Center of Plano, or
      b. Texas Health Presbyterian Hospital Plano

16. Intoxicated Patients:

Patients believed to be simply intoxicated by alcohol and/or other street drugs may be transported to Parkland Hospital for possible enrollment in the Dallas Serial Inebriate Project.

a. Paramedics CANNOT "medically clear" patients for transport by police to jail or to the City Detention Center. However, paramedics may, after a complete evaluation, make a determination that a patient does not appear to require transport by ambulance.
b. Paramedics MUST transport patients by ambulance to a receiving hospital emergency department if they have ANY of the following criteria:
   i. Glasgow Coma Score less than 13;
   ii. Pulse rate less than 60 or greater than 120;
   iii. Systolic blood pressure less than 90;
   iv. Diastolic blood pressure greater than 110;
   v. Respiratory rate less than 12 or greater than 24;
   vi. Oxygen saturation less than 95%;
   vii. Capillary blood glucose analysis (BGA) level less than 60 or greater than 300;
   viii. Active hemorrhage;
   ix. Bruising or hematoma above clavicles indicating the need for spinal precautions;
   x. Witnessed seizure within the last hour;
   xi. ANY signs or symptoms of Excited Delirium;
   xii. Inability to ambulate with limited assistance;
   xiii. A law enforcement officer reports that he/she is NOT comfortable transporting the patient by means other than ambulance.

17. Multi Casualty Incident (MCI):

In the event of a Multi-Casualty Incident (MCI), destination decisions will be determined by the Incident Transport Officer, in consultation with BioTel and the EMS Medical Director on-site, if available.

UTSW/BioTel Policy: Determination of Death in the Field, Termination of Resuscitative Efforts in the Field, and Do Not Resuscitate (DNR)

Purpose: To provide guidance for determining when prehospital resuscitation attempts are not indicated, when paramedics may terminate resuscitative efforts in the field, and when and how to apply Do Not Resuscitate (DNR) Orders. Paramedics should use good judgment and common sense in the application of these guidelines. Multi-Casualty Incidents (MCI) patients are EXEMPT from this policy.

General Information:

1. In all situations where any possibility of life exists, make every effort to resuscitate the patient.
    A. Very often, the reported "down time" inaccurately predicts resuscitation potential. The patient may have been in bradycardia or simply unconscious for a period of time, yet still perfusing blood to the brain. Additionally, time information received from bystanders is often inaccurate.
    B. Pupil size and response to light can be inaccurate indicators of death, as the eyes can be affected by oral or locally applied medications. Pupils can fixate after only one or two minutes of global anoxia. Additionally, children and hypothermic patients may have fixed and dilated pupils from anoxia, and yet can be resuscitated without long-term neurological deficit.
2. EMS personnel do not PRONOUNCE death, but rather DETERMINE death based on predetermined criteria. Only a BioTel Medical Command Physician can PRONOUNCE death.

A) CRITERIA TO DETERMINE DEATH IN THE FIELD:

1. EMS personnel are not required to initiate resuscitative measures if ANY of the following criteria exists:
    A. Decapitation;
    B. Decomposition;
    C. Rigor Mortis;
    D. Dependent Lividity;
    E. Incineration;
    F. Visual MASSIVE trauma to the brain or heart that is CLEARLY incompatible with life;
    G. Presence of a VALID Do Not Resuscitate order, documentation or bracelet/medallion;
    H. ALS units may discontinue resuscitation attempts for victims of blunt or penetrating traumatic cardiac arrest, if no EMS-witnessed signs of life are present AND ECG monitoring confirms asystole.
2. *With the exception of blunt traumatic arrest*, an ECG strip is not required for any patient who meets any of the above criteria.
3. For patients in blunt traumatic arrest, a cardiac rhythm strip demonstrating asystole MUST BE OBTAINED AND DOCUMENTED.
4. EMS personnel are not obligated to continue resuscitation efforts initiated by other persons on the scene when the patient meets any of the above criteria. This includes telephone CPR initiated by the direction of Emergency Medical Dispatchers.

Once Death has been Determined:

1. Immediately notify the appropriate law enforcement agency and remain on-scene until they arrive.
2. Cover the body with a sheet or other suitable item.
3. Do not remove any property from the body or from the scene for any purpose.
4. Leave the body at the scene, in the care of the appropriate law enforcement agency.

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B) TERMINATION OF RESUSCITATIVE EFFORTS IN THE FIELD:

1. Make every effort to resuscitate all patients who do not meet the criteria outlined in above in Section A. However, studies show that rapid transport for in-hospital resuscitation after unsuccessful prehospital Advanced Cardiac Life Support (ACLS) efforts rarely, if ever, results in survival to hospital discharge. Additionally, the risks associated with high-speed transport outweigh the extremely small likelihood of benefit.
2. Field deaths not covered by this policy require assessment by a transporting paramedic and consultation with the BioTel Medical Command Physician for pronouncement of death.
3. During the initial resuscitation effort, EMS personnel or appropriate fire/rescue personnel will inform the family of the progress of the resuscitative efforts and possible implementation of this policy. If any family member or responsible party objects to the termination of resuscitation efforts in the field, OR if paramedics determine that pronouncement in the field is either not appropriate or might be unsafe, continue the resuscitation and transport the patient to the closest appropriate receiving hospital emergency department. Notify BioTel immediately of the circumstances.

Terminating Resuscitation Efforts in the Field

1. UTSW/BioTel paramedics may terminate all resuscitation efforts of a presumed primary (medical) cardiac arrest WITHOUT BIOTEL CONSULTATION ONLY if ALL of the following criteria are met:

    a. Patient is an adult over 70 years of age;
    b. Patient is in a nursing home or other long-term care facility;
    c. Effective ventilation with a BVM (chest rise and fall, auscultation of breath sounds in four places, absence of gastric sounds) or with a supraglottic airway or endotracheal tube is being provided.
    d. IV or IO access has been established;
    e. The patient was found in asystole, remains in asystole, and has failed to respond to Advanced Cardiac Life Support (ACLS) guidelines:
        i. For a minimum of 20 minutes, regardless of the previous CPR time and the arrest interval. Time begins with paramedic initiation of ALS care (IV, advanced airway).
        ii. For a minimum of 30 minutes, if the arrest occurred in the presence of EMS personnel.
    f. The $ETCO_2$ reading is less than 20 mmHg while performing high-quality chest compressions.

    UNLESS ALL OF THESE CRITERIA HAVE BEEN MET, PARAMEDICS MUST CONSULT BIOTEL PRIOR TO FIELD PRONOUNCEMENT.

UTSW/BioTel paramedics SHALL NOT terminate resuscitation efforts if:

1. The patient is less than 18 years of age.
2. The patient is visibly pregnant.
3. The cardiac arrest may be due to trauma and EMS providers note any signs of life OR the cardiac rhythm is anything but asystole.
4. The cardiac arrest MAY BE associated with hypothermia, drug overdose, toxicological exposures, airway obstruction, or electrocution.
5. If the cardiac arrest has occurred in a crowded public setting, excluding patients in nursing homes or extended care facilities.
6. If the scene situation might place EMS providers in jeopardy.
7. When the family will not accept the termination of resuscitative efforts in the field.
8. If there is an inability to communicate with family present at scene or due to language or cultural barrier. (This does not imply that medics must contact absent family members before making the decision. It only applies if contact with the family is already established.)
9. If the patient has persistent Ventricular Fibrillation, pulseless Ventricular Tachycardia, any narrow QRS complex, or any organized QRS complex at a rate of at least 40.
10. If the patient demonstrates any neurological signs.
11. If the patient has a return of spontaneous circulation (pulse) for even a brief period. Return of spontaneous circulation during resuscitation for even a brief period is a positive prognostic sign and warrants consideration of transport to a receiving hospital emergency department.

Once Death has been Determined

1. Immediately notify the appropriate law enforcement agency and remain on scene until they arrive.
2. Cover the body with a sheet or other suitable item.
3. Do not remove any property from the body or the scene for any purpose.
4. Leave all medical devices (i.e., endotracheal tube, IV, ECG pads, etc.) applied to the body in place.
5. The body is to be left at the scene with the appropriate law enforcement agency.

C) DO NOT RESUSCITATE (DNR) ORDERS

The desire of the patient supersedes any Out-of-Hospital DNR Order!

Various individuals can revoke a DNR order at any time. These include the patient (including a competent minor) or a person who identifies himself or herself as the patient's legal guardian, a qualified relative, or a person having a medical power of attorney. Revocation can be in the form of verbal communication to responding paramedics, destruction of the form, or removal of a DNR device such as a bracelet or medallion.

Qualified relatives are defined in the following priority; the patient's

1. Spouse;
2. Reasonably available adult children;
3. Parents; or
4. Nearest living relative.

Identifying DNR Order Devices and Determining their Validity
EMS personnel shall accept any one of the following devices as proof of a valid DNR order. EMS personnel are not required to accept or interpret an out-of-hospital DNR order that does not meet the requirements of this policy. If doubt exists as to whether the DNR Order Form presented is valid, EMS personnel will initiate resuscitation until discovery of a valid DNR order or transfer of patient care to a higher level. DNR requests that do not meet the approved form outlined in this policy (including requests by a Medical Power of Attorney) require BioTel authorization.

DNR Order Form
The official Texas Department of State Health Services Out-of-Hospital Do-Not-Resuscitate Form is an original, single page form with a Texas DNR logo in the upper, left-hand corner of the page. Duplicate copies are valid. Consider the form valid if the following conditions exist:

1. The patient's identity matches that of the patient named on the form.
2. The form is the original TDSHS Form containing the DNR logo or a copy.
3. All required sections are completed.
4. All required signatures are present.

DNR Bracelet
There are two acceptable DNR bracelets. The first is a white, plastic, hospital-type bracelets with the word "TEXAS" (or a representation of the geographical shape of Texas and the word "STOP" imposed over the shape and the words "DO NOT RESUSCITATE". The bracelet contains no other identifying information. The other type of DNR bracelet is made of stainless steel, looks similar to the "medic alert" bracelets, and is inscribed with the words "TEXAS DO NOT RESUSCITATE – OOH.

EMS personnel will honor either bracelet around the patient's wrist as if it were a valid DNR Order Form. Do not honor a DNR bracelet unless the patient is wearing it around the wrist. Do not remove the bracelet from the patient, even if the patient is deceased.

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DNR Necklace:
The DNR necklace is made of a stainless steel chain, 16 to 18 inches in length with a one-inch diameter disk attached. Inscribed on the disk is the same information as is found on the metal bracelet. EMS personnel will honor this necklace worn around the patient's neck as if presented with a valid paper DNR Order form.

Do not honor a DNR necklace unless the patient is wearing it around the neck. Do not remove the necklace from the patient, even if the patient is deceased.

Out-of-State DNR Orders
EMS personnel may accept a paper Out-of-Hospital DNR form that the patient executed in another state, as long as the order appears valid and there is no reason to question the authenticity of the order. EMS personnel may not accept any bracelets, necklaces, or other similar devices as proof of Out-of-State DNR Orders.

Do Not Honor a DNR Order form if:
1. There is alteration in the meaning of the form, e.g., some of the listed treatments are marked through as if to reject them.
2. The patient communicates a desire to revoke the order.
3. The order is revoked by the attending physician, legal guardian, a close relative (spouse, child, parent, or nearest living relative), or the person who has proxy or Durable Power of Attorney for Health Care.
4. The patient is pregnant.
5. You cannot conclusively match the name on the form to the identity of the patient.
6. Unnatural or suspicious circumstances are present.

Compliance with Out-of-Hospital DNR Order
1. EMS personnel must match the name on the DNR order form to the identity of the patient.
2. EMS personnel must agree that the out-of-hospital TDH DNR order form appears to be valid.
3. If the patient is found in or develops cardiac and/or respiratory arrest,
   A. EMS personnel will honor the DNR order by withholding placement of the AED, manual defibrillator, CPR, transcutaneous pacing, advanced airway, and artificial ventilation.
   B. If assessment or treatment begins and someone presents a valid DNR order form for the patient, EMS personnel shall stop the assessment and/or treatment immediately - even if a positive response has occurred.
4. If the patient has a DNR order that appears valid, and the patient is not in cardiac or respiratory arrest,
   A. EMS personnel will provide care, such as opening the patient's airway, providing oxygen, IV fluids or medications (other than resuscitation medications), or any other treatment directed toward making the patient comfortable including controlling bleeding, splinting and administering medications.
   B. The DNR Order form must accompany the patient during transport to a receiving hospital emergency department.

Documentation
Following the field declaration of death, EMS personnel should contact BioTel to document statistical information required by Texas Department of State Health Services. When the response team encounters a DNR order form, a bracelet, or a necklace, the medic should document the following items within the patient care record.

1. An assessment of the patient's condition.
2. The type of DNR device (DNR paper form, bracelet, or necklace) used to confirm the DNR status.
3. Any problems encountered during implementation of the DNR order.
4. The name of the patient's attending physician.
5. The full name, address, telephone number, and relationship to the patient of any witness used to identify the patient.

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Interacting with the Family/Loved Ones

The following guidelines will assist prehospital personnel in their interaction with family members or loved ones present on the scene:

1. The moment resuscitative efforts stop for one person, EMS personnel acquire a new set of patients - the family and loved ones.
2. Briefly describe the circumstances leading to the death. Review with them the sequence of events that transpired. Avoid euphemisms such as, “he’s passed on”, “she is no longer with us”, or “he’s left us”. Instead, use the words death, dying, or dead.
3. Allow time for the family to process the events and the information provided. Make eye contact. Consider appropriate physical contact with family members to indicate empathy and compassion. Convey your feelings with a phrase such as, “you have my (our) sincere sympathy”, rather than “I am (we are) sorry”.
4. Allow as much time as necessary for questions and discussion. Review the events several times to make sure there is complete understanding and to facilitate further questions.
5. Allow the family the opportunity to see their relative. If equipment is still connected, inform the family in advance.
6. Know in advance what happens next and who will sign the death certificate. One of the survivors will surely ask, “What do we do next?” Be prepared with a proper answer, such as “You will need to contact a funeral home”, etc.

UTSW/BioTel Policy: EMS Unit Wait Times at Receiving Hospitals

Purpose: The purpose of this policy is to minimize "Wait Times" for EMS units at receiving hospitals.

BACKGROUND:

Due to emergency department (ED) overcrowding and staffing issues, ambulances are occasionally asked to wait prior to transferring their patient to the care of ED staff.
This policy is intended to offer guidance to UTSW/BioTel paramedics who, upon arrival with a patient at an ED, are asked to wait prior to the transfer of the care of their patient to ED staff.

GUIDELINES:

All UTSW/BioTel paramedics shall comply with the following guidelines:

1. When a member of a hospital ED staff indicates that the wait time for the transfer of care will exceed twenty (20) minutes, then the paramedic crew will ask to speak with the ED Charge Nurse. They shall ask the Charge Nurse to verify that the paramedics and EMS unit will be out of service at the hospital for at least 20 minutes while waiting for the ED staff to assume full responsibility for the patient. They shall then communicate to the Charge Nurse that UTSW/BioTel procedures do not allow for ambulances to remain at a hospital for an extended time, and shall ask that the patient transfer be expedited as soon as possible.

2. If the ED staff indicates that the wait time will exceed thirty (30) minutes, or if the actual waiting time passes thirty (30) minutes, then the paramedics shall contact the appropriate Field Supervisor. The Field Supervisor shall contact the on-duty Charge Nurse of the ED via telephone to request that the ED staff immediately accept full responsibility for the patient in order to free up the paramedics and EMS unit. If the Charge Nurse indicates that the ED cannot comply with this request, then the Field Supervisor will respond to that Emergency Department, Code-1, and will request that the hospital's "Administrator On Call" be paged. While en-route to the hospital, the Field Supervisor shall contact BioTel and ask that the EMS Medical Director, or his designee, be notified of the situation.

3. Paramedics are reminded that once they have arrived on hospital property, they MUST deliver their patient to ED staff, and that they may ONLY leave that hospital with their patient following direction of a BioTel Medical Command Physician. To do otherwise would constitute an EMTALA violation (Refer to the **EMTALA** Policy).

4. UTSW/BioTel paramedics will act professionally when dealing with ED staff at all times and shall defer to their Field Supervisor or the BioTel EMS Medical Director to resolve these issues, if need be.

UTSW/BioTel Policy: EMTALA

Purpose: The purpose of this policy is to ensure that UTSW/BioTel Paramedics adhere to Federal EMTALA Guidelines.

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

B. The CMS defines a dedicated hospital emergency department as an area of the hospital that meets one of three tests: it is licensed by the state as an emergency department, it holds itself out to the public as providing emergency care, or, in a calendar year, it treats at least one-third of its outpatient visits for an emergency medical condition. Hospitals have three obligations under EMTALA:
    1. Any individual who comes to the hospital and requests examination or treatment must receive an appropriate medical screening examination within the capability of the hospital to determine whether an emergency medical condition exists. Examination and treatment cannot be delayed to inquire about methods of payment or insurance coverage. Emergency departments must also post signs notifying patients and visitors of their rights under the statute.
    2. If it is determined that a medical emergency condition exists, the hospital must provide stabilizing treatment within its capability until the emergency medical condition is resolved or stabilized. If a hospital does not have the capability to stabilize the emergency medical condition, it must arrange an "appropriate" transfer of the patient to another hospital in accordance with the EMTALA statute and the regulations promulgated by the CMS. Hospitals with specialized capabilities are obligated to accept transfers from hospitals that lack the capability to treat an unstable medical condition, and this last requirement applies even to hospitals that do not have emergency departments.
    3. Hospitals must report to CMS or to the state survey agency any time they have reason to believe they may have received an individual who has been transferred in an unstable emergency medical condition from another hospital in violation of EMTALA.

C. EMTALA directly affects EMS agency providers in two major ways:
    1. Under EMTALA, a patient "comes to" the hospital when an ambulance that contains the patient crosses the threshold of the hospital's property. Once the ambulance "comes to" the receiving hospital, the patient may not be removed from that hospital by paramedics until the receiving hospital has complied with EMTALA and has, at a minimum provided a medical screening exam for that patient, even if the patient requests that paramedics take them somewhere else. Once an ambulance has arrived at a hospital, meaning it has crossed the threshold of the hospital's property, that ambulance shall not leave the hospital with that patient without first seeking approval from an EMS Supervisor AND from BioTel.

    2. Patients who are found at hospital-based out-patient clinics (meaning the clinic is on the grounds of that hospital) that are not equipped to handle the patient's medical emergency must be transported to the emergency department of the hospital they are associated with, UNLESS the clinic treating physician has made arrangements for acceptance at another hospital emergency department. In such instances, clinic staff shall provide the paramedics with a "Memorandum of Transfer" indicating that the patient has been accepted at that hospital emergency department. Paramedics must give this document to ED staff upon arrival. Paramedics shall not deviate from these transfer arrangements without first consulting BioTel.

3. If a clinic is not on the grounds of a particular hospital, AND no arrangements have been made in advance by clinic staff for acceptance of the patient at a particular hospital's emergency department, paramedics shall utilize standard system guidelines for determining patient destination.

4. **SPECIAL CIRCUMSTANCES RELATED TO PARKLAND HOSPITAL and CHILDREN'S MEDICAL CENTER (CMC):** At times, paramedics will transport both an adult and a pediatric patient in the same ambulance, most commonly associated with motor vehicle collisions (MVCs). In these instances, paramedics shall transport both patients either to the Parkland Hospital ambulance bay or to the CMC ambulance bay, depending upon which of their two patients is felt to be most critical. In these instances, paramedics may then "split" the patients, taking the adult patient to the Parkland Hospital ED and the pediatric patient to CMC, utilizing the corridor connecting Parkland Hospital and CMC, turning the care of the pediatric patient over to CMC triage staff and the adult patient to Parkland Hospital ED triage staff.

5. **SPECIAL CIRCUMSTANCES RELATED TO PARKLAND CLINICS LOCATED ADJACENT TO PARKLAND HOSPITAL:** Because of the proximity of Parkland Hospital's "Amelia Court" outpatient clinic (1936 Amelia Court at Harry Hines Blvd.) and the Ambulatory Surgery Center (4900 Harry Hines Blvd. at Medical District Drive) to Parkland Hospital, patients seen at these facilities MUST be transported to the Parkland Hospital ED, UNLESS the clinic treating physician has made arrangements for acceptance at another hospital emergency department. In such instances, clinic staff shall provide the paramedics with a "Memorandum of Transfer" indicating that the patient has been accepted at another hospital emergency department. Paramedics must give this document to ED staff upon arrival. Paramedics shall not deviate from these transfer arrangements without first consulting BioTel and notifying their EMS Supervisor.

6. Finally, hospital helipads are exempt from EMTALA requirements. If a local EMS agency meets a helicopter at the site of a hospital helipad, the patient does NOT need to go to that hospital's emergency department, if the sending hospital has made arrangements for transfer of the patient to another nearby hospital, OR if coming from a "scene", the ultimate point of delivery is a different hospital that is the appropriate destination for that patient. Consider the helipad a load/unload waypoint and nothing more.

D. In the event that a paramedic in the UTSW/BioTel system has reason to believe that there may be an EMTALA issue regarding his/her patient, the paramedic should immediately contact the Medical Command Physician at BioTel and their EMS Supervisor for further direction. Paramedics shall not engage in discussions with hospital or clinic personnel either at the transferring hospital/clinic or at the receiving hospital regarding any EMTALA issues, unless specifically instructed to do so by the Medical Command Physician. In such instances, they shall notify their EMS Supervisor of such occurrences.

UTSW/BioTel Policy: Patient Evaluation & Transport

Purpose: This policy establishes a standardized definition of a **PATIENT**, sets performance standards for the assessment of patients in the out-of-hospital setting, assists paramedics in determining when a patient should be transported to a hospital, and dictates the documentation requirements for **all** patients, regardless of whether or not a patient is transported to a receiving facility.

1. Scope:

This policy is intended to guide UTSW/BioTel paramedics in determining which of the many persons that they encounter shall be considered to be a **PATIENT** and therefore require emergency evaluation. In addition, this policy sets forth the minimum elements of history-taking and physical assessment that shall be performed, as well as the required data elements needed for appropriate documentation. Lastly, this policy shall guide the decision-making process regarding which patients require transportation to a Dallas-area hospital emergency department, as well as the required documentation for patients who are not transported.

2. Patient Definition:

BioTel paramedics shall consider a patient to be:

- Any person who has contacted 911 requesting emergency medical assistance for themselves;
- Any person for whom 911 has been contacted because a third party believes the person may be sick and/or injured.

3. Exceptions to the Definition of a Patient (NASIP – "Not A Sick or Injured Person"):

a. Minor motor vehicle collisions (MVCs) and third party reports of a "sick person or person down":

Some individuals involved in minor MVCs may not be injured and would, therefore not be considered to be a patient. In addition, some persons for whom EMS is called may not be patients (example: a person sleeping on a park bench).

i. In order not to be considered a patient, an individual must:

a. Be awake, alert, oriented, and cooperative.
b. Calmly, clearly, and lucidly state the he or she is not injured and he or she does not wish to evaluated by EMS personnel.
c. Be ambulatory without assistance, or at their baseline level of ambulation.
d. Not exhibit any external signs of recent trauma such as lacerations, abrasions, etc.
e. Not exhibit signs of gross alcohol or drug intoxication (slurred speech, odor of alcohol on breath, ataxic gait).
f. Be willing to give their name for the purposes of documentation that they were involved in the incident and do not wish to be evaluated.
g. Not have been involved in a traumatic event that meets any Trauma Center Criteria.

If a person meets ALL of the above criteria, his or her name shall be documented on the Prehospital Care Report (ePCR) as being involved in a minor MVC, and that he or she does not meet the criteria for being a patient. Two paramedics or a paramedic and an officer will sign the ePCR indicating that the person meets ALL of the above criteria. The disposition code shall be "NASIP" (Not a sick or injured person). Multiple non-patient NASIPs may be documented on a single ePCR.

ii. If any of the above criteria are NOT met, the person shall be considered to be a patient and must be fully evaluated by paramedics and appropriate documentation shall be completed. If such a patient refuses assessment the paramedics shall immediately notify an EMS Field Supervisor or BioTel for consultation and direction.

b. If a law enforcement official has requested that paramedics evaluate a person, that person shall be considered to be a patient. If a person in custody refuses evaluation by EMS, paramedics shall immediately contact an EMS Supervisor and/or BioTel for further direction. Paramedics may elect to simply transport the patient to the closest appropriate receiving hospital emergency department. If this occurs, BioTel shall be notified that an incompletely assessed patient is en route.

c. Assessment Notes:

1. *Not a Sick or Injured Person* (NASIP) is not the same as *Unable to Locate* (UTL).

2. NASIP requires that a visual and verbal assessment has been made of a person on scene.

3. UTL implies that no person was identified on scene who called 911 or for whom 911 was called.

4. Patient Assessment and Documentation

a. All persons who meet the definition of a patient shall be assessed in a manner that is consistent with standard paramedic practice, unless it is unsafe to perform such an assessment.

b. If the physical location of the patient is felt to be potentially unsafe the paramedic shall either:

i. Move the prospective patient to a place where it is no longer unsafe to assess the patient while maintaining a basic airway, ventilation and **SPINAL MOTION RESTRICTION**, as necessary; **OR**

ii. Perform whatever aspects of the assessment that may be safely performed and then expedite transport to a hospital emergency department, as indicated.

c. **All patients** for whom it is not unsafe to do so shall have a full set of vital signs measured (blood pressure, pulse, and respiratory rate, oxygen saturation and temperature) and the determination of a Glasgow Comma Scale (GCS) Score. ALL of these values shall be recorded on the ePCR.

d. The following data elements MUST be documented on the ePCR for every patient, unless it is documented on the ePCR why such information is not obtainable.

1) Name, age, date of birth, home address, and phone number, and social security number.
2) Chief Complaint (CC)
3) History of Present illness (HPI)
4) Past Medical History (PMH)
5) Medications
6) Allergies to medications
7) Vital signs INCLUDING:
   - Palpated pulse rate (HR)
   - Blood pressure (BP)
   - Respiratory rate RR)
   - Oxygen saturation (SpO_2)

NOTE: Unstable patients shall have repeat vital signs documented every 5-10 minutes.

8) Glasgow Coma Score
9) Physical Examination, which should minimally include assessment of the head, neck, chest/lungs, abdomen/pelvis, extremities, and a basic neurological exam
10) All interventions performed and the response to those interventions
11) All medications given, including dose, route and clinical response to those medications
12) Disposition of the patient, including justification of the need for transport or explanation of why the patient was NOT transported
13) Patient signature
14) Signatures of two paramedics, OR one paramedic and an EMS agency officer

5. Transport Decision Making – Refer to the DESTINATION Policy for Additional Guidance:

a. Following a complete assessment of a patient, BioTel paramedics shall generally offer patients transport to a Dallas area hospital emergency department via ambulance.

b. Patients who do not meet specialty hospital criteria, such as Trauma Centers, Stroke Centers and STEMI Centers, who do not have **any** of the criteria listed in Section 8 below, who have normal vital signs, and do not meet **any** of the "exceptions" listed in Section "C" below, may be informed that they will be transported to the **closest open and appropriate** hospital emergency department. If that patient refuses transport to the closest open and appropriate ED, then they may be considered to be a "Patient Declining Transport" or "PDT". Proceed to Section 6 for further instructions.

c. Exceptions to #5b:

1) Pregnant patients who report receiving prenatal care shall be transported to the ED that is associated with their prenatal care provider, or if no such facility exists, to their facility of choice, as long as there is no indication to transport the patient and infant to an Obstetrics Specialty Care facility.

2) Patients who are post-op/post-procedure within 90 days and have a chief complaint that could be related to their surgery/procedure shall be transported to the ED of the hospital that performed their surgery/procedure.

3) Patients undergoing chemotherapy or radiation treatment shall be transported to the ED that is associated with their cancer treatment center.

4) Consider "sister hospital" relationships. For example, if a patient wants to go to a Baylor Hospital ED that is far away, but (s)he has a minor medical condition and normal vital signs, the patient could be transported not to the closest ED, but, rather, to the closest Baylor campus.

5) VA Patients: Patients who report that they are veterans, who do not meet specialty care criteria, and who express the desire to be transported to the VA hospital may be transported there. Patients who are not veterans shall NOT be transported the VA, unless they have an unstable airway and the VA hospital is by far the closest ED.

6) Finally, use good judgment. If there are other unique or extenuating circumstances, transport the patient to the hospital you believe is most appropriate, report those circumstances to the receiving hospital staff upon arrival, and document your decision-making process on the ePCR.

d. EMS personnel shall not initiate a discussion of the cost of being transported by ambulance or be given an estimate of waiting times at the receiving emergency department. If asked, paramedics may state:

"Transport generally costs a few hundred to a thousand dollars, but what is most important is that we get you to the hospital right now…."

OR

"We don't know how long the wait is at any given ER at any given time".

e. If one paramedic on-scene has determined that a patient should be transported by ambulance to a given hospital emergency department, the patient shall be transported. IF there is disagreement between paramedics as to the need for ambulance transport or what the appropriate destination should be, an EMS Supervisor or BioTel shall be immediately consulted to resolve the conflict.

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6. Patients Declining Transport (PDT):

a. Following a physical examination and an offer to transport the patient to a hospital, some patients may decline transport and choose to find their own way to the doctor or hospital, or may seek some alternative treatment.

b. Competent patients who are not in custody of law enforcement ("under arrest" or under Emergency Detention) maintain the right of self-determination and shall be allowed to refuse transportation to a hospital emergency department ONLY if ALL of the following criteria are met:

1) A paramedic has determined that the patient has decision-making capacity to refuse transport; and

2) A paramedic has discussed the potential risks of non-transport with the patient and the patient's family, when present, and has documented that discussion on the ePCR; and

3) A paramedic has made a determination that the patient understands and accepts those risks and has documented this determination on the ePCR.

c. If paramedics believe that a patient does not have an illness or injury in which a decision by the patient to decline transport could result in harm, OR if a patient declines transport to the closest appropriate ED, paramedics shall ask the patient to sign a *Patient Declines Transport* (PDT) form. Paramedics shall complete the PDT portion of the ePCR and obtain the patient's signature and the signature of a witness.

7. Mandatory Offer of Transport Criteria and Requirements for Patients Declining Transport Against Medical Advice – (AMA):

a. Paramedics shall follow their EMS agency specific policies regarding mandatory transport and decisions made "Against Medical Advice" and utilize sound judgment and common sense.

b. A patient with ANY of the following criteria should be offered transport by paramedics in an ambulance to a hospital ED. If the patient does not consent to ambulance transport, (s)he shall be considered to decline transport "Against Medical Advice" or "AMA". These criteria include any patient:

1) Who has been administered any medication by a UTSW/BioTel paramedic.
2) Complaining of non-traumatic chest pain.
3) Complaining of shortness of breath or difficulty breathing.
4) Complaining of vomiting blood or rectal bleeding.
5) Meeting Trauma Center Triage Criteria (refer to the DESTINATION Policy and TRAUMA Guidelines).
6) Over age 50 with abdominal pain.
7) Adult with a pulse rate less than 50 or higher than 110 BPM.
8) Adult with a systolic blood pressure greater than 180 or less than 95 mm Hg.
9) Adult with a diastolic blood pressure greater than 110 mm Hg.
10) Who has had a seizure in the previous 60 minutes.
11) Who has had a syncopal event.
12) SpO_2 less than 93% on room or ambient air, or while using baseline supplemental oxygen.
13) Who reports a loss of consciousness related to the 911 request for service.
14) Who reports signs or symptoms consistent with acute stroke or Transient Ischemic Attack (TIA).
15) Under the age of 18, unless proof of emancipation is provided by a copy of a court order.
16) For whom there is any concern regarding the possibility of their abuse or neglect.
17) In the custody of law enforcement for whom law enforcement officers request ambulance transport.
18) Who is or might be pregnant for whom signs and symptoms could be reasonably be related to the pregnancy.
19) Over the age of 75.
20) Who meet Burn Center Criteria (Refer to the DESTINATION Policy and BURNS Guidelines).

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21) Who present with signs or symptoms of smoke inhalation.
22) Who might be suicidal, including those for whom a 3rd party reported a concern for suicidal thoughts or actions.
23) Reported or suspected of having an intentional or unintentional drug or other substance overdose.
24) With diabetes for whom any paramedic-measured Point of Care (POC) blood glucose measurement is less than 90 mg/dL or greater than 300 mg/dL.
25) With an Acute Life-Threatening Event (ALTE).
26) For whom paramedics are unclear regarding the appropriateness or safety of a patient refusing transport.

c. AMA patients shall always be advised that they should re-contact 911 at any time in the future if their condition should worsen or if they change their mind about ambulance transport.

8. Paramedic Initiated Refusal of Service – (PIRS):

a. UTSW/BioTel paramedics are encouraged NOT to decline ambulance transport to a person who meets the definition of a patient.

b. Should paramedics elect to refuse transport for a patient who requests ambulance transport, they shall document the reasons for their refusal to transport and shall notify their EMS supervisor prior to leaving the scene.

c. UTSW/BioTel agencies are encouraged to review 100% of Paramedic Initiated Refusals of service for documentation and appropriateness of the decision to refuse transport.

9. General Guidelines for Patients in Custody (Refer to the CUSTODY & RESTRAINT Policies):

a. All persons for whom EMS has been requested by a member of the law enforcement community in order to provide a medical evaluation shall be considered to be a patient and shall be fully assessed and documented, provided that it is safe to assess them. Once an assessment is completed, paramedics shall follow their EMS agency specific guidelines for determining the destination for patients in custody.

b. Paramedics cannot *"medically clear"* a patient in police custody. If paramedics do not believe that a patient in custody requires transport to a hospital, an EMS Supervisor or BioTel shall be contacted for consultation and approval for the law enforcement agency to transport the patient either to jail or to a receiving hospital. Paramedics must be confident that the patient does not require additional medical evaluation, because if such a patient is determined by jail personnel to require additional medical evaluation, another ambulance will be summoned to the jail. All reasonable attempts should be made to avoid this scenario.

c. Occasionally persons in custody may exhibit combative behavior and altered mental status. This condition is often referred to as **EXCITED DELIRIUM** and is often associated with drug ingestions, particularly cocaine, PCP and/or amphetamines. A number of medical conditions may, however, mimic drug-induced **EXCITED DELIRIUM**, and only sophisticated testing in an emergency department can determine the exact cause of this patient presentation. Paramedics should be aware that this represents a true medical emergency and these patients are at high risk of hyperthermia, hypoxia, hyperkalemia, hypoglycemia, and sudden cardiac arrest. **These patients MUST be transported by ambulance. Patients who have been handcuffed MUST have a law enforcement officer capable of removing the handcuffs riding in the back of the ambulance to the hospital.**

d. If it is unsafe to assess a combative patient, then the patient shall be placed in the back of an ambulance and the number of law enforcement officers required to control the patient shall ride with the paramedics to an appropriate ED. No such patient shall ever be transported without the presence of law enforcement officers. When it is safe to do so, paramedics shall obtain vital signs, a blood glucose determination, initiate cardiac monitoring, and administer oxygen. Early notification to BioTel of the transport of an incompletely assessed combative patient in custody is MANDATORY.

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10. EMS Incident Disposition Codes:

UTSW/BioTel paramedics shall utilize ONLY one of the following disposition codes on the ePCR and when reporting the disposition of the call to their communications centers, and when closing out the run on the ePCR:

CAN	Canceled or disregarded en route to the scene (document by whom)
UTL	Unable To Locate a person who called 911 or for whom 911 was called
NASIP	Not a Sick or Injured Person
TX	Transported to a hospital
PDT	Patient Declined Transport
AMA	Against Medical Advice
PIRS	Paramedic Initiated Refusal of Service
POL	Police to transport
Signal 27	Medical Examiner's Case (no resuscitation attempted)
TERM	Field Resuscitation Attempt Terminated

UTSW/BioTel Policy: Physician Coordination at the Scene of a Medical Emergency

Purpose: The purpose of this policy is to guide UTSW/BioTel paramedics when encountering a physician at the scene of a medical emergency.

1. **GENERAL GUIDELINES:**

A. In general, paramedics shall not accept direction from any physician or members of the public on emergency calls. Only BioTel staff and BioTel medical command physicians are authorized to provide medical direction to paramedics. However, in certain circumstances, a field physician may be authorized to provide medical direction to paramedics if the following conditions are met:
   a. The physician is licensed in the State of Texas, is present on scene and wishes to direct patient care AND agrees to accompany the patient to the hospital; and
   b. The direction being offered by the physician is within the Paramedic Scope of Practice.
   c. A BioTel Medical Command Physician has been contacted and agrees that such direction is appropriate and approves the on-scene physician to direct the care of the patient.

2. **PROCEDURE FOR INTERACTING WITH PHYSICIANS ON-SCENE AT AN EMERGENCY MEDICAL CALL:**

PRIOR to accepting direction from an on-scene physician, paramedics shall:

A. Verify the identity and credentials of the on-scene physician. The physician must produce a current Texas medical license, and must show it to the Paramedic, along with a valid government-issued photo ID demonstrating that he/she is the person whose name is on the medical license;
B. Advise the physician that he or she will be required to ride in the ambulance with the patient to the hospital and must sign the Prehospital Care Record;
C. Contact BioTel and seek approval from the Medical Command Physician allowing the on-scene physician to direct the care of the patient.

3. **ON-SCENE PHYSICIAN OPTIONS:**

Once the on-scene physician has provided his/her medical license and official governmental ID, paramedics shall contact BioTel and inform staff that a physician on scene is requesting to provide medical direction. BioTel staff shall inform the on-duty Medical Command Physician who will discuss the on-scene physician's offer to direct the care of the patient with the paramedics and then with the on-scene physician. Following these conversations, and with the approval of the BioTel Medical Command Physician:

A. The on-scene physician may assist the paramedics and offer advice regarding patient care, but must allow the paramedics to remain in control of the scene and to treat/transport the patient according to BioTel policies and Guidelines For Therapy;
   -OR-
B. The on-scene physician may be given approval by the BioTel Medical Command Physician to direct the care of the patient within the paramedics' scope of practice. The on-scene physician must accompany the patient in the ambulance to the hospital, and must assume total responsibility for the patient's care until emergency department staff assumes this responsibility. The paramedics will assist the physician as requested, provided that they operate within the standard of care and the paramedic Scope of Practice. All orders given by the on-scene physician shall be documented on the ePCR and the physician shall sign the ePCR. Finally, the physician's name, medical license number and complete contact information will be documented on the ePCR.

4. **SPECIAL CIRCUMSTANCES:**

A. Physicians in a healthcare setting (hospital, clinic or physician's office):

a. Physicians already caring for a patient in a hospital or clinic setting have established a physician-patient relationship and therefore do not fall under the requirements of this policy. That being said, should a physician already caring for a patient direct the paramedics to administer a medication or perform a procedure, paramedics shall inform the physician that they operate under the direction and treatment guidelines of the UTSW/BioTel system and can only provide care consistent with the BioTel Guidelines for Therapy. Should the physician still wish to direct the care of the patient, BioTel shall be contacted so that the on-scene physician may speak directly with the BioTel Medical Command Physician.

b. In general, decisions made by such physicians regarding whether to transport a patient by ambulance, as well as the destination hospital for a patient, shall be respected, assuming that the hospital is a BioTel receiving hospital and paramedics believe that the destination hospital can appropriately care for that patient. Of course, the patient must consent to the transfer. If there is a discrepancy between the physicians' direction to transport the patient by ambulance OR the physicians' direction regarding the appropriate destination hospital, BioTel shall be consulted and an EMS supervisor shall be requested to respond to the scene.

c. Paramedics shall always maintain a professional and respectful demeanor, as they do with any member of the public when interacting with a physician at the scene of a medical emergency.

B. Do Not Resuscitate (DNR) Orders:

a. An on-scene physician who has been identified as the patient's personal physician may issue a DNR Order, which Emergency Medical Services (EMS) personnel may follow, if the physician has been properly identified and states that he or she is accepting full medical-legal accountability; family members, if present, must agree. This order shall be documented on the ePCR and must be approved by the BioTel Medical Command Physician. In this circumstance, the Medical Command Physician may waive the requirement for the physician to accompany the patient during ambulance transport, should transport to a receiving hospital ensue.

b. If there is ANY question or concern regarding the appropriateness of the on-scene physician issuing a DNR Order, paramedics shall begin resuscitation according to BioTel Guidelines for Therapy, as indicated, while contacting BioTel for further direction.

C. EMS Physicians:

a. On occasion, paramedics will encounter a physician who is trained and experienced in working with prehospital care providers. Such "EMS Physicians" may or may not be known to paramedics.

b. If a physician identifies him/herself as an "EMS Physician" and is known to the paramedics, they may follow the direction of the "EMS Physician" provided such direction is consistent with BioTel Guidelines for Therapy and the paramedics agree that such direction is appropriate for the care of the patient. If the paramedics disagree with the care suggested by the "EMS Physician", BioTel shall be immediately contacted and an EMS supervisor shall be requested to respond to the scene. Known "EMS Physicians" are not required to accompany the patient to the hospital in the ambulance, although doing so is acceptable if the paramedics and the "EMS Physician" believe it would be of benefit to the patient. Any direction provided to the paramedics by the "EMS Physician" shall be documented on the ePCR.

c. If the "EMS Physician" is NOT known to the paramedics, they shall ask the physician to provide some form of credentials, such as an EMS agency ID card, badge or other appropriate evidence that they function as an EMS Physician. In such cases, paramedics may utilize judgment as to whether to accept advice or direction from such a physician. If there is any question as to the validity of the physician's credentials or the medical

direction he/she offers, paramedics will inform the physician of the requirements of this policy and act accordingly.

d. This procedure shall be followed whether the paramedics are evaluating a patient at a single scene or at a public venue such as a concert, marathon race, church service or other "mass gathering" event.

e. Any questions regarding interactions with "EMS Physicians" on-scene shall be referred to BioTel.

5. **INFORMATION CARD FOR PHYSICIANS SEEKING TO ASSIST PARAMEDICS IN THE FIELD:**
(This is NOT to be given to physicians already caring for a patient in a healthcare setting).

Information For Physicians Seeking to Assist Paramedics at the Scene of a Medical Emergency:
Thank you for your offer to assist paramedics in caring for a person in need of emergency medical evaluation and treatment in the field. PLEASE READ THE FOLLOWING INFORMATION CAREFULLY: In the State of Texas, paramedics operate under the authority and direction of a designated, accountable EMS Medical Director and are only authorized to provide emergency medical treatment utilizing the protocols and guidelines for therapy approved by the Medical Director. The paramedics on scene are experienced professionals who are experts in providing out-of-hospital emergency medical evaluation and treatment. They operate for the University of Texas Southwestern Medical Center (UTSW) BioTel EMS System, led by Medical Director Dr. Paul Pepe. Any physician wishing to assist the paramedics in the care of a patient must: A) Provide to the paramedics for verification a copy of his/her current Texas medical license and also an official government-issued photo ID. Once that verification has been completed, the physician may: 1) Consult with the on-duty BioTel Medical Command Physician and offer advice on the care of the patient, but allow the Medical Command Physician to direct patient care; ***OR*** 2) With the approval of the BioTel Medical Command Physician, he/she may direct the paramedics within the Texas paramedic Scope of Practice and then accompany the patient to the hospital and assume total responsibility for patient care until this responsibility is assumed by emergency department staff. In this case, the paramedics will assist the physician as requested, provided they operate within the Scope of Practice. All orders given by the on-scene physician shall be documented on the electronic care record and signed by the physician. The physician's name, medical license number and contact information will be documented on the electronic care record. **If you do not have a copy of your medical license and a photo ID, or if you are not willing to consult with the BioTel Medical Command Physician, accept in writing full medical-legal accountability for the care rendered AND accompany the paramedics and the patient in the ambulance to the hospital, PLEASE stand back and allow the paramedics to do their job.**
Thank you.

UTSW/BioTel Policy: Radio/Telephone and In-Person Verbal Patient Reporting

Purpose: The purpose of this policy is to set forth the minimum standards for the communication of vital patient information when giving radio or telephone report, and when providing this information in person at the receiving hospital.

1. **POLICY:**

EMS providers shall provide a succinct patient report by radio or telephone to BioTel or directly to the receiving hospital, as well as in-person once at a receiving facility, in accordance with the following standards.

2. **FIELD COMMUNICATION – REPORT FORMAT:**
   a. Paramedics shall ALWAYS document the name of the BioTel staff member receiving report or the name of the receiving hospital and hospital staff member receiving report.

   b. When contacting BioTel, paramedics shall communicate whether contact is for routine hospital notification, or for another reason, such as:
      i. Specialty Care Notification (Trauma, Burn, STEMI, Stroke, etc.);
      ii. BioTel Consultation;
      iii. BioTel Medical Command (physician) Consultation;
      iv. Termination of Resuscitation (Field Termination Pronouncement);
      v. Destination Decision-making;
      vi. AMA/Patient Refusal;
      vii. Other.

   c. Paramedics' field report to either BioTel or directly to a receiving hospital shall include at a minimum:
      i. EMS agency and unit number;
      ii. Age and gender;
      iii. Chief complaint/or mechanism of injury;
      iv. Vital signs;
      v. Level of consciousness;
      vi. Transport code and ETA;
      vii. Whether the patient has had a supraglottic or endotracheal airway in place;
      viii. Any other pertinent patient information.

3. **RECEIVING HOSPITAL COMMUNICATION – REPORT FORMAT:**
   a. Paramedics shall ALWAYS document the name of the hospital staff member receiving report both by radio/telephone and in person.

   b. For critical or "Specialty Care" patients, upon entering a room with multiple staff members present, ask "Who will be taking report today?" and then direct your comments to that staff member.

   c. The in-hospital verbal report shall include at a minimum:
      i. Age and gender;
      ii. Chief complaint/or mechanism of injury;
      iii. Vital signs;
      iv. Level of consciousness;
      v. Pertinent positive and negative physical findings;
      vi. Any interventions performed and the patient's response to those interventions;
      vii. Any medications given, including the dose, route and response to the medication;
      viii. Any additional information that the treatment team might need to effectively care for that patient.

4. **VERBAL REPORT FOR CRITICAL PEDIATRIC PATIENTS UPON ARRIVAL AT CHILDREN'S MEDICAL CENTER:**
    a. Upon arrival at CMC with a critical pediatric patient, CMC staff will FIRST perform a primary survey of your patient BEFORE receiving report.
    b. Once CMC personnel have completed the primary survey AND any necessary critical interventions, paramedics will then be asked to give report.
    c. With this in mind, providing a complete verbal report by radio or telephone to BioTel regarding the transport of a critical pediatric patient to CMC is both critical and mandatory.

5. **RADIO OR TELEPHONE COMMUNICATION FAILURE OR INABILITY OF PARAMEDICS TO GIVE REPORT:**

In the event of radio or telephone communication failure in the field or if paramedics are too busy attending to a critically ill patient to give report, they shall request that their respective dispatch center relay as much patient information as possible to BioTel as early in the transport as possible.

6. **QUALITY IMPROVEMENT:**

BioTel will work with our EMS Agency and receiving hospital partners to monitor, report, and improve the quality of field-to-hospital and in-hospital patient verbal reporting.

UTSW/BioTel Policy: Restraint of Patient

Purpose: To provide guidance for the use of physical or chemical restraint in the management and transport of patients who become violent or potentially violent, or who may harm themselves or others. Paramedics, EMT-Intermediates, and EMT-Basic level EMS providers may use these guidelines.

1. **GUIDELINES:**

   a. When following this policy, the paramount concern is the safety of the patient, community, and the responding EMS provider.

   b. Use restraints only when necessary in situations where the patient is potentially violent or exhibiting behavior deemed dangerous to self or others. Administer restraint in a humane and professional manner.

   c. EMS personnel should contact BioTel prior to the application of any restraining device, whenever possible. As crew safety comes first, EMS personnel may apply restraints BEFORE consulting BioTel, if the patient represents an immediate threat to self or to the EMS provider(s).

   d. Prehospital providers must consider that aggressive, violent behavior may be a symptom of medical conditions such as head trauma, alcohol, or drug related problems, and metabolic or psychiatric disorders. (Refer to the **EXCITED DELIRIUM** Guidelines, and to the **EVALUATION and TRANSPORT** Policy.)

   e. The method of restraint used shall allow for adequate monitoring of vital signs and shall not restrict the ability to protect the patient's airway, or compromise neurologic, respiratory, or vascular status.

2. **PATIENTS IN POLICE CUSTODY:**

   a. This policy does not negate the need for law enforcement personnel to use appropriate restraint equipment approved by their respective agencies for arrest and control.

   b. The responsibility for patient health management rests with the highest medical authority on the scene.

   c. A patient who is capable of understanding the consequences of his/her decisions never loses the right to participate in the decision making process regarding his/her medical care, regardless of the arrest status.

   d. In situations where law enforcement officers apply handcuffs:

      i. Do not cuff the patient to the ambulance stretcher.

      ii. The law enforcement officer shall accompany the patient in the ambulance if the handcuffs are to remain applied. However, if EMS personnel restrain the patient according to the procedure outlined in this policy, the law enforcement officer may elect to follow the ambulance in a patrol car to the receiving facility.

3. **POLICY DETAILS:**

   a. Restraint devices applied by prehospital personnel must be either padded leather or soft restraints (e.g. Posey vest, Velcro, or seatbelt-type).

   b. Suggested restraint technique is a six-point restraint system. Ideally, restraint devices should connect the patient to a backboard for ease of transfer at the receiving facility.

      i. Use a snug-fitting device at the ankles and wrists to secure both legs and arms, respectively. Extend the legs and arms and draw the restraint straps taut.

      ii. Prevent the patient from sitting up by applying an appropriate restraint device across the chest and knees. Draw the restraint straps taut, but do not restrict chest wall excursion.

iii. If using a backboard, restrain the patient supine. If a lateral position becomes necessary, tilt the backboard to the appropriate angle and provide support. In the lateral position, the patient must face EMS personnel, not the wall of the ambulance.

iv. **Paramedic Level** – Paramedics must continuously monitor all restrained patients using pulse oximetry, capnography, and the ECG monitor as soon as they become available.

v. EMS personnel should evaluate restrained extremities for pulse quality, capillary refill, color, temperature, and nerve and motor function immediately following application of the restraint device and every 5 minutes thereafter. Any abnormal findings require removal of the restraint device; however, after reevaluation, medics may reapply the device, if indicated. The Medical Direction Team recognizes that the evaluation of nerve and motor status requires patient cooperation and thus may be difficult to monitor.

vi. Do not place restraints in such a way as to prevent evaluation of the patient's medical status (e.g., airway, breathing, circulation, neurologic status), to prevent necessary patient care activities, or to in any way jeopardize the patient.

vii. EMS personnel must have a means of immediately releasing the restraints.

viii. Carefully document the use of restraint with the following information:

a) Reasons for restraint;
b) Technique and materials used;
c) Assessment findings of the patient's extremities, including periodic reevaluation;
d) The patient's mental, respiratory and circulatory status, including periodic reevaluation;
e) Time of call to BioTel for the restraint order.

4. **METHODS OF RESTRAINT PROHIBITED IN THE UTSW/BIOTEL EMS SYSTEM:**

EMS personnel within the BioTel system may **NOT** use any of these forms of restraint:

a. The Sandwich Technique, whereby personnel place the patient between two objects, such as a backboard and a scoop stretcher;

b. Hobble (hogtie) restraint, whereby personnel bind or handcuff the wrists and ankles behind the back;

c. Any prone restraint position;

d. Any restraint procedure that restricts the movement of the abdomen (diaphragm) or chest, either by direct compression or hyperextension of the chest wall;

e. Hard plastic ties or any restraint device requiring a key to remove.

5. **CHEMICAL RESTRAINT (PARAMEDIC-LEVEL ONLY):**

For patients who continue to struggle following the application of medical restraints, including patients who may have ingested a stimulant or hallucinogen, paramedics may administer:

a. Diazepam 2.5 mg – 5 mg slow IVP/IO/IN/IM, **OR**
b. Midazolam 2.5 mg – 5 mg slow IVP/IO/IN/IM, **OR**
c. Ketamine 2 mg/kg IV/IO or 5 mg/kg IM.

BioTel may authorize further sedation, if required.
Pediatric patients: Contact BioTel for authorization and dosing of midazolam sedation; do not administer ketamine.

UTSW/BioTel Policy: Return-to-Duty Requirements for Paramedics Returning to Clinical Duty Following Prolonged Absence

Purpose: To establish a protocol for the re-credentialing of former active duty UTSW/ BioTel credentialed paramedics for return to clinical activity.

1. **OBJECTIVES:**
   a. Identify candidates for paramedic re-credentialing.
   b. Establish a competency-based program that facilitates the re-acclimation of previously credentialed paramedics to the knowledge, skills, abilities and responsibilities of an active paramedic.
   c. Provide a process of competency verification by EMS Supervisors, Chief Officers and the BioTel Medical Directors.

2. **SCOPE:**
   a. This protocol applies to all paramedics seeking re-credentialing with a UTSW/BioTel EMS agency after a period of clinical inactivity.

3. **DEFINITIONS:**
   a. **Clinical Activity:** The provision of emergency medical evaluation and treatment as a component of the paramedic's routine job description, i.e. providing clinical care on a regular basis on an engine or ambulance.
   b. **Within System Paramedic:** A previously credentialed paramedic who has remained within the BioTel system in a role other than providing primary patient evaluation and treatment.
   c. **Re-Instatement Paramedic:** A previously credentialed paramedic who meets the following criteria:
      i. Held valid credentialing at time of leave.
      ii. Has been clinically inactive for less than 6 months.
      iii. Is not currently undergoing any remediation program implemented by the UTSW Medical Directors Council (MDC).
   d. **Re-Entry Paramedic:** A previously credentialed paramedic who meets the following criteria:
      i. Held valid credentialing at time of leave.
      ii. Has been clinically inactive for 6 or greater, but less than 24, months.
      iii. Is not currently undergoing any remediation program implemented by the UTSW Medical Directors Council (MDC).
   e. **Late Re-Entry Paramedic:** A previously credentialed paramedic who meets the following criteria:
      i. Held valid credentialing at time of reassignment.
      ii. Has been clinically inactive for 24 or more months.
      iii. Is not currently undergoing any remediation program implemented by the UTSW Medical Directors Council (MDC).
   f. **Paramedic Re-Entry Program (PREP):** A program through which Re-Entry Paramedics will undergo training and evaluation of clinical and procedural skills prior to re-instatement of credentials and return to active duty.
   g. **PREP Review Committee:** A committee whose purpose is to recommend candidates for the PREP and to continually monitor the progress of performance of both candidates and preceptors.
      i. For Re-Entry Paramedics, the committee shall comprise:
         1. EMS Chiefs or their designees.
      ii. For Late Re-Entry Paramedics, the committee comprise:
         1. EMS Chiefs or their designees; and
         2. Designated BioTel EMS Medical Directors.

4. **IDENTIFICATION OF CANDIDATES FOR RE-CREDENTIALING:**
   a. Candidates for the PREP include, but are not limited to, those paramedics who have been out of clinical practice for any of the following reasons:

i. Military service;
ii. Injury or illness;
iii. Maternity;
iv. Administrative re-assignment.

5. **SELECTION PROCESS:**
   a. Application: A State of Texas certified or licensed paramedic meeting the above criteria may submit in writing to the Chief of EMS a written application for entry into the PREP.
   b. In the case of a Re-Instatement Paramedic (less than 6 months of clinical inactivity), provided that the paramedic meets all other requirements for functioning within the BioTel EMS System, no further action needs be taken unless it is felt to be indicated by the Chief of EMS.
   c. Screening: For entry into the PREP, members of the PREP Review Committee will review the Candidate's eligibility based on, but not limited to, the following criteria:
      i. Verification of State paramedic certification;
      ii. Verification of previous credentials with a UTSW / BioTel EMS Agency;
      iii. Prior counseling or disciplinary actions;
      iv. Other work history or supporting documents provided by the Agency;
      v. Review of activities performed during leave from clinical duty.
   d. Recommendation: Following review of the Candidate's eligibility, the PREP Review Committee will recommend the candidate for acceptance consideration into the PREP. If approved by the PREP review committee, the candidate will be placed into the PREP.
   e. Removal from the PREP:
      i. In such circumstances as the Field Preceptors, EMS Chiefs or Medical Directors have concerns regarding the Candidate's ability to successfully complete the PREP, a letter requesting removal from the PREP may be brought to the PREP Review Committee.
      ii. Such a letter and supporting documents will be reviewed by the PREP Review Committee, after which a determination will be made as to the Candidate's further participation in the PREP, or corrective action as per the determination of the Committee.

6. **PROGRAM COMPONENTS:**
   a. Continuing Education: All CE activities occurring during clinical inactivity.
   b. BioTel Protocols Refresher Course: A refresher course based on the UTSW/BioTel Treatment Guidelines at the time of acceptance into the PREP.
   c. BioTel Protocols Exam: An examination based on the content of the UTSW/BioTel Treatment Guidelines at the time of acceptance into the PREP.
   d. Skills Refresher: A refresher course and examination of clinically important skills, as determined by the BioTel EMS Medical Direction Team.
   e. Field Evaluation: Supervised and evaluated paramedic shifts with senior EMS field supervisors.
   f. PREP Review Committee Review: A final review by the PREP Review Committee based on appropriate completion of the above items, with final recommendation to the EMS Chiefs.

7. **RE-CREDENTIALING REQUIREMENTS:**
   a. Clinical inactivity less than 6 months:
      i. Continuing Education: Satisfactory completion of all missed continuing education and operational drills and updates within 30 days of re-instatement.
      ii. Protocols: May elect to take Protocols Refresher Course, at the Candidate's discretion.
      iii. Skills: No requirement.
      iv. Field evaluation: No requirement.
      v. The paramedic will not be restricted from patient care duties during this time period.
   b. Clinical inactivity 6 to 11 months:
      i. Continuing Education: Satisfactory completion of all missed continuing education and operational drills and updates.
      ii. BioTel Protocols: Successfully pass the BioTel Protocols exam.
         1. The candidate may elect to take a Protocols Refresher Course prior to examination.
         2. Should the Candidate fail the protocol examination, they will be placed into a Protocols Refresher Course.
      iii. Skills: The candidate may elect to take a Skills Refresher Course.

iv. Field evaluation: No requirement.
v. The paramedic will be restricted from assignment until all requirements have been met.

c. Clinical inactivity 12 to 23 months:
   i. Continuing Education: Satisfactory completion of all missed continuing education and operational drills and updates.
   ii. Protocols: Successfully complete Protocols Refresher Course and Protocols Exam.
   iii. Skills: Successfully complete skills review and examination.
   iv. Field evaluation: 3 to 5 preceptor-evaluated ride-outs.
   v. The paramedic will be restricted from assignment until all requirements have been met.

d. Clinical inactivity 24 to 35 months:
   i. Continuing Education: Satisfactory completion of all missed continuing education and operational drills and updates.
   ii. Protocols: Successfully complete Protocols Refresher Course and Protocols Exam.
   iii. Skills: Successfully complete skills review and examination.
   iv. Field evaluation: 10 preceptor-evaluated ride-outs.
   v. The paramedic will be restricted from assignment until all requirements have been met.

e. Clinical inactivity 36 months or longer – Out of system:
   i. Return to paramedic school

f. Clinical inactivity 36 Months to 7 Years – Within system:
   i. Discretion of UTSW Medical Director's Council.

g. Clinical inactivity longer than 7 years – Within system:
   i. Return to paramedic school.

8. **SUMMARY TABLE:**

<table>
<tr><td></td><td colspan="3">Re-Entry Paramedics</td><td colspan="3">Late Re-Entry Paramedics</td></tr>
<tr><td></td><td>0 to 6 mo.</td><td>6 to 11 mo.</td><td>12 to 23 mo.</td><td>24 to 35 mo.</td><td rowspan="2">36 mo. to 7 years (Within system)</td><td rowspan="2">More than 36 mo. (Out of system)

More than 7 years (Within system)</td></tr>
<tr><td>Continuing Education</td><td>30 days to complete</td><td>Complete prior to return to duty</td><td>Complete prior to return to duty</td><td>Complete prior to return to duty</td></tr>
<tr><td>Protocol Exam</td><td></td><td>Complete prior to return to duty</td><td>Complete prior to return to duty</td><td>Complete prior to return to duty</td><td rowspan="4">Discretion of UTSW Medical Director's Council</td><td rowspan="4">Return to paramedic school</td></tr>
<tr><td>Protocol Refresher</td><td></td><td>Complete if failure to pass protocol exam</td><td>Complete prior to return to duty</td><td>Complete prior to return to duty</td></tr>
<tr><td>Skills Exam</td><td></td><td></td><td>Complete prior to return to duty</td><td>Complete prior to return to duty</td></tr>
<tr><td>Preceptor Ride-Outs (shifts)</td><td></td><td></td><td>3 to 5</td><td>10</td></tr>
</table>

UTSW/BioTel Policy: Spinal Motion Restriction

Purpose: The purpose of this policy is to better ensure the most optimal application of spinal motion restriction measures in the prehospital environment.

1. **INDICATIONS FOR IMMOBILIZATION:**
Spinal motion restriction is MANDATORY for any patient for whom a mechanism of injury with the potential to have caused injury to the patient's spine (MVC, fall, or an injury resulting in ANY evidence of trauma above the clavicles), **AND ANY ONE OR MORE** of the following criteria is present:
    a. The patient offers a subjective report or objective evidence of otherwise unexplainable numbness, tingling, weakness or paralysis of any extremity.
    b. ANY alteration in the patient's level of consciousness at the time of evaluation;
    c. A report by the patient, bystander or witness that the patient had experienced a loss of consciousness;
    d. Suspicion of intoxication due to drugs or alcohol;
    e. A significant language or communication barrier exists between EMS personnel and the patient;
    f. Evidence of inadequate systemic perfusion;
    g. Patient is younger than **8** years or older than 60 years of age;
    h. The patient has an injury that could reasonably be thought to distract from the patient's ability to recognize pain or tenderness in the neck or spine.

2. **EXCEPTION TO IMMOBILIZATION: Clinical Clearance of the Cervical Spine:**

If the patient meets NONE of the above clinical indications, paramedics may elect to implement "clinical clearance" procedures. Paramedics MAY STILL apply **SPINAL MOTION RESTRICTION** whenever it is determined to be appropriate, or when the injury mechanism or other factors may preclude clearance of the spine in the out-of-hospital setting.

For the purpose of "clinical clearance", the following procedure shall be followed:

a. Maintain manual stabilization of the head and neck and ask the patient: "Does your neck hurt?"
    i. If the answer is "yes", apply spinal motion restrictions and transport the patient.
    ii. If the answer is "no", continue to step b.
b. Palpate the posterior cervical spine beginning at vertebrae prominens (C7) while asking: "Does this cause you any pain?"
    i. If the answer is "yes", apply spinal motion restrictions and transport the patient.
    ii. If the answer is "no", continue palpating along the entire cervical spine. If, at any point, the patient complains of tenderness, apply spinal motion restrictions and transport the patient. Upon reaching the occiput, if the patient has not complained of tenderness, move on to step c.
c. Tell the patient, "I am going to ask you to slowly move your head." Instruct the patient to immediately stop and tell you if moving his/her head causes the patient ANY pain in the neck, or any funny sensation, such as "pins and needles" in either his/her arms or hands. Then ask the patient to:
    i. Slowly move his/her head forward (bending the chin to the chest), then backward, then side to side.
    ii. If the patient reports ANY discomfort or paresthesias, slowly return their head to neutral position, apply spinal motion restrictions and transport the patient.
    iii. If there is no discomfort and no paresthesias, spinal motion restrictions are not required.
    iv. Clearly DOCUMENT each step on the ePCR and indicate: "cervical spine clinically cleared".
    v. Palpate the remainder of the patient's spine. If there is ANY midline tenderness, place the patient on a rigid spine board for transport. If there is NO midline tenderness, a spine board is not indicated.
    vi. If moving the patient's neck into a more neutral position causes pain/discomfort/paresthesias, then immobilize the spine in a less painful position, as optimally as possible.

Continued on the next page….

3. **ADDITIONAL CONSIDERATIONS:**

a. Be conservative! Spinal motion restrictions measures are rapidly reversible. When in doubt, apply spinal motion restrictions.
b. Patients with penetrating injuries to the neck generally do not require spinal motion restriction.
c. Be conservative when evaluating patients who are found down with new weakness or paralysis. While these patients may have suffered a cardiovascular event, hypoglycemia or some other problem, they may have also injured their neck and possibly their spinal cord. Generally, spinal motion restrictions must be applied in any patient with new paralysis and any evidence/suspicion of trauma above the clavicles, no matter how minor.
d. As stated previously, patients who appear to be intoxicated and who have evidence of trauma above the clavicles MUST have spinal motion restrictions applied.
e. When indicated, spinal motion restrictions should be applied prior to any movement of the patient, unless an immediate life-threatening danger exists for the patient or the rescuers. If the patient must be moved to prevent injury to the patient or to the rescuers, manual stabilization of the head and neck shall be maintained to the degree possible.
f. In the rare event that a patient is believed to require spinal motion restrictions but cannot or will not tolerate them due to other factors such as congestive heart failure, respiratory insufficiency or for very small children, manual stabilization of the head and neck shall be maintained with fixation of the patient to a backboard if possible. The circumstances surrounding this deviation from guidelines shall be reported through BioTel en route to the receiving hospital and shall be documented on the ePCR.
g. Ultimately, the concept is to restrict spinal movement and not simply apply adjuncts if such interventions create movement or creates improper immobilization/alignment.

4. **SPINAL IMMOBILIZATION EQUIPMENT:**

Spinal motion restrictions, when applied, shall generally include:

a. Rigid spine board or similar transporting device.
b. Semi-rigid, properly sized cervical collar. When a properly sized cervical collar is not available, alternative immobilization methods (towel rolls, vacuum or other splinting materials, etc.) may be used, provided that they do not impinge upon the patient's ability to breathe.
c. Lateral neck rolls or approved head immobilization device.
d. Tape or securing straps across the forehead and cervical collar.
e. Straps across the patient's chest, hips, abdomen, and legs to secure the patient to the device and to minimize pivoting movement in any direction.

EMS Spinal Precautions and the Use of the Long Backboard

Position Statement of the National Association of EMS Physicians and the American College of Surgeons Committee on Trauma

The National Association of EMS Physicians and the American College of Surgeons Committee on Trauma believe that:

1. Long backboards are commonly used to attempt to provide rigid spinal immobilization among EMS trauma patients. However, the benefit of long backboards is largely unproven.

2. The long backboard can induce pain, patient agitation, and respiratory compromise. Further, the backboard can decrease tissue perfusion at pressure points, leading to the development of pressure ulcers.

3. Utilization of backboards for spinal immobilization during transport should be judicious, so that potential benefits outweigh risks.

4. Appropriate patients to be immobilized with a backboard may include those with:
   - A. Blunt trauma and altered level of consciousness;
   - B. Spinal pain or tenderness;
   - C. Neurologic complaint (e.g., numbness or motor weakness)
   - D. Anatomic deformity of the spine;
   - E. High energy mechanism of injury and:
     - a. Drug or alcohol intoxication;
     - b. Inability to communicate; and/or
     - c. Distracting injury.

5. Patients for whom immobilization on a backboard is not necessary include those with all of the following:
   - A. Normal level of consciousness (GCS 15);
   - B. No spine tenderness or anatomic abnormality;
   - C. No neurologic findings or complaints;
   - D. No distracting injury;
   - E. No intoxication.

6. Patients with penetrating trauma to the head, neck or torso and no evidence of spinal injury should not be immobilized on a backboard.

7. Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the EMS stretcher, and may be most appropriate for:
   - A. Patients who are found to be ambulatory at the scene;
   - B. Patients who must be transported for a protracted time, particularly prior to interfacility transfer; or
   - C. Patients for whom a backboard is not otherwise indicated.

8. Whether or not a backboard is used, attention to spinal precautions among at-risk patients is paramount. These include application of a cervical collar, adequate security to a stretcher, minimal movement/transfers, and maintenance of in-line stabilization during any necessary movement/transfers.

9. Education of field emergency medical services personnel should include evaluation of risk of spinal injury in the context of options to provide spinal precautions.

10. Protocols or plans to promote judicious use of long backboards during prehospital care should engage as many stakeholders in the trauma/EMS system as possible.

11. Patients should be removed from backboards as soon as practical in an emergency department.

NAEMSP Board of Directors Approved: December 16, 2012 / ACS-Committee on Trauma Approved: October 30, 2012

TOURNIQUET APPLICATION

Purpose: The purpose of this policy is to assist paramedics with the indications for, and application and management of a prehospital tourniquet.

UTSW/BioTel paramedics may apply any EMS agency-approved tourniquet to control blood loss under certain conditions. Once applied, these patients require transport to a Trauma Center.

1) I**ndications for tourniquet application**
   a. Potentially life-threatening extremity hemorrhage **AND**
   b. Hemorrhage cannot be controlled by direct pressure.

2) **Contraindications for tourniquet application**
   a. Non-extremity hemorrhage OR
   b. Site of extremity hemorrhage precludes the ability to appropriately apply a tourniquet.

3) Procedures for tourniquet application:
   a. UTSW/BioTel paramedics shall be familiar with safe tourniquet application technique.
   b. The tourniquet and bleeding site should be left uncovered or with minimal bandaging to facilitate frequent wound site re-evaluation.
   c. If the application of a tourniquet fails to control bleeding a second tourniquet may be applied.
   d. It is essential to document the time that a tourniquet was applied.
      i. Time of application should be written directly on the tourniquet
      ii. Time of application should be documented in the patient care report
   e. Once placed, the tourniquet should not be removed until the patient is transferred to a higher level of care (see special circumstance below)
   f. Notify BioTel or the receiving hospital en route that the patient has had a tourniquet applied. Communicate whether bleeding has been controlled or not, as well as time of tourniquet application.
   g. Continue to monitor the patient's vital signs and the wound for recurrent bleeding.

Special circumstances:

Improvised tourniquets applied by bystanders and non-medical personnel prior to EMS arrival are not a substitute for a commercial device properly applied by UTSW/BioTel EMS providers.

a. In such cases, a BioTel agency-approved commercial tourniquet should be applied (but not secured) proximal to the improvised device prior to its removal, if possible. If hemorrhage uncontrolled by direct pressure reoccurs after removal of the improvised device, the commercial tourniquet shall be deployed using the procedure described in this Policy.

Rarely, a patient who has had a tourniquet placed by a first-responding law enforcement officer or citizen prior to EMS arrival may decline an offer of transport to the hospital by ambulance. This should be strongly discouraged. However, should paramedics be unsuccessful in convincing the patient to accept ambulance transport, the following steps shall be taken:

a. Explain to the patient that the tourniquet cannot remain in place if the patient is not being transported by ambulance, and that removal of the tourniquet may result in uncontrolled bleeding and possibly death.
b. Contact BioTel requesting that the Medical Command Physician speak directly with the patient to try to convince the patient to accept transport.
c. If the Medical Command Physician fails to convince the patient to accept ambulance transport, and upon acknowledgment of the warnings, the tourniquet should be slowly released over 3 to 5 minutes.
d. If bleeding recurs, apply direct pressure/pressure bandaging and observe the patient for 10 minutes. If bleeding remains uncontrolled, re-apply the tourniquet and contact BioTel for further assistance.
e. If bleeding is controlled with direct pressure/pressure bandage, document this, as well as the presence of distal pulses and capillary refill. Then, have the patient sign the refusal, and encourage them to seek immediate emergency medical care by whatever means they choose.

VENTRICULAR ASSIST DEVICE (VAD)

Purpose: The purpose of this policy is to assist UTSW/BioTel paramedics when evaluating a patient who has a Ventricular Assist Device (VAD) in place.

A ventricular assist device (VAD) is an implantable device used to artificially augment cardiac output and support circulation in patients with significant ventricular dysfunction. The mechanics of the VAD differ depending on manufacturer, however most devices support circulation via laminar flow, meaning that circulation may be present even though palpable pulses or a measureable blood pressure may be absent.

1. RESPONSIVE PATIENT:

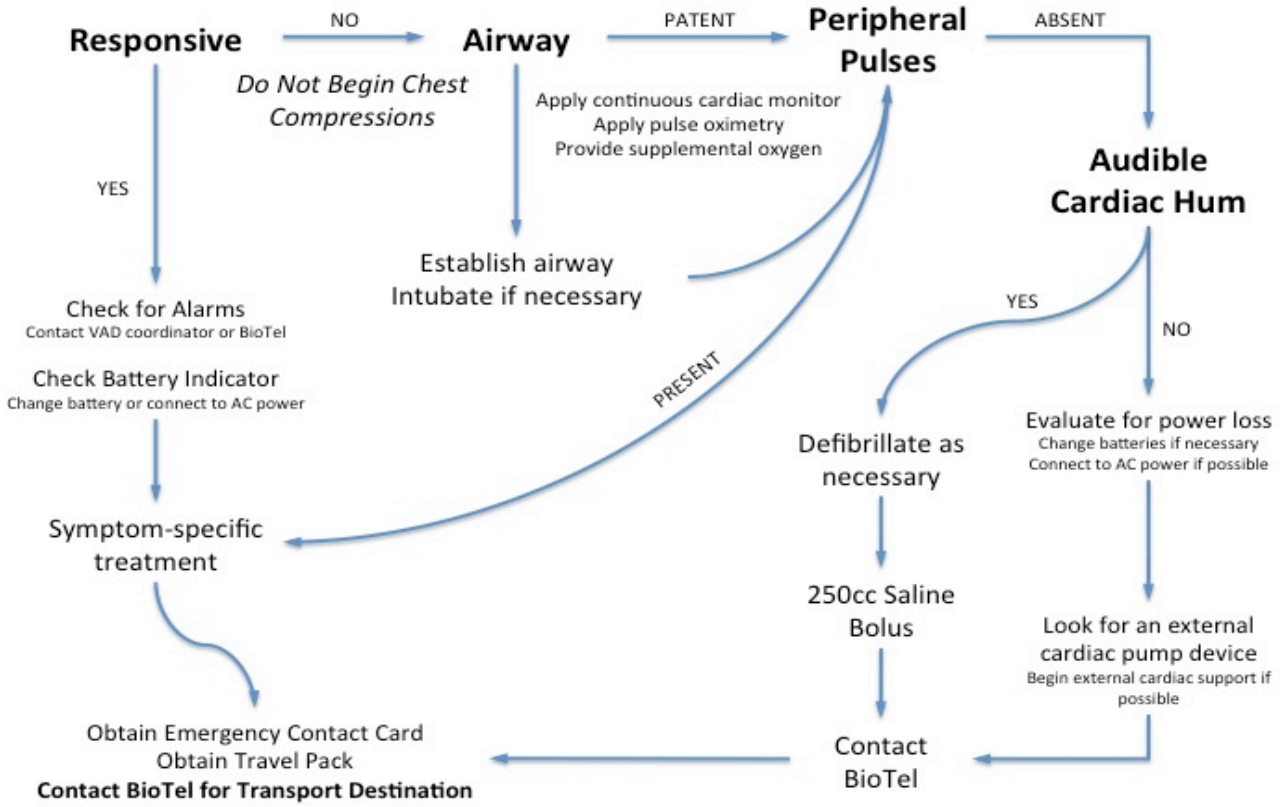
a. Check the VAD for alarms:
   i. If alarms are activated, contact the VAD Coordinator or BioTel
b. Check the VAD battery indicator:
   i. Change batteries, if indicated
c. Obtain the patient's Emergency Contact Card
d. Obtain the patient's travel batteries, charger and travel pack
e. Management per symptom-specific protocol
f. Contact BioTel for transport destination decision

2. UNRESPONSIVE PATIENT:

a. ***Do not*** begin chest compressions
b. Evaluate airway -- *If absent:*
   i. Establish a patent airway
   ii. Intubate if necessary
c. Apply SpO_2 monitoring:
   i. Administer supplemental oxygen to achieve a SpO_2 at least 90%
d. If intubated, apply continuous $ETCO_2$ monitoring
e. Apply continuous ECG monitoring using hands-free defibrillator pads in Paddles lead
f. Check peripheral pulses -- *If present:*
   i. Treat according to symptom-specific Guidelines
   ii. Contact BioTel for transport destination
g. If peripheral pulses are absent, auscultate the sternal border. *If humming:*
   i. Connect cardiac monitor
   ii. Defibrillate if necessary, according to the VENTRICULAR FIBRILLATION Guidelines
   iii. Administer a 250cc Normal Saline bolus IV/IO
   iv. Contact BioTel
h. If peripheral pulses are absent *and there is no indication of pump function*:
   i. Do not begin chest compressions
   ii. Evaluate the VAD for power loss:
      1. Change batteries, if necessary
      2. Connect to AC power
   iii. Look for an external cardiac pump device:
      1. If present, begin external circulatory support
   iv. Contact BioTel
i. Obtain the patient's travel batteries, charger and travel pack
j. Contact BioTel for transport destination decision

Continued on the next page…

For additional patient care considerations not covered in this protocol, refer to the symptom-specific Guidelines or contact BioTel.



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UTSW/BioTel EMS System: PHARMACOLOGY

Table of Contents

Adenosine
(Adenocard®)

Indications:	Paroxysmal and non-paroxysmal supraventricular tachycardia (SVT). Standing order administration for stable adults only, BioTel must authorize administration in unstable adults and in the pediatric patient.		
Contraindications:	• 2nd- or 3rd-degree heart block • Atrial fibrillation or flutter • Sick Sinus Syndrome	• Dipyridamole (Persantine®) • Organophosphate ingestion • Poisoning/Drug-induced tachycardia	
Precautions:	• Assure rhythm is not ventricular in origin • Explain expected side effects to patient • Monitor patient and ECG continuously before, during and after treatment • Use with caution: COPD, CHF, CAD Contact BioTel prior to administration for any of the following: • Asthma patient taking bronchodilators (theophylline class) • Seizure patient taking carbamazepine (Tegretol®) • Recent caffeine ingestion		
Side Effects:	• Flushing • Sweating • Chest Pain	• Nausea/Vomiting • Lightheadedness	• Transient Arrhythmias • Transient Asystole
Adult Dose:	Standing order: • 12 mg rapid push followed immediately by a rapid 20 mL NS flush. • If no conversion within 1 to 2 minutes, repeat the dose once, with a flush.		
Pediatric Dose:	**BIOTEL AUTHORIZATION REQUIRED** For Stable, Narrow-Complex Tachycardia (Probable SVT – HR greater than 220 in infant under 1 year old, or greater than 180 for child 1 to 8 years old; history; absence of P waves on ECG; no respiratory variation.) • 0.1 mg/kg RAPID push/IO (maximum 6 mg) followed immediately by a RAPID 5-10 mL NS flush. • If no conversion within 1 to 2 minutes, administer 0.2 mg/kg RAPID IV push/IO (maximum 12 mg) followed immediately by a rapid 5-10 mL NS flush. For Stable Wide-Complex Tachycardia, the dose is the same. For Unstable Tachycardia (Narrow- or Wide-Complex), the dose is the same; paramedics may prepare for immediate administration to the unstable child, but the dose should be confirmed by BioTel prior to administration.		
Route:	• IV, RAPID push at the insertion site (antecubital space); 2-syringe technique preferable. IO, RAPID push (alternative site); 2-syringe technique preferable.		
Drug Action:	• Slows AV node conduction, thereby terminating reentrant tachycardia • Causes transient AV block • Causes systemic vasodilation		
Class:	Atrial Antiarrhythmic		
Onset:	Immediate		
Duration:	10 seconds		
Special:	Record continuous ECG rhythm strip during administration		

Albuterol
(Ventolin®, Proventil®)

Indications:	Bronchospasm associated with: • Asthma (including *status asthmaticus*) • COPD • Chemical toxins: nerve agents, cyanide, blistering agents, choking agents • Allergic reaction unresponsive to epinephrine and diphenhydramine • Congestive heart failure - **BIOTEL AUTHORIZATION ONLY**
Contraindications:	Pregnancy, except in life-threatening situations
Precautions:	Known heart disease
Side Effects:	• Restlessness • Hypertension • Tachycardia - palpitations

Adult Dose:	• 2.5 mg given via nebulizer over 5-15 minutes – standing order
	• If no improvement after the first dose:
	  • Personnel may administer up to two additional doses
	  • Combine 2nd and 3rd doses with Ipratropium (Atrovent®) 0.5 mg. - standing order.
	  • For *status asthmaticus*, paramedics may administer the albuterol and ipratropium combination at each of the three doses
	BioTel must authorize additional doses beyond three

Pediatric Dose:	• 2.5 mg administered via nebulizer over 5-15 minutes – standing order:
	• If no improvement after the first dose:
	  • Personnel may administer up to two additional doses
	  • Combine 2nd and 3rd doses with Ipratropium (Atrovent®) 0.5 mg. - standing order
	  • For *status asthmaticus*, paramedics may administer the albuterol and ipratropium bromide combination for each of the three doses
	BioTel must authorize additional doses beyond three (same as adult).
	Do not administer to a pediatric patient with barking cough and/or stridor.

Route:	Inhalation (via nebulizer)
Drug Action:	Bronchodilation (Beta-2 adrenergic agonist)
Class:	Bronchodilator
Onset:	1 minute
Duration:	3 – 4 hours after inhalation

Amiodarone HCl
(Cordarone®, Nexterone®)

Indications:	• Ventricular fibrillation or pulseless ventricular tachycardia that does not respond to initial defibrillation attempts • Sustained ventricular tachycardia with a pulse
Contraindications:	Trauma patients Co-administration with procainamide
Precautions:	• Do not shake (prevents foaming) • Draw-up with large gauge needle (at least 18g) • Protect from light • Avoid contact with plastic • Administer at IV/IO port closest to the patient • Use with caution in renal failure patients
Side Effects:	• Bradycardia • Hypotension
Adult Dose:	Standing order: Ventricular fibrillation (VF); Pulseless ventricular tachycardia (pulseless VTach); • First Dose: 300 mg • Second Dose: 150 mg Sustained, unstable ventricular tachycardia with a pulse (unstable VTach); • First Dose: 300 mg • Second Dose: 150 mg **BIOTEL AUTHORIZATION REQUIRED:** Stable or unstable, sustained ventricular tachycardia (VT) WITH pulse • 150 mg IV/IO over 10 minutes (Dilute 300 mg in 250 mL NS and infuse at 12.5 mL/min for 10 minutes, then discontinue infusion. BioTel may recommend alternate infusion instructions.)
Pediatric Dose:	Standing order: Ventricular fibrillation (VF)/Pulseless ventricular tachycardia (pulseless VTach): • First Dose: 5 mg/kg, flush with 10 mL Normal Saline • Second Dose: 5 mg/kg, flush with 10 mL Normal Saline **BIOTEL AUTHORIZATION REQUIRED:** Sustained, **unstable** ventricular tachycardia with a pulse (unstable VTach); • 5 mg/kg IV/IO slow infusion over 30 minutes (Contact BioTel for infusion instructions) • Synchronized cardioversion is preferred in most cases.
Route:	IV or IO
Drug Action:	• Alters movement of sodium, potassium and calcium through normal channels: o Increases the refractory period of all cardiac tissues o Slows repolarization o Decreases cardiac automaticity • Blocks alpha and beta adrenergic receptors
Class:	Antiarrhythmic
Onset:	Within minutes
Duration:	Variable

Aspirin
(Acetylsalicylic Acid)

Indications:	Chest pain that paramedics believe is of cardiac origin
Contraindications:	• Aspirin allergy • Aspirin-induced asthma
Precautions:	Any significant bleeding
Side Effects:	None for pre-hospital
Adult Dose:	• One (325 mg) adult aspirin or four (81 mg) baby aspirin - standing order, regardless of whether the patient has taken any aspirin within the previous 24 hours.
Pediatric Dose:	**BIOTEL AUTHORIZATION ONLY** Not normally given to pediatric patients by EMS
Route:	Orally (chewed)
Drug Action:	• Reduces platelet stickiness • Blocks pain impulses in the CNS • Reduces coronary artery vasoconstriction
Class:	Anti-platelet aggregator, analgesic, anti-inflammatory, antipyretic
Onset:	15 - 30 minutes
Duration:	4 - 6 hours

Atropine

Indications:	• Symptomatic bradycardia • Organophosphate pesticide poisoning	• Chemical exposure due to nerve agent • Pharmacologically-Assisted Intubation
Precautions:	• If given too slowly, can cause transient bradycardia • Administer into medication port closest to IV/IO site • Notify BioTel before giving to patients with glaucoma	
Side Effects:	• Tachycardia • Dilated pupils (may make pupil assessment unreliable) • Anticholinergic effects: dry mouth, blurred vision, decreased sweating, confusion	
Contraindications:	Hypothermic bradycardia	
Class:	Anticholinergic/Parasympatholytic agent	
Route:	• IV or IO, rapid push • Deep IM (via auto-injector) for nerve agent exposure (or PAI)	
Adult Dose:	Symptomatic Bradycardia – **BIOTEL AUTHORIZATION ONLY** • 0.5 mg – 1.0 mg push – BioTel must approve all dosing Organophosphate poisoning: **BIOTEL AUTHORIZATION ONLY** • 2 mg push every 5 – 15 minutes until excessive secretions are diminished Nerve agent exposure: **BIOTEL AUTHORIZATION ONLY** • 2 mg – 20 mg IM, IV, IO	
Pediatric Dose:	Standing order: CONSIDER for symptomatic bradycardia unresponsive to oxygenation and ventilation, when a vagally-mediated cause is suspected: • 0.02 mg/kg (0.2 mL/kg) (**minimum single dose 0.1 mg**), IV or IO. • May repeat once, up to a maximum, total, cumulative dose of 1 mg. **BIOTEL AUTHORIZATION ONLY** Organophosphate poisoning: • 0.05 mg/kg push every 20 minutes until excessive secretions are diminished Premedication in Pharmacologically-Assisted Intubation (PAI) • 0.01 to 0.02 mg/kg IV/IO push (0.1 to 0.2 mL/kg), two minutes prior to intubation; maximum single dose 1 mg	
Drug Action:	• Reverses suspected vagal tone in some types of bradycardia • Blocks acetylcholine in organophosphate poisoning (pesticide or nerve agent)	
Onset:	Rapid	
Duration:	2 - 6 hours	

Calcium Chloride

Indications:	• Known or suspected hyperkalemic cardiac arrest (e.g. renal failure) • Calcium channel blocker toxicity (bradycardia or hypotension) • Magnesium sulfate toxicity
Contraindications:	None
Precautions:	• Start IV in the antecubital fossa to lower risk of infiltration • While administering, continually check IV/IO site for patency and signs/symptoms of infiltration • Do not mix with sodium bicarbonate; flush tubing well between drugs • Inform BioTel (prior to administration) if patient taking digitalis preparation
Side Effects:	• Tissue necrosis if $CaCl_2$ infiltrates • Forms precipitate if given with sodium bicarbonate • Causes digitalis toxicity if administered to patient on digitalis • With rapid infusion or overdose: bradycardia, hypotension and asystole
Adult Dose:	Standing order: 10 – 15 mg/kg (0.1 – 0.15 mL/kg) of a 10% solution IV/IO push
Pediatric Dose:	**BIOTEL AUTHORIZATION ONLY** 10 – 15 mg/kg (0.1 – 0.15 mL/kg) of a 10% solution IV/IO push
Route:	IV or IO push; slow push (in live patients) - 1 mL/minute
Drug Action:	• Balances hyperkalemia • Increases myocardial contractile force and ventricular automaticity • Aids in the re-entry of calcium into muscle when given for calcium channel blocker or magnesium sulfate toxicity
Class:	Electrolyte
Onset:	5 – 15 minutes
Duration:	Dose dependent (effects may persist 4 hours after IV administration)

Dextrose 50%

Indications:	• Altered mental status or seizure caused by hypoglycemia – hypoglycemia is defined as:
	  • Adult:
	  o Diabetics = POC glucose analysis less than 110 mg/dL or symptomatic
	  o Non-diabetics = POC glucose analysis less than 80 mg/dL
	  • Pediatric:
	  o Term and Preterm Newborn = POC glucose analysis less than 45 mg/dL
	  o Diabetics = POC glucose analysis less than 70 mg/dL or symptomatic
	  o Non-diabetics = POC glucose analysis less than 70 mg/dL
	  • Coma of unknown cause

Contraindications:	None
Precautions:	• For IV administration, use the antecubital fossa, if possible, to reduce the risk of infiltration • During administration, continuously monitor IV/IO site for patency and signs/symptoms of infiltration • Contact BioTel (prior to drug administration) for hypoglycemia in the patient with head trauma or suspected increased intracranial pressure • Recheck POC glucose analysis 10 – 15 minutes after administration
Side Effects:	Tissue necrosis with infiltration
Adult Dose:	25 grams to 50 grams - standing order
Pediatric Dose:	Newly born infant up to 30 days of age (0.2 g/kg) – standing order, as D10: • Newly born infant under 30 days of age: Discard 40 mL from one 50 mL pre-filled syringe & replace with 40 mL of Normal Saline: administer 2 mL/kg of D10 solution Infant 31 days up to 1 year of age (0.5 g/kg) – standing order, as D10: • 31 days to 1 year of age: Discard 40 mL from one 50 mL pre-filled syringe & replace with 40 mL of Normal Saline: administer 5 mL/kg of D10 solution Child 1 to 13 years of age (0.5 g/kg) – standing order, as D25: • 1 year to 13 years of age: Discard 25 mL from one 50 mL pre-filled syringe & replace with 25 mL of Normal Saline: administer 2 mL/kg of D25 solution
Route:	IV or IO, slow push (to prevent infiltration)
Drug Action:	Increases blood glucose level
Class:	Carbohydrate
Onset:	1 minute
Duration:	Depends on the degree of hypoglycemia

Diazepam
(Valium®)
(Optional medication – not required for every BioTel agency)

Indications:	• Active seizure/*status epilepticus* or seizure related to eclampsia • Procedural sedation prior to cardioversion or transcutaneous pacing in conscious patients or to facilitate endotracheal intubation • Chest pain or tachycardia following an overdose or ingestion of a stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) • Excited delirium (sedation in struggling patients when physical restraints are applied) • Maintain sedation following advanced airway placement using pharmacologically-assisted intubation (PAI) or post-cardiac arrest	
Contraindications:	• Pregnancy (unless eclamptic seizure) o All other uses in pregnancy require BioTel authorization • Alcohol or other sedative drug use	• Head injury • Hypersensitivity
Precautions:	• Monitor respiratory status closely. • Administer at site closest to IV/IO insertion point. • Avoid mixing with any other drugs and solutions. • Flush well before and after use. • Titrate in small incremental doses to avoid adverse side effects	
Side Effects:	• Respiratory depression • Hypotension • Confusion	• Stupor • Vein irritation, phlebitis, sclerosis • Nausea
Adult Dose:	Standing order: 2.5 mg – 5 mg (up to a total cumulative maximum of 10 mg), titrated to achieve desired results • For procedural sedation: Only 1 initial dose and 1 repeat dose • **BIOTEL AUTHORIZATION** required for sedation to facilitate endotracheal intubation (Pharmacologically Assisted Intubation (PAI)) • BioTel may order additional doses beyond 10 mg	
Pediatric Dose:	Standing order: Seizure: • 0.5 mg/kg per rectum (PR) (Maximum single dose: 10 mg), if midazolam is unavailable **All other indications require BioTel authorization**	
Route:	• IV or IO, slow push • IM (alternate route) • IN (not preferred) • PR, for pediatric seizure	
Drug Action:	Central Nervous System depressant that causes: • Amnesia	• Sedation • Muscle relaxation
Class:	Benzodiazepine	
Onset:	IV/IO/IN: 1 to 5 minutes	IM: 15 to 30 minutes Rectal: 5 to 15 minutes
Duration:	IV/IO/IN: 15 to 60 minutes	Rectal: 2 to 4 hours

Diphenhydramine HCl
(Benadryl®)

Indications:	• Allergic reaction – standing order • Dystonic reaction – standing order	
Contraindications:	Hypersensitivity to diphenhydramine	
Precautions:	Acute asthma attack	
Side Effects:	• Drowsiness • Sedation • Disturbed coordination • Hypotension • Palpitations	• Tachycardia • Bradycardia • Thickening of bronchial secretions • Dry mouth and throat • Paradoxical excitement in children
Adult Dose:	Standing order: 25 mg – 50 mg	
Pediatric Dose	Standing order: 1 mg/kg – 2 mg/kg • For IV/IO administration using the 50 mg/mL formulation, dilute 50 mg (1 mL) with 9 mL Normal Saline, to a final concentration of 5 mg/mL; administer 1 to 2 mg/kg IV/IO (0.2 to 0.4 mL/kg), followed by a 10 mL Normal Saline flush. • For IM administration using the 50 mg/mL formulation, do not dilute; administer 1 to 2 mg/kg IM (0.02 to 0.04 mL/kg).	
Route:	• IV push (25 mg/minute) • IO (alternate route) • IM	
Drug Action:	• Blocks histamine$_1$ receptor sites in allergic reactions • Reverses side effects of dystonic reactions caused by phenothiazines	
Class:	Antihistamine	
Onset:	Maximum effects seen in 1 hour to 3 hours	
Duration:	6 hours to 12 hours	

Dopamine HCL
(Intropin®)
(Optional medication – not required for every BioTel agency)

Indications:	• Cardiogenic shock with systolic blood pressure between 70 mmHg – 90 mmHg • Symptomatic bradycardia unresponsive to atropine or TCP
Contraindications:	Hypovolemic shock
Precautions:	• Start IV in the antecubital fossa to reduce the risk of infiltration • Continually check IV/IO site for patency and signs/symptoms of infiltration • Do not mix with sodium bicarbonate • Flush tubing well between drugs • Continually monitor ECG, heart rate and blood pressure
Side Effects:	• Tissue necrosis with infiltration • Hypertension • Tachycardia • Arrhythmias
Adult Dose:	2 to 10 mcg/kg/minute - **BIOTEL AUTHORIZATION ONLY** • 400 mg dopamine in 250 mL NS (1600 mcg/mL) • 800 mg dopamine in 500 mL NS (1600 mcg/mL)
Pediatric Dose	2 to 10 mcg/kg/minute - **BIOTEL AUTHORIZATION ONLY** • 400 mg dopamine in 250 mL NS (1600 mcg/mL) • 800 mg dopamine in 500 mL NS (1600 mcg/mL)
Route:	IV or IO – piggyback
Drug Action:	• At low doses, increases perfusion to kidneys and abdominal organs • At moderate doses, increases force and rate of ventricular contraction • At high doses, causes peripheral vasoconstriction
Class:	Sympathomimetic
Onset:	2 minutes – 4 minutes
Duration:	10 minutes – 15 minutes

Epinephrine 1:1,000

Indications:	• Allergic reaction/anaphylactic shock • Bronchospasm unresponsive to inhaled beta-agonists
Contraindications:	• Allergic reaction: None • Refractory bronchospasm: Heart disease, History of Acute MI, Age > 45 years, Arrhythmia, Labor
Precautions:	Allergic reaction/anaphylactic shock/refractory bronchospasm: • Monitor ECG closely • Patients on beta blockers may need glucagon or higher doses of epinephrine
Side Effects:	Anaphylaxis: • Tachycardia • Ventricular dysrhythmias • Headache • Flushing • Nausea/vomiting • Chest pain
Adult Dose:	• Allergic reaction: 0.3 mg – 0.5 mg IM - standing order, single dose only • Anaphylactic shock: 0.3 mg – 0.5 mg IM, every 20 minutes, up to total of 3 doses (including any dose given by autoinjector) - standing order • Administer only one dose for bronchospasm unresponsive to nebulizers, CPAP, or magnesium sulfate
Pediatric Dose:	Standing order: • Allergic reaction/anaphylactic shock: 0.01 mg/kg (0.01 mL/kg) IM (maximum dose: 0.3 mg (0.3 mL)); single dose only. • BioTel must authorize additional dose(s). • Bronchospasm unresponsive to inhaled beta-agonists/anti-cholinergics in children at least 2 years of age: 0.01 mg/kg (0.01 mL/kg) IM (maximum dose: 0.3 mg) • Bronchospasm refractory to albuterol & NO asthma history in children younger than 2 years of age: 3 mL via nebulizer; may repeat once. • Suspected croup (respiratory distress, barking cough and/or stridor) in any age pediatric patient: 5 mL via nebulizer; may repeat once.
Route:	IM Nebulized
Drug Action:	Alpha effects produce peripheral vasoconstriction which: • Increases coronary and cerebral perfusion • Increases blood pressure in anaphylaxis $Beta_1$ effects: • Increases heart rate • Improves force of ventricular contractions $Beta_2$ effects: •Causes bronchodilation
Class:	Sympathomimetic
Onset:	5 minutes – 10 minutes
Duration:	5 minutes – 10 minutes

Epinephrine 1:10,000

Indications:	• Cardiac arrest • Anaphylaxis unresponsive to other treatment • Pediatric bradycardia unresponsive to other treatment	
Contraindications:	None	
Precautions:	CPR: • None Anaphylaxis: • Monitor ECG closely. • Patients on beta-blockers may need glucagon or higher doses of epinephrine. • Do not mix with sodium bicarbonate; flush tubing well between drugs.	
Side Effects:	CPR: • None	Anaphylaxis: • Tachycardia • Ventricular arrhythmias • Headache • Flushing • Nausea/vomiting • Chest Pain
Adult Dose:	Standing order: Cardiac arrest: • 1mg IV or IO rapid push every 3 – 5 minutes Anaphylaxis: • 0.1 mg – 0.2 mg slow push (over 1 minute)	
Pediatric Dose:	Standing order: Cardiac arrest: • 0.01 mg/kg (0.1 mL/kg) rapid push every 3 - 5 minutes Anaphylaxis with cardiovascular collapse unresponsive to other measures: • 0.01 mg/kg slow push (0.1 mL/kg) (maximum dose 0.3 mg)	
Route:	IV or IO push	
Drug Action:	Alpha effects produce peripheral vasoconstriction which: • Increases coronary and cerebral perfusion • Increases blood pressure in anaphylaxis $Beta_1$ effects: • Increases heart rate • Improves force of ventricular contractions $Beta_2$ effects: • Bronchodilation	
Class:	Sympathomimetic	
Onset:	1 minute – 2 minutes	
Duration:	5 minutes – 10 minutes	

Etomidate

(Optional medication – not required for every BioTel agency)

Indications:	Sedation to for pharmacologically-assisted intubation (PAI)

Contraindications:	• For EMS use, no contraindications.
	• Relative contraindications:
	  • Known adrenal insufficiency (known to suppress cortisol production)
	  • Known history of focal seizure disorder (may exacerbate condition)
	  • Pregnancy
	• Use with caution:
	  • Hypotension
	  • Severe asthma
	  • Sepsis

Precautions:	• May cause myoclonic activity (e.g., coughing, hiccups) • May exacerbate focal seizure disorder
Side Effects:	• Nausea and/or vomiting • Temporary involuntary muscle contractions
Adult	• 0.3 mg/kg slow push administered one minute prior to intubation • Additional doses of 0.1 mg/kg as necessary to achieve adequate sedation to a maximum total dose of 40 mg
Pediatric Dose:	**BIOTEL AUTHORIZATION REQUIRED** • 0.6 mg/kg slow push administered one minute prior to intubation • Additional doses of 0.1 to 0.2 mg/kg as necessary to achieve adequate sedation, to a maximum total, cumulative dose of 20 mg
Route:	IV or IO push
Drug Action:	Suppresses central nervous system activity thereby inducing rapid unconsciousness
Class:	• Short-acting intravenous anesthetic • Hypnotic • Sedative
Onset:	1 minute – 2 minutes
Duration:	Dose dependent, but usually 3 to 5 minutes

Fentanyl

(Optional medication – not required for every BioTel agency)

Indications:	Pain relief
Contraindications:	• Severe hemorrhage • Shock • Known hypersensitivity • MAO inhibitor use within the previous 14 days.
Precautions:	• May produce respiratory depression • May produce bradycardia • Use with caution in patients with liver and kidney dysfunction • Use with caution for OB patients in active labor (especially high-risk patients)
Side Effects:	• Respiratory depression • Temporary involuntary muscle contractions • Bradycardia
Adult Dose:	Standing order: • Pain relief unresponsive to or untreatable with nitrous oxide: o 1 mcg/kg slow IV/IO or IM or IN – Maximum single dose 100 mcg. o May repeat once after 15 minutes. o Do not exceed 200 mcg per patient, total, cumulative maximum dose without BioTel authorization. • Sedation (with midazolam) prior to pharmacologically-assisted intubation (PAI): o 1 mcg/kg slow IV/IO push **BIOTEL AUTHORIZATION REQUIRED IF THE PATIENT:** • is at least 65 years of age; • is debilitated; • has altered mental status; OR • has a SBP less than 110 mmHg.
Pediatric Dose:	Standing order: • Pain relief unresponsive to or untreatable with nitrous oxide: o 1 mcg/kg slow IV/IO or IM or IN – Maximum single dose 100 mcg. o May repeat once after 15 minutes. o Do not exceed 200 mcg per patient, total, cumulative maximum dose without BioTel authorization. **BIOTEL AUTHORIZATION REQUIRED:** Sedation (with midazolam) 1 minute prior to pharmacologically-assisted intubation (PAI): o 1 mcg/kg slow IV/IO – Do not exceed 100 mcg per dose
Route:	• IV or IO, slow push • IM • IN (Intranasal) • SQ (pediatric patients)
Drug Action:	Produces analgesic effects similar to, but about 50 to 100 times stronger than, morphine (the two medications are not chemically related).
Class:	Opiate narcotic analgesic
Onset:	Immediate; however maximal analgesia may not occur for several minutes
Duration:	30 to 60 minutes
Antidote:	Naloxone

Glucagon

Indications:	• Hypoglycemia when no IV is obtainable and gag reflex is absent (NOT a first-line choice for hypoglycemia); hypoglycemia defined as POC glucose analysis:
	  • Adult: less than 80 mg/dL (non-diabetic), or less than 110 mg/dL or symptomatic (diabetic)
	  • Pediatric: less than 70 mg/dL (non-diabetic), or less than 70 mg/dL or symptomatic (diabetic)
	• Beta blocker and calcium channel blocker toxicity

Contraindications:	Hypersensitivity to proteins
Precautions:	Administer cautiously to: • Patients with cardiovascular disease • Patients with kidney or liver dysfunction
Side Effects:	• Hypotension • Nausea and vomiting • Tachycardia
Adult Dose:	Hypoglycemia: • 1 mg IV/IO/IM/IN/SQ - standing order • If no response, BioTel may authorize additional doses at 20-minute intervals, if necessary Bradycardia (beta-blocker toxicity): • 1 mg – 5 mg IV/IO - standing order • 1 mg IM/IN if IV or IO access not available Cardiac arrest (beta-blocker toxicity): • 1 mg – 5 mg IV/IO push - standing order, may repeat once.
Pediatric Dose 1 to 13 years of age	Standing order: Hypoglycemia: • 1 mg IV/IO/IM/IN/SQ - standing order; may repeat once after 20 minutes. • If no response, BioTel may authorize additional doses. Beta-blocker toxicity: • 1mg IV/IO – BioTel may authorize additional doses at 20-minute intervals.
Pediatric Dose Under 1 year of age	Standing order: Hypoglycemia: • 0.5 mg IV/IO/IM/IN/SQ - standing order; may repeat once after 20 minutes. • If no response, BioTel may authorize additional doses. Beta-blocker toxicity: • 0.5 mg IV/IO – BioTel may authorize additional doses at 20-minute intervals.
Route:	• IM or SQ for hypoglycemia • IM or slow IV push (over 2-5 minutes): bradycardia due to beta-blocker or calcium-channel blocker toxicity • Rapid IV/IO push: cardiac arrest due to beta-blocker or calcium-channel toxicity • Intranasal (IN) as an alternative route when other routes are inaccessible
Drug Action:	• Converts stored glycogen to glucose, increasing blood glucose level • Improves cardiac contractility and increases heart rate
Class:	• Pancreatic Hormone • Insulin Antagonist
Onset:	Within 1 minute - however it may be 15 minutes before any response is observed
Duration:	60 - 90 minutes

Glucose 40% Oral Gel
(Glutose15™)

<table>
<tr><td>Indications:</td><td>Altered mental status caused by hypoglycemia, defined as:
Adults:
Diabetics = POC glucose analysis less than 110 mg/dL or symptomatic
Non-diabetics = POC blood glucose analysis less than 80 mg/dL
Children:
Diabetics = POC blood glucose analysis less than 70 mg/dL or symptomatic
Non-diabetics = POC blood glucose analysis less than 70 mg/dL
Neonates:
POC blood glucose analysis less than 45 mg/dL</td></tr>
<tr><td>Contraindications:</td><td>Absent gag reflex
Patients who are unable to protect their airway
Patients who are unable to swallow</td></tr>
<tr><td>Precautions:</td><td>Assure gag reflex is present prior to administration
‡For young infants and children, the child should be sitting upright or in the recovery position, and the gel should be massaged into the cheek pocket mucosa</td></tr>
<tr><td>Side Effects:</td><td>Aspiration</td></tr>
<tr><td>Adult Dose:</td><td>Standing order (*based on 15-gram unit dose):
Hypoglycemia:
o *One full tube (15 g), administered in small increments
o May repeat once after 15 minutes</td></tr>
<tr><td>Pediatric Dose:</td><td>Standing order (*based on 15-gram unit dose):
Hypoglycemia:
0.5 grams/kg, administered in small increments:
<table>
<tr><th>AGE</th><th>APPROX WT</th><th>DOSE</th></tr>
<tr><td>Infant (31 days to 1 yr)</td><td>Under 10 kg</td><td>5 mL‡</td></tr>
<tr><td>1 yr to 3 yr</td><td>15 kg</td><td>7.5 mL‡</td></tr>
<tr><td>3 to 5 yr</td><td>20 kg</td><td>¼ tube*</td></tr>
<tr><td>5 to 7 yr</td><td>25 kg</td><td>½ tube*</td></tr>
<tr><td>At least 7 yr</td><td>30 kg</td><td>1 tube*</td></tr>
</table>
May repeat once after 15 minutes
*Based on 15-gram unit dose</td></tr>
<tr><td>Neonatal Dose:</td><td>Standing order for neonatal hypoglycemia for infants up to 30 days of age:
Hypoglycemia:
0.2 g/kg (0.5 mL/kg) massaged gently into the mucosa of the cheek cavity</td></tr>
<tr><td>How Supplied:</td><td>40% Gel (15 grams in 1.3 oz. (approximately 37.5 g))
*NOTE: Agencies carrying a different size unit dose will need to adjust dosing accordingly, especially for pediatric patients</td></tr>
<tr><td>Route:</td><td>Oral (buccal cavity between the gums and teeth, not the posterior oropharynx)</td></tr>
<tr><td>Drug Action:</td><td>Increases blood glucose level</td></tr>
<tr><td>Class:</td><td>Carbohydrate</td></tr>
<tr><td>Onset:</td><td>1 minute</td></tr>
<tr><td>Duration:</td><td>Depends on the degree of hypoglycemia</td></tr>
</table>

Hydroxocobalamin
(Cyanokit®)
(Optional medication – not required for every BioTel agency)

Indications:	Cyanide toxicity
Contraindications:	Absolute: None Relative: History of anaphylactic reaction to hydroxocobalamin or cyanocobalamin
Precautions:	Pregnancy: Category C Lactation: Excretion in milk unknown – use with caution Co-administration with other cyanide antidotes – use with caution
Side Effects:	Flushing, urticaria, itching or rash Chest tightness and dyspnea Transient blood pressure elevation Anaphylaxis Red skin, tears, sweat and urine
Adult Dose:	Standing order for Cyanide toxicity: 5 grams (2 vials) over 15 minutes: • Reconstitute EACH 2.5 g vial in 100 mL Normal Saline o Invert or rock the vial for 30 seconds – do NOT shake o Final concentration: 25 mg/mL o Lactated Ringers solution may be substituted, if Normal Saline is unavailable • Administer total 5 g dose over 15 minutes (approximately 15 mL/minute) • May repeat once if the patient is still symptomatic after 30 minutes • Total maximum, cumulative dose: 10 g
Pediatric Dose:	Standing order for Cyanide toxicity: 70 mg/kg (~3 mL/kg) over 15 minutes: •Reconstitute EACH 2.5 g vial in 100 mL Normal Saline o Invert or rock the vial for 30 seconds – do NOT shake o Final concentration: 25 mg/mL o Lactated Ringers solution may be substituted, if Normal Saline is unavailable •Administer 70 mg/kg (~3 mL/kg) over 15 minutes •May repeat once at **half** the dose (35 mg/kg) (~1.5 mL/kg) if the patient is still symptomatic after 30 minutes •Total maximum, cumulative dose: 10 g
How Supplied:	Two vials, 2.5 grams each, per Cyanokit® Normal Saline diluent is NOT included in the kit
Route:	IV or IO
Drug Action:	Vitamin B12 molecule complexed to cobalt: cyanide displaces the cobalt on the molecule, resulting in cyanocobalamin, which is then removed from the body by renal excretion
Class:	Cyanide antidote
Onset:	Rapid
Duration:	Several hours

Ipratropium Bromide
(Atrovent®)

Indications:	• Bronchospasm associated with asthma or COPD that does not respond to the first dose of albuterol • Bronchospasm from chemical toxins: nerve agents, cyanide, blistering agents, choking agents	
Contraindications:	• Sensitivity/allergy to soy lecithin products (soybeans, peanuts) • Sensitivity/allergy to atropine • Bronchoconstriction that is caused by allergic reaction	
Precautions:	Notify BioTel (prior to administration) if the patient has: Narrow-angle glaucoma, prostatic hypertrophy (enlarged prostate), bladder-neck obstruction	
Side Effects:	• Tachycardia/Palpitations • Restlessness/Nervousness • Blurred vision • Dizziness, Headache	• Dry mouth • Cough, worsening of symptoms • Skin rash
Adult Dose:	• Standing order: 0.5 mg mixed with 2.5 mg albuterol given via nebulizer over 5 to 15 minutes if the patient does not improve after a single albuterol-only nebulizer treatment. • A second 0.5 mg dose mixed with 2.5 mg albuterol may be given under standing orders, if needed. • May be mixed with each of the three albuterol doses for *status asthmaticus.* • BioTel must authorize any additional doses.	
Pediatric Dose:	Standing order: Bronchospasm refractory to a single nebulized albuterol in a pediatric patient at least 2 years of age or any age pediatric patient with a history of asthma: • 0.5 mg mixed with 2.5 mg albuterol via nebulizer • 0.25 mg for infants under 1 year of age • May repeat up to 2 more times, combined with albuterol (total maximum number of doses: 3). Status asthmaticus: may be combined with albuterol for all 3 initial nebulizer treatments.	
Route:	Inhalation	
Drug Action:	• Bronchodilation • Dries respiratory tract secretions	
Class:	Topical Anticholinergic/Parasympatholytic	
Onset:	5-15 minutes	
Duration:	4-6 hours	

Ketamine
(Ketalar®)
(Optional medication – not required for every BioTel agency)

Indications:	• Excited delirium – ADULTS ONLY • Premedication for intubation in the conscious patient (PAI)
Contraindications:	• Stroke • Elevated intracranial pressure (ICP) • Severe hypertension • Severe cardiac disease • Upper respiratory infection/excessive secretions (especially pediatric) • Hypersensitivity to ketamine
Precautions:	Keep patient in a quiet environment
Side Effects:	• Hypertension • Tachycardia • Emergence reactions: hallucinations, unpleasant/vivid dreams • Increased respiratory secretions • Vomiting • Laryngospasm (pediatric patients with upper respiratory infection and/or excessive secretions) • Rarely: hypotension, bradycardia and respiratory depression • Theoretical: increased intracranial pressure
Adult Dose:	1 – 2 mg/kg IVP/IO (over one minute) or 4 – 5 mg/kg IM
Pediatric Dose:	**BIOTEL AUTHORIZATION REQUIRED** Sedation prior to pharmacologically-assisted intubation (PAI): 2 mg/kg IVP/IO (over one minute) or 3 – 5 mg/kg IM
Route:	Slow IVP/IO or IM
Drug Action:	Blocks pain perception and causes short term amnesia without muscle relaxation
Class:	Non-barbiturate dissociative anesthetic
Onset:	Within 30 seconds (IV/IO); 1-2 minutes (IM)
Duration:	5-10 minutes (IV/IO); 10-20 minutes (IM)

Lidocaine HCl
(Xylocaine®)

Indications:	• Ventricular fibrillation • Wide-complex tachycardia (WCT) and hemodynamically significant PVCs • Pain related to intraosseous infusion (BioTel authorization required for pediatric) • Premedication for Pharmacologically-Assisted Intubation (PAI)
Contraindications:	• Life-sustaining ventricular escape rhythms associated with bradycardia or 2° or 3° heart blocks • Hypersensitivity
Precautions:	• Contact BioTel for patients over 65 years of age, history of liver disease, or CHF • Contact BioTel prior to administration if the patient has any "caine" allergy • Short half-life; bolus may need repeating, and if bolus converts rhythm, repeat bolus may be necessary especially in prolonged transport time • Continually monitor ECG, blood pressure and level of consciousness • Maximum total, cumulative dose of lidocaine is 3 mg/kg
Side Effects:	• Initially: drowsy, lightheadedness, blurred vision • Toxicity: hypotension, change in level of consciousness, seizures, cardiovascular collapse, bradycardia
Adult Dose:	Standing order: o VF/pulselessVT unresponsive to defibrillation and amiodarone, or when amiodarone cannot be used: ▪ 1.0 – 1.5 mg/kg IV or IO push (maximum dose 100 mg). o Consider continuous IV/IO infusion for stable WCT if amiodarone is unavailable or cannot be used – Contact BioTel o Premedication for Pharmacologically-Assisted Intubation (PAI): ▪ 1.0 mg/kg IV or IO push o Pain related to intraosseous access in conscious patients: ▪ 40 mg (2 mL) IO prior to Normal Saline flush **BIOTEL AUTHORIZATION ONLY** o Consider continuous IV/O infusion for frequent, hemodynamically significant PVCs during Post-cardiac arrest care (amiodarone preferred).
Pediatric Dose:	Standing order o VF/pulselessVT unresponsive to defibrillation and amiodarone, or when amiodarone cannot be used: ▪ 1.0 mg/kg IV or IO push (maximum dose 100 mg). **BIOTEL AUTHORIZATION ONLY** o Consider for unstable, sustained Wide Complex Tachycardia when synchronized cardioversion cannot be performed: 1.0 mg/kg IV/IO push . o Consider continuous IV/IO infusion for frequent, hemodynamically significant PVCs following synchronized cardioversion or for frequent, hemodynamically significant PVCs during Post-cardiac arrest care (amiodarone preferred).
Route:	• IV or IO push (no faster than 50 mg/minute in conscious patients)
Drug Action:	• Suppresses ventricular ectopy • Blocks conduction of pain impulses
Class:	• Ventricular Antiarrhythmic • Local Anesthetic
Onset:	30 seconds - 90 seconds
Duration:	10 minutes - 20 minutes

Magnesium Sulfate

Indications:	• Torsades de pointes (antiarrhythmic of choice) • Bronchospasm in asthma or COPD that is not responsive to other therapy
Contraindications:	• Shock or systolic blood pressure less than 110mmHg (adult) or (70 mm Hg + (2 x age in years))(pediatric) • Heart block • Respiratory depression • Chronic kidney disease/dialysis
Precautions:	Inform BioTel prior to administration if: • Hypomagnesemia is suspected • Patient is on digitalis preparations • Continuously monitor Vital Signs, ECG, SpO_2, LOC and muscle strength
Side Effects:	• Diaphoresis • Facial flushing • Hypotension • Depressed reflexes • Hypothermia • Bradycardia • Circulatory collapse • Respiratory depression • Muscle weakness/paralysis • CNS depression
Adult Dose:	Mix 2 grams of magnesium sulfate into a 250 mL bag of Normal Saline and infuse piggyback via microdrip tubing: • Standing order, wide open: o *Pulseless* Torsades de Pointes (cardiac arrest) • Standing order, over 20 minutes: o Perfusing Torsades de Pointes with pulse after successful cardioversion • Standing order, over 20 minutes: o Refractory bronchospasm (BioTel authorization required if dialysis patient) • Standing order, over 20 minutes: o Eclamptic seizure refractory to diazepam or midazolam, over 20 minutes
Pediatric Dose:	**BIOTEL CONSULTATION FOR DOSE CONFIRMATION REQUIRED** Impending Respiratory Failure (altered mental status, severe ventilatory difficulty) in a pediatric patient over 2 years old or any age with asthma history: Mix 2 grams of magnesium sulfate into a 250 mL bag of Normal Saline, and • Administer 40 mg/kg (5 mL/kg) IV/IO infusion over 30 minutes. • Maximum dose: 2 g. *Administer simultaneously with* 1:1000 epinephrine 0.01 mg/kg IM (0.01 mL/kg) (Maximum dose: 0.3 mg (0.3 mL))
Route:	IV or IO piggyback
Drug Action:	• Reverses magnesium deficiency • Blocks calcium channels • Increases intracellular potassium • Depresses the Central Nervous System • Relaxes smooth muscle
Class:	• Electrolyte • Anticonvulsant • Smooth Muscle Relaxant
Onset:	Immediate following IV infusion
Duration:	30 minutes
Antidote:	Calcium Chloride

Methylprednisolone
(Solu-medrol®)
(Optional medication – not required for every BioTel agency)

Indications:	Helps reduce airway swelling associated with bronchospasm: • Wheezing refractory to inhaled bronchodilators • Status asthmaticus • Severe anaphylaxis, in conjunction with epinephrine and diphenhydramine
Contraindications:	Known hypersensitivity to the product and its constituents
Precautions:	• Methylprednisolone is an adjunct to, not a substitute for, bronchodilator therapy in acute asthma exacerbation. • Safety in pregnancy is unclear – administer to gravid females, nursing mothers, and women of childbearing potential only when the anticipated benefits outweigh the known risks.
Side Effects:	• May produce hypertension • Rare instances of: o Anaphylactic reactions o Exacerbation of congestive heart failure o Seizure • Most side effects are related to dosages higher than typically used in EMS
Adult Dose:	Standing order, if available: • Severe allergic reaction (anaphylaxis): • 60 – 125 mg IV/IO, if there are no contraindications • Refractory bronchospasm and status asthmaticus: • 60 – 125 mg IV/IO, if there are no contraindications
Pediatric Dose:	Standing order, if available, and there are no contraindications: • Severe allergic reaction (anaphylaxis), OR refractory bronchospasm or status asthmaticus** – 125 mg reconstituted in 2 mL and diluted with 8 mL Normal Saline to a final volume of 10 mL (12.5 mg/mL). Administer IVP/IO: • Age under 1 yr**: 12.5 mg (1 mL) • Age 1 to 3 yr**: 25 mg (2 mL) • Age 3 to 5 yr: 37.5 mg (3 mL) • Age 5 to 9 yr: 50 mg (4 mL) • Age 9 to 13 yr: 62.5 mg (5 mL) • **Do not administer for respiratory distress to children less than 2 years of age, unless the child has a history of asthma. • Consult BioTel for dosing confirmation if IM administration is required because of lack of vascular access: • Reconstitute in 2 mL vial, as supplied (125 mg/2mL), but do NOT dilute • Dose: 2 mg/kg (0.032 mL/kg) IM
Route:	IV and IO (all indications) IM (refractory bronchospasm/status asthmaticus only – not for anaphylaxis)
Drug Action:	Potent anti-inflammatory steroid
Class:	Synthetic Glucocorticoid
Onset:	60 – 120 minutes; clinical response in 4 – 6 hours
Duration:	12 – 36 hours

Midazolam
(Versed®)
(Optional medication – not required for every BioTel agency)

Indications:	• Active seizure/status epilepticus or seizure related to eclampsia • Sedation prior to cardioversion or transcutaneous pacing in conscious patients or to facilitate endotracheal intubation • Excited delirium (sedation in struggling patients when medical restraints are applied) • Chest pain or tachycardia following an overdose or ingestion of a stimulant or hallucinogen (cocaine, amphetamine, ecstasy, LSD, PCP, ketamine) • Maintain sedation following advanced airway placement using the pharmacologically assisted intubation procedure or if ROSC achieved following cardiac arrest
Contraindications:	• Known hypersensitivity • Acute narrow-angle glaucoma
Precautions:	• **Monitor respiratory status closely: prepare for BVM assisted ventilation** • Give at the site closest to the IV/IO insertion site and avoid mixing with any other drugs and solutions; flush well before and after use • Titrate in small boluses to avoid adverse side effects
Side Effects:	• Respiratory depression • Hypotension • Stupor • Nausea • Confusion
Adult Dose:	• Standing order doses: o 0.1 mg/kg IV/IO push (maximum single dose of 5 mg) for sedation prior to Pharmacologically-Assisted Intubation (PAI): o **Note: BIOTEL AUTHORIZATION** is required for all non-PAI agencies as an adjunct to facilitate endotracheal intubation. o 2.5 mg – 5 mg IV/IO/IM, or 5 mg IN to maintain sedation and endotracheal tube placement following ROSC. o May repeat once. o 2.5 mg – 5 mg per dose titrated to achieve all other desired clinical effects: o Maximum cumulative total IV/IO/IM dose: 5 mg. o Maximum cumulative total IN dose: 10 mg. • BioTel may order additional doses beyond standing order doses.
Pediatric Dose:	Standing order: • Seizures • **INTRANASAL** • 1 to 6 months of age: 0.2 mg/kg up to a maximum single dose of 1 mg. • Over 6 months of age: 0.2 – 0.3 mg/kg, up to a maximum single dose of 5 mg; divide the dose between both nostrils, if possible. • **INTRAVENOUS or INTRAOSSEOUS** • 0.15 to 0.2 mg/kg up to a maximum single dose of 5 mg o Maintain sedation and endotracheal tube placement following ROSC: ▪ 0.1 mg/kg IV/IO/IM/IN (maximum SINGLE dose 5 mg). o May repeat once. **BIOTEL AUTHORIZATION REQUIRED** • Sedation (with fentanyl) prior to pharmacologically-assisted intubation (PAI): • 0.1 mg/kg IV/IO/IN/IM • Excited Delirium and any other use in the pediatric patient

Route:	• IV or IO; IM	• Intranasal (IN) rapid Push
Drug Action:	Central nervous system depressant that causes: • Amnesia • Sedation	• Muscle relaxation
Class:	Benzodiazepine	
Onset:	Highly variable, however usually 1 – 5 minutes	
Duration:	Variable; however, usually 15 minutes to 1 hour	

Morphine Sulfate

(Optional medication – not required for every BioTel agency)

Indications:	• Chest pain unresponsive to nitroglycerin • Moderate to acute pain secondary to amputations, fractures, or other situations that cannot be controlled with nitrous oxide
Contraindications:	• Systolic BP less than 110 mmHg; BioTel may authorize administration in patients with systolic BP between 90 & 110 mmHg • Head injury • Severe respiratory depression • Hypersensitivity • Use with caution for OB patients in active labor (especially high-risk patients)
Precautions:	• Monitor respiratory status and blood pressure closely • Have naloxone (Narcan®) readily available • Prepare for assisted ventilation prior to administration
Side Effects:	• Hypotension • Tachycardia • Bradycardia • Palpitations • Syncope • Facial flushing • Respiratory depression • Euphoria • Bronchospasm • Dry mouth • Allergic reaction
Adult Dose:	Standing order: Pain control • 2 mg – 4 mg increments, every 15 minutes, up to a total, maximum cumulative dose of 8 mg **BIOTEL AUTHORIZATION REQUIRED IF patient:** • Is older than 65 years of age • Is debilitated • Has altered mental status • Has a SBP less than 90 mmHg
Pediatric Dose:	Standing order Pain Control: • 0.05 mg/kg per dose, up to a maximum of 5 mg; • May repeat once after 15 minutes, if needed; • Additional dosing requires BioTel authorization
Route:	Slow IV or IO push; IM
Drug Action:	• Alleviates pain • Decreases peripheral vascular resistance – vasodilator • Decreases cardiac workload and oxygen demand on the heart
Class:	Narcotic Analgesic
Onset:	1 minute - 2 minutes following IV/IO administration
Duration:	2 hours - 7 hours
Antidote:	Naloxone (Narcan®)

Naloxone HCL
(Narcan®)

Indications:	• Narcotic overdose • Coma of unknown origin • Cardiac arrest with suspected narcotic overdose etiology • Seizure with suspected narcotic overdose etiology	
Contraindications:	Hypersensitivity	
Precautions:	• Effective for only 30 - 60 minutes; repeat if LOC and/or respiratory status deteriorate • Secure patient prior to administration • Not recommended as part of initial resuscitative efforts for newborns with respiratory depression • Avoid administration in babies whose mothers are suspected of having had long term exposure to opioids (risk of neonatal seizures)	
Side Effects:	• Tachycardia • Hypertension • Diaphoresis • Nausea • Blurred vision	• Acute withdrawal syndrome (violent behavior) With rapid administration: • Arrhythmia • Projectile vomiting
Adult Dose:	Standing order: Non-cardiac arrest : • 0.4 mg every 5 minutes slow push until the respiratory rate improves and the patient can maintain a SpO_2 of 96%, OR until a total of 2 mg has been administered Cardiac Arrest: • 2 mg IVP/IO	
Pediatric Dose	Standing order: Non-cardiac arrest: • 0.1 mg/kg slow push (maximum single dose 0.4 mg) until the respiratory rate improves and the patient can maintain a SpO_2 of 96%; may repeat every 2 minutes in opiate-naïve patients, OR until a total of maximum, cumulative dose of 2 mg has been administered Cardiac Arrest • 0.1 mg/kg IV/IO (maximum single dose: 2.0 mg)	
Route:	• Intranasal (IN) rapid push • Slow IV or IO push • IM (alternate route) • Subcutaneous (least preferred route)	
Drug Action:	Reverses narcotic effects	
Class:	Narcotic Antagonist	
Onset:	Within 2 minutes of IVIO administration	
Duration:	30 minutes - 60 minutes	

Nitroglycerin
(Nitrostat®)

Indications:	• Chest pain of cardiac origin • Pulmonary edema associated with congestive heart failure (may be administered without an IV if systolic blood pressure > 110 mmHg)
Contraindications:	• Systolic blood pressure less than 90 mm Hg • Increased intracranial pressure • Viagra® [sildenafil] or similar drugs (Cialis® [tadalafil], Levitra® [vardenafil]) in the previous 36 hours • Hypersensitivity
Precautions:	• For acute coronary syndrome, 12-lead ECG must be performed prior to nitroglycerin administration. • Monitor blood pressure closely. If blood pressure falls below 110 mmHg resulting from nitroglycerin administration, DO NOT give any additional nitroglycerin. • Assure patient is sitting or lying down during administration. • Active ingredient of nitroglycerin will "sting" when administered sublingually. • IV must be established prior to administration in patients with suspected inferior wall MI.
Side Effects:	• Hypotension • Headache • Postural hypotension/syncope • Reflex tachycardia • Nausea and vomiting • Diaphoresis
Adult Dose:	• Standing order o 1 spray (0.4 mg) or tablet - standing order o May repeat twice at 5 minute intervals PRN - standing order • BioTel must authorize additional doses beyond the initial three
Pediatric Dose:	**BIOTEL AUTHORIZATION ONLY** 1 spray (0.4 mg) or tablet
Route:	Sublingual
Drug Action:	• Coronary and systemic vasodilator - decreases peripheral vascular resistance and preload • Decreases cardiac workload and oxygen demand on the heart
Class:	Vasodilator
Onset:	1 minute - 3 minutes
Duration:	30 minutes - 60 minutes

Nitrous Oxide

(Nitronox®)

(Optional medication – not required in every BioTel agency)

Indications:	• Adjunct analgesic for ischemic chest pain (other agents preferred) • Severe pain or discomfort in all patients without contraindications (other agents preferred) • **NOTE:** As of July 15, 2014 this medication is not currently carried by any BioTel agency. It is retained as an optional medication for possible future reintroduction to relevant Treatment Guidelines and/or Procedures, in the event of unforeseen narcotic shortages or other contingencies.
Contraindications:	• Any altered level of consciousness or head injury • Chronic obstructive pulmonary disease • Chest trauma or actual/suspected pneumothorax • Abdominal trauma • Major facial trauma • Acutely psychotic patients • Pregnancy, other than active labor • Any patient (adult or pediatric) unable to self-administer • Decompression sickness
Precautions:	• Must be self-administered • Check machine gauges daily for proper concentrations • Monitor blood pressure and pulse oximetry values during administration
Side Effects:	• Hypotension • Dizziness • Nausea and vomiting
Adult Dose:	Instruct patient to inhale deeply through patient-held mask or mouthpiece
Pediatric Dose:	Instruct patient to inhale deeply through patient-held mask or mouthpiece
Route:	Inhalation
Drug Action:	• Depresses the central nervous system • Increases oxygen tension in the blood thereby reducing hypoxia
Class:	Gaseous Analgesic/Anesthetic
Onset:	2 minutes - 5 minutes
Duration:	2 minutes - 5 minutes

Norepinephrine bitartrate
(Levophed®)

Indications:	• Cardiogenic shock • Post cardiac arrest management of hypotension
Contraindications:	Hypovolemia
Precautions:	• Start IV's in the antecubital fossa to lower risk of infiltration • While administering continually check IVIO site for patency and signs/symptoms of infiltration • Continually monitor blood pressure • Do not mix with sodium bicarbonate; flush tubing well between drugs
Side Effects:	• Tissue necrosis with infiltration • Hypertension • Headache • Dysrhythmia • Tachycardia • Reflex bradycardia • Chest pain
Adult Dose:	Standing order for post cardiac arrest management of systolic blood pressures less than 90 mmHg o 8-12 mcg/minute ▪ 4mg norepinephrine in 250 mL NS (16 mcg/mL) ▪ 8mg norepinephrine in 500 mL NS (16 mcg/mL) Standing order for patients experiencing cardiogenic shock o 8-12 mcg/minute ▪ 4mg norepinephrine in 250 mL NS (16 mcg/mL) ▪ 8mg norepinephrine in 500 mL NS (16 mcg/mL)
Pediatric Dose:	**BIOTEL AUTHORIZATION REQUIRED**
Route:	IV or intraosseous piggyback
Drug Action:	• Potent peripheral vasoconstrictor • Increases myocardial contractility
Class:	Sympathomimetic
Onset:	1 minute - 3 minute
Duration:	5 minutes - 10 minutes

Ondansetron HCl

(Zofran®)

(Optional medication – not required in every BioTel agency)

Indications:	Prevention of nausea and vomiting
Contraindications:	• Hypersensitivity • Do not administer to children under the age of two years
Precautions:	• Is not effective in every patient • Patients who fail to respond to a single IV/IO dose often do not respond to additional doses
Side Effects:	• Headache • Dizziness • Musculoskeletal pain • Drowsiness/Sedation • Burning sensation at the site of injection
Adult Dose:	Standing order Nausea and/or vomiting: • 4 mg IV or IO (over 1 minute) or IN or IM (one dose only); **OR** • Zofran ODT® 4 mg sublingual (SL) (one dose only); • Do not exceed 4 mg and do not administer repeat doses.

Pediatric Dose:	Standing order:
	Nausea and/or Vomiting (in conjunction with fluid resuscitation, as indicated):
	• 0.1 mg/kg IV or IO (over 1 minute) or IN (not IM);
	• Do not exceed 4 mg total, cumulative dose; **OR**
	• Ondansetron tablet (Zofran ODT®) sublingual (SL):
	  • 2 years to 5 years of age (and less than 20 kg): 2 mg;
	  • At least 5 years of age (and at least 20 kg): 4 mg;
	  • Do NOT administer repeat doses;
	  • Do NOT administer to children less than 2 years of age.

Route:	• Slow IV or IO push (over 1 minute) • Intranasal (IN) rapid push • Intramuscular (IM): **ADULT ONLY** • Sublingual (SL), if available
Drug Action:	Selectively blocks serotonin receptors (those that produce nausea/vomiting)
Class:	Antiemetic
Onset:	Approximately 30 minutes
Duration:	Approximately 9 hours

Pralidoxime Chloride

(Protopam® Chloride, 2-PAM, 2-PAM Chloride)

(Optional medication – not required in every BioTel agency)

Indications:	• Second drug given for the treatment of poisoning due to organophosphate pesticides and chemical nerve agents (First drug is atropine) • Primary indication for pralidoxime administration is muscle weakness or respiratory depression in these patients
Contraindications:	No absolute contraindications
Precautions:	• Not indicated for poisonings with carbamate pesticides • Effects during pregnancy are unknown • Safety and efficacy in children is unknown • Do not administer more than 3 auto-injectors, due to its hypertensive effects
Side Effects:	• Tachycardia, laryngospasm, muscle rigidity if IV and infused too quickly • Mild to moderate pain at injection site • Blurred or double vision, dizziness, loss of coordination, headache drowsiness, hypertension, tachycardia
Adult Dose:	600mg (1 autoinjector) - 1800mg (3 auto-injectors) - standing order
Pediatric Dose:	Not generally administered to pediatric patients – **Contact BioTel**
Route:	Deep IM
Drug Action:	• Reactivates cholinesterase which has been deactivated by chemical nerve agents and organophosphate poisons • Relieves paralysis of the respiratory muscles following chemical nerve agent or organophosphate exposure
Class:	Cholinesterase reactivator
Onset:	About 15 minutes
Duration:	About 1 hour

Promethazine HCl
(Phenergan®)
(Optional medication – not required in every BioTel agency)

Indications:	Persistent vomiting due to gastrointestinal problems
Contraindications:	• Elderly >65 years of age • Debilitated patients (signs of dehydration and weakness) • Trauma • Altered level of consciousness • Pregnancy - only with BioTel authorization • Known sulfa allergy • Hypersensitivity
Precautions:	• Monitor LOC • Avoid intra-arterial or subcutaneous administration • Give slowly–rapid administration can cause vein irritation, phlebitis and sclerosis • Watch for signs/symptoms of excessive sedation and dystonic reaction
Side Effects:	• Marked drowsiness/sedation • Allergic reaction • Dysrhythmia • Nausea and vomiting • Hyperexcitability • Dystonic reaction • Use in children may cause hallucinations, convulsions, and sudden death
Adult Dose:	Titrate doses of 12.5 mg to achieve the desired effect, up to a maximum of 25 mg - standing order
Pediatric Dose:	Do not administer to pediatric patients
Route:	• IM - deep into muscle
Drug Action:	Potent antiemetic
Class:	• Antiemetic • Phenothiazine • Antihistamine
Onset:	20 minutes after IM administration
Duration:	4 hours - 6 hours
Antidote	For dystonic reactions give diphenhydramine (Benadryl®)

Proparacaine HCL
(Alcaine®)

Indications:	• Short-term relief from corneal burns or corneal abrasions • Patient comfort prior to irrigation associated with chemical exposure, pepper spray, mace
Contraindications:	• Eye avulsion • Foreign bodies in the eyes • Globe rupture • Allergies to the "caine" drugs
Precautions:	Caution patient not to rub eye
Side Effects:	• Burning or stinging sensation • Irritation
Adult Dose:	1-2 drops in affected eye. Repeat dose every 5 minutes up to a total of 3 applications - standing order
Pediatric Dose:	1-2 drops in affected eye. Repeat dose every 5 minutes up to a total of 3 applications - standing order (same as adult)
Route:	Dropped into the affected eye
Drug Action:	Rapid, brief, superficial anesthesia; blocks nerve impulses from sensory nerves
Class:	Topical ophthalmic anesthetic
Onset:	Within 30 seconds
Duration:	10-15 minutes

Sodium Bicarbonate

Indications:	• Altered level of consciousness and wide complex tachycardia resulting from tricyclic antidepressant (TCA) overdose or ingestion - **BIOTEL AUTHORIZATION ONLY**
	• Cardiac arrest associated with
	  o Hyperkalemia
	  ▪ renal failure
	  ▪ dialysis
	  ▪ crush injury/crush syndrome
	  o Metabolic acidosis
	  ▪ renal failure
	  ▪ diabetic ketoacidosis (DKA)
	  ▪ methanol ingestion
	  ▪ aspirin (ASA) overdose
	  o Tricyclic antidepressant (TCA) overdose or ingestion
	  o Prolonged (greater than 15 minutes) resuscitation attempt

Contraindications:	Not recommended for routine use in cardiac arrest
Precautions:	• Flush IV/IO line well between all drugs • May inactivate epinephrine or dopamine
Side Effects:	• Alkalosis • Seizures • Tissue sloughing at injection site

Adult Dose:	• Standing order when used during cardiac arrest
	  o 1 mEq/kg IV/IO slow push
	• BioTel authorization required for tricyclic antidepressant toxicity
	  o 1 mEq/kg IV/IO slow push

Pediatric Dose:	• Standing order when used during cardiac arrest
	  o 1 mEq/kg IV/IO slow push
	• BioTel authorization required for tricyclic antidepressant toxicity
	  o 1 mEq/kg IV/IO slow push (same as adult)

Route:	IV or intraosseous push
Drug Action:	• Drives serum potassium back into the cell • Enhances urinary excretion of tricyclic antidepressants • Neutralizes acidosis
Class:	• Electrolyte • Alkalinizing Agent
Onset:	2 minutes – 10 minutes
Duration:	30 minutes – 60 minutes

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