

The University of Texas Southwestern Medical Center
at Dallas/ BiOTEL EMS SYSTEM

Emergency Medical Services

Protocol for Therapy

APRIL 2002

**UTSW/ BIOTEL EMS SYSTEM
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GENERAL OVERVIEW

Protocols are guidelines that represent the preferred, prospective approach for a given situation.

As such, the clinical judgment exercised by the field paramedics in conjunction with on-line medical control, may call for variation from the established protocol from time to time.

Protocols may also overlap with one another (e.g. a patient in respiratory distress who also has bradycardia). Treatment priorities for these individual patients should be based on good sound clinical judgment by the paramedic in conjunction with medical control as necessary.

Standing orders are procedures/treatments that may be performed prior to contact with medical control (BioTel). This is acceptable under the legal concept of delegated practice. The point when BioTel contact is required is specified on each protocol. Earlier contact is always possible if questions, problems or unusual cases exist.

BioTel should be contacted and notified about all patients for whom ALS procedures or therapies are **ATTEMPTED** or initiated, except for precautionary intravenous access procedures (IVs).

For purposes of this protocol, pediatric patients are defined as those less than 13 years of age.

ADULT PROTOCOL PRINCIPLES

AIRWAY MANAGEMENT

Passage of an (cuffed when appropriate) endotracheal tube shall be considered definitive airway management in our EMS system.

Patients should be intubated for respiratory failure and for airway protection. Note that these indications are independent of respiratory rate or spontaneous effort. They are also independent of pulse oximetry readings.

Bag valve mask devices (BVM) are often used prior to or in conjunction with endotracheal intubation. Ideally usage of a BVM is a two (2) or three (3) person procedure. Proper BVM usage should follow the following mnemonic scheme:

- C – C-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 squeeze followed by quick release on the bag
 - O – Oxygen supply sufficient and functioning properly
 - S – Sellick's maneuver (cricoid pressure)

Adjuncts are often used to aid in intubation decisions and to aid in confirmation of ET tube placement. Their use is acceptable in our system as long as the following caveats are observed:

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. Has no role in confirming ET tube placement.
2. **End-tidal CO₂ detectors (ETCO₂)** – useful to confirm ET tube placement, however, many false negatives (no CO₂ detected) can occur (eg. If the patient is in prolonged cardiac arrest, has a massive pulmonary embolus, poor chest compressions, or otherwise not producing CO₂).
3. **Esophageal detector devices (EDD)** – useful to confirm ET tube placement, however, false positives do occur, especially with improperly placed nasal tubes.

ENDOTRACHEAL TUBE (ET) PLACEMENT

In summary, no single technique or adjunct is sufficient alone to confirm proper ET tube placement. ET placement should be assessed using the following scheme:

1. Visualize the tube passing through the cords (for oral intubation).
2. Ensure no sounds are heard over the stomach when ventilating the patient through the ET tube.
3. Ensure good 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 ET CO₂ detector (not as effective in certain cardiac arrests) and/or EDD if available.

The above should be documented on the patient's chart and communicated to BioTel with each intubation. If the placement of the tube cannot be confirmed, re-evaluate and re-intubate if necessary. Do not assume a tube is in either the correct **or** incorrect position based on any one of these steps in isolation. Continue to re-evaluate every few minutes and particularly after patient movement.

Breathing via the ET Tube

While positive pressure breaths are often necessary to ensure adequate lung inflation (>10 ml/kg) for the critically ill or injured patient, overzealous positive pressure breaths can impair venous return and cardiac output in certain patients, particularly those with hypovolemia, acute exacerbations of COPD or asthma, and other conditions that might already impair circulation (eg. tamponade, tension pneumothorax or severe hemorrhage). Once intubated with an ET tube, a tidal volume of 10-15 ml/kg should be used (exceptions: existing tension pneumothorax, pneumonectomy patient, long standing lung injury, or pneumonia). In turn, the respiratory rate (RR) should be modified accordingly. In CPR cases, once full stable blood pressure and circulation are restored, increase the RR accordingly.

A reasonable empiric approach is to provide 10-15 ml/kg tidal volume and

1. A respiratory rate (RR) of 12-15 per minute if awake and struggling (breaths every 4-5 seconds)
2. A RR of 8-10 per minute with CPR, shock, or significantly prolonged respiratory phase (breaths every 6-7 secs)
3. A RR of 6-8 if in post-traumatic circulatory arrest (breaths every 7-10 seconds)

ET Tube Drug Administration

Although much less effective in cardiac arrest cases when no IV access is available, the following drugs may be given via the ET tube:

N	Narcan
A	Atropine
V	Valium
E	Epinephrine
L	Lidocaine

When administering medications down the ET tube:

- Inject 2-2.5 times the normal dose down the ET tube
- Follow with 10 ml normal saline flush*
- Immediately attach the BVM and forcefully ventilate 3-4 times

**Alternatively the medication may be diluted to 10 ml total volume and pushed down the ET tube. In children, the flush should be smaller (e.g. 0.2 ml/kg).*

IV FLUID TYPE

Practically speaking, only one type of fluid should be used for the small volumes and short transport times commonly encountered in urban/suburban EMS systems—Normal Saline (NS). Ringers Lactate (LR) is preferable, however, when large volumes of fluid are necessary or long transport times are anticipated.

IV FLUID RATE

Generally patients need either an IV access to keep the vascular site open (TKO) or to provide volume resuscitation. Certain hypotensive trauma patients may respond to fluid run wide open (WO). Others requiring volume resuscitation are best treated with 250-1000 ml boluses and frequent re-evaluation. A saline lock may be substituted for IV TKO.

IV SITE

Antecubital veins and external jugular veins are the access sites of choice in adults for cardiac arrest. Pre-existing central venous lines may be utilized in critical cases if the individual medic has the knowledge and equipment to do so.

CARDIAC CARE

When treating a cardiac arrhythmia, treat in order: 1) heart rate; 2) heart rhythm and 3) blood pressure.

Therapy for medical CPR cases should be performed right where the patient is found. Conditions that prohibit this, such as a hazardous environment or inadequate work space, should be indicated on the run report. Studies show what occurs at the scene determines the outcome, with certain uncommon exceptions. In addition, the earlier the restoration of stable pulses occurs, the better the chance of full recovery. Attempts to move these patients can delay therapy and interfere with proper monitoring and care delivery.

PEDIATRIC PROTOCOL PRINCIPLES

DEFINITION: Pediatric patients are those less than 13 years of age. In general, EMS protocols and standing orders apply to both adults and children. Some exceptions, comments and helpful tips follow.

PEDIATRIC ASSESSMENT

1. Normal vital signs vary with age. Note that the younger the child, the faster the normal heart rate and the lower the normal blood pressure. After about 12 years of age, normal vital signs approach adult levels.

AGE	HEART RATE (BPM)	RESP. RATE (BPM)	SYSTOLIC BP (mmHg)
Premature	100-190	40-60	Difficult to measure
Neonate	90-190	30-60	50-70
6 months	80-180	25-40	60-110
1 year	80-150	20-40	70-110
3-4 years	80-140	20-30	80-115
5-6 years	70-120	20-25	80-115
7-8 years	70-110	20-25	85-120
11-12 years	60-110	15-20	95-135

Mean systolic BP can also be *estimated* by: $80 + (2 \times \text{Age})$ in years.

Lower limits of systolic BP can also be *estimated* by: $70 + (2 \times \text{Age})$ in years.

2. Pediatric respiratory distress may look just like respiratory distress in adults, but may also present as:

- slow respirations
- nasal flaring
- retractions
- accessory muscle use
- tachypnea
- decreased breath sounds
- mottling
- grunting
- pale appearance
- stridor
- cyanosis
- bradycardia

3. Signs of shock or other serious illness may mimic those in adults, but may also include:

- change in level of consciousness (LOC)—especially failure to recognize/respond to parents
- tachycardia/ bradycardia
- narrowing pulse pressure
- pale/cool/mottled skin
- tachypnea
- capillary refill > 2 seconds
- relative flaccidity

4. A Broeslow tape is highly recommended as an aid to determining the patient's weight and proper drug doses and equipment sizes.

5. ET tube size can also be *estimated* by: $(\text{Age} + 16) \div 4$ or by looking at the size of the patient's little finger. For laryngoscope blades: children less than 1 year usually need a #1 blade, children 1-4 years usually need a #2 blade and children > 4 years usually need a #3 blade.

PEDIATRIC CARDIAC ARREST

1. Cardiac arrests in pediatric patients are most commonly the result of respiratory failure.

2. Hypotension and bradycardia are both indicators of impending cardiac arrest.

3. Start CPR if the pediatric patient is unresponsive and:

- a. Under 1 year of age if heart rate < 60/minute and with signs of hypoperfusion and after 30 - 60 seconds of ventilation with supplemental oxygen.
- b. 1 year-12 years of age if no spontaneous pulse.

4. Although VF is unusual, when present, defibrillate at 2 joules/kg initially and repeat at 4 joules/kg.

5. Transcutaneous pacing (TCP) is not usually needed, when necessary, place the pads anterior/posterior and contact BioTel for settings.

PEDIATRIC TRAUMA

1. Minimal on-scene time is critical for the injured pediatric patient.
2. The mechanism of injury must be taken into account even if the child appears stable on initial assessment. The mechanism of injury is critical in order to triage the pediatric trauma patient to the correct facility.
3. When necessary, NS (or RL) for initial pre-hospital fluid resuscitation is given rapidly at 20 ml/kg. Do not run IVs wide open in children; if necessary you may repeat the 20 ml/kg rapid infusion after contacting BioTel.

PEDIATRIC FLUID THERAPY

1. Use a microdrip on patients < 20 lbs (10 kg) for IVs; regular tubing for intraosseous (IO).
2. Intraosseous (IO) infusions are indicated for children ≤ 5 years of age who are in shock, cardiac arrest, unconscious or unresponsive to verbal stimuli and:
 - a. Who are unconscious or seriously ill with an immediate need for venous access to administer fluids or drugs when 1 or 2 attempts at peripheral venipuncture have been unsuccessful within 90 seconds.
 - b. Go immediately to an IO if peripheral veins are NOT readily obtainable in the unconscious seriously ill or injured patient.

PEDIATRIC STANDING ORDERS

Standing orders for pediatric patients are the same as those for adults for the majority of protocols (e.g. all items above CONTACT BIOTEL on protocols). **Exceptions to standing orders for pediatric patients include bradycardia, heart failure, and vomiting.** Contact BioTel for assistance anytime there are questions—even if the situation is covered by standing orders.

PEDIATRIC DOSES

Pediatric doses are given as ml or mg per kg. The maximum dose is always the adult dose. Never exceed the adult dose in large children or adolescents.

RESUSCITATION PROTOCOL PRINCIPLES

DEFINITION: The following are guidelines regarding resuscitation in the field. Good judgment and common sense shall be used in the application of these guidelines.

1. In all situations where there is **ANY** possibility that life exists, every effort will be made to resuscitate the patient.
2. The paramedic should be cognizant of the following facts:
 - a. Persons in V-fib, PEA, and asystole can potentially be resuscitated.
 - b. Very often the reported “DOWN TIME” is an inaccurate parameter of resuscitation potential, as the patient may have been in bradycardia or simply unconscious for a period of time, yet still perfusing blood to the brain. Additionally, information received from bystanders in regards to time is usually inaccurate.
 - c. Pupil size and response to light can be inaccurate as medications taken orally or intraocularly can affect them. Pupils can fixate after only a minute or two of global anoxia. Additionally, children and hypothermic patients may have fixed and dilated pupils from anoxia and yet be resuscitated without neurological deficit.
3. Resuscitation need not be attempted in the field in cases of:
 - a. Decapitation
 - b. Decomposition
 - c. Rigor Mortis
 - d. Dependent Lividity
 - e. Visual massive trauma to the brain or heart conclusively incompatible with life

MASS CASUALTY INCIDENTS

In these situations, EMS protocols can be used as standing orders. However, BioTel will be contacted at the soonest possible chance.

DNR ORDERS

1. State of Texas Out-of-Hospital DNR orders

- a. If a patient presents with properly completed Texas Department of Health DNR form or approved identification device:
 - All responding EMS personnel are authorized to cease and withhold all resuscitative measures in the event of respiratory or cardiac arrest.
- b. All other appropriate care, including comfort care, shall be provided in accordance with existing protocols and procedures.
- c. Once the patient has been pronounced as dead, contact BioTel to document statistical information required by Texas Department of Health.
- d. A DNR order from the patient's physician present *on-scene* will be honored in the event of respiratory or cardiac arrest.
- e. BioTel shall be contacted for situations involving:
 1. Out of state DNR orders
 2. Unclear DNR orders
 3. Scene disputes
 4. The Physician issuing the order is **NOT** the patient's personal physician (or on-scene)

NOTE: If BioTel is not readily available for situations indicated Section E, initiate CPR until BioTel is contacted.

2. Living Wills or Physician's Advanced Directive

The paramedics action should not be changed by a Living Will described or produced by the family or bystanders.

NOTE: *It is usually not possible to predict with certainty, the non-recoverability of a brain acutely insulted by cardiac arrest. A delay in care can increase anoxia time, increasing the likelihood of permanent brain damage. Therefore, the responsible paramedic is usually obligated to start CPR. Keep in mind the rescuers may be considered liable for failure to act if they elect not to perform CPR on an arbitrary basis.*

ALLERGIC REACTION

DEFINITION: Patients presenting with rash, hives, shortness of breath, or other signs and symptoms, up to and including shock, apparently due to an allergic reaction (e.g. bee sting, food allergy, medication reaction, etc...)

TREATMENT:

1. Oxygen, monitor lead II ECG, IV NS

2. Conditions:

- | | |
|--|---|
| a. If shock is present: | Supine position with legs elevated (if tolerated)
100% Oxygen NRB
Intubate PRN
IV NS wide open*
Epinephrine 1:10,000 0.3-0.5 mg SLOW IVP* |
| | OR |
| | Epinephrine 1:1,000 0.3-0.5 mg SC*
(if no immediate IV access)
Benadryl 50 mg IVP* |
| b. If dyspnea present
but no shock: | Epinephrine 1:1,000 0.3-0.5 mg SC*
Benadryl 50 mg IVP* |
| c. If localized reaction only: | Benadryl 50 mg IVP or IM* |

3. **CONTACT BIOTEL**

* PEDIATRIC DOSES

Fluid bolus 20 ml/kg; BioTel may order repeat bolus
Epinephrine 1:10,000 0.01 mg/kg IVP
Epinephrine 1:1,000 0.01 mg/kg SC (max. 0.3 mg/dose)
Benadryl 1-2 mg/kg (IVP, IM)

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ALTERED LEVEL OF CONSCIOUSNESS

DEFINITION: Patients who are disoriented, confused or unconscious. Includes patients with and without an apparent cause for their condition such as hypoglycemia, substance abuse, toxic ingestion or intoxication.

TREATMENT:

*If Trauma suspected, immobilize spine as well as refer to **TRAUMA** protocol.
If no Trauma, place patient in left lateral position and strap loosely to stretcher.*

1. Oxygen, monitor lead II ECG, IV NS
2. Rapid glucose determination
3. Conditions:
 - a. Glucose < 60 **OR** known diabetic with glucose < 90:
 - If IV established:
D50 25Gm –50 Gm IVP*
Narcan 2 mg IVP*¹
 - If no IV obtainable and patient conscious and able to swallow:
Glucose 25-50 Gm SL*
Narcan 2 mg IM*¹
 - If no IV obtainable and patient unconscious or decreased LOC:
Glucagon 1 mg IM or SQ
Narcan 2 mg IM*¹
 - b. Glucose ≥ 60:
 - If IV established: Narcan 2 mg IVP*
 - If no IV obtainable: Narcan 2 mg IM*
4. **CONTACT BIOTEL**
Notes: ¹ If patient becomes alert and oriented after Glucose administration, do not give Narcan.

* PEDIATRIC DOSES

Glucose if <60: give 0.5 Gm/kg IVP

- Age newborn to 1 month D10 (dilute D50 1:4) 5 ml/kg
- Age 1 month to 2 years D25 (dilute D50 1:1) 2 ml/kg
- Age > 2 years D50 1 ml/kg

Glucose 0.5 gm/kg SL

Narcan 0.1mg/kg IVP

Glucagon 1 mg IM

AMPUTATION

DEFINITION: Patients with isolated amputation of any extremity. Also, the care of the amputated part applies to the multiple trauma victim with an amputation.

TREATMENT:

*Control bleeding with direct pressure, contact BioTel if bleeding can not be controlled.
Remove gross contaminants on amputated part by rinsing with saline.*

1. Wrap amputated part in moistened saline gauze and place in plastic bag or container (sterile if available).

2. Seal container tightly and place in solution of ice water.

3. Condition:

a. If amputation is proximal to wrist or ankle:

Oxygen
Monitor lead II ECG
IV NS

b. Follow **PAIN MANAGEMENT** protocol

4. **CONTACT BIOTEL**

5. **TREATMENT CONSIDERATIONS:**

Additional morphine, according to **PAIN MANAGEMENT** protocol

* PEDIATRIC DOSES

Morphine 0.1mg/kg IVP

ASYSTOLE

DEFINITION: Apneic, pulseless patients with no cardiac activity. Also, includes those with minimal electrical activity (e.g. agonal rhythm.)

TREATMENT:

If patient has diabetic ketoacidosis or renal failure, contact BioTel after first round of drugs.

1. CPR
2. Intubate / Ventilate 100% oxygen / monitor lead II ECG / IV NS
3. Confirm Asystole in two leads.
Consider possible causes: hypoxia, hyperkalemia, hypokalemia, pre-existing acidosis, drug overdose, hypothermia.
4. Epinephrine 1 mg IVP, repeat every 3-5 minutes*
5. Atropine 1 mg IVP, repeat every 3-5 minutes (max dose 0.04 mg/kg)*
6. **CONTACT BIOTEL (after 3rd round of drugs administered)**
7. **TREATMENT CONSIDERATIONS:**
 - a. Epinephrine 1 mg IVP, repeat every 3-5 minutes*
 - b. Sodium Bicarbonate (NaHCO₃) 1 meq/kg IVP
 - c. Calcium Chloride (10% solution) 10 -15 mg/kg IVP
 - d. Transcutaneous (external) Pacer
Set rate: 70 BPM (beats per minute)
Milliamps: Adjust for MECHANICAL capture (palpable pulse)

NOTE: Item "e" may be considered in the post-resuscitation phase (ROSC)

- e. Levophed drip 8-12 mcg/minute (refer to Drug Drip Charts)

PRINCIPLE: Flush drugs with IV fluid 10-15 seconds (squeezing the bag) while maintaining chest compressions

* PEDIATRIC DOSES

Epinephrine (1:10,000) 0.01 mg/kg IVP; repeat every 3-5 minutes
Atropine 0.02 mg/kg (minimum dose 0.1mg) - may be repeated once

NOTE: *If patient's rhythm changes at any time during resuscitation, refer to appropriate protocol.*

BRADYCARDIA (SYMPTOMATIC BRADYCARDIA)

DEFINITION: Patients with a heart rate < 60 **AND** symptoms. Symptoms include: Systolic BP < 90, altered level of consciousness, seizures, disorientation, confusion, dizziness, etc. For all others, **CONTACT BIOTEL** before treatment.

TREATMENT:

If heart rate < 60 **AND** Symptomatic:

1. Oxygen, monitor lead II ECG, IV NS
2. Obtain 12 lead ECG

*If a patient has chest pain and bradycardia with no other symptoms, **CONTACT BIOTEL** prior to treatment.*

3. Atropine 1.0 mg IVP*
4. Transcutaneous (external) Pacer
Set rate: 70 BPM (beats per minute)
Milliamps: Adjust for MECHANICAL capture (palpable pulse)
5. **CONTACT BIOTEL**

6. TREATMENT CONSIDERATIONS:

- a. Atropine 1.0 mg IVP (max dose 0.04 mg/kg)*
- b. Dopamine drip 2-10 mcg/kg/minute (refer Drug Drip Charts)

*** PEDIATRIC DOSES**

Ensure an adequate airway and oxygenation

If newborn to one year with signs of hypoperfusion and heart rates < 60, provide chest compressions

Contact BioTel before administering drugs for bradycardia

Atropine 0.02 mg/kg (min dose 0.1mg), may repeat once

Epinephrine 1:10,000 0.01 mg/kg (slow IVP per BioTel)

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CHEST PAIN

DEFINITION: Patients with atraumatic, non-pleuritic pain in the anterior chest. Also patients with epigastric pain, shoulder or neck pain, etc... if these are believed to be of cardiac origin (e.g. based on patient's past medical history or current presentation.) See also arrhythmia protocols.

TREATMENT:

Place patient in position of comfort, minimize patient exertion and transport on stretcher.

1. Oxygen, monitor lead II ECG, IV NS
2. Obtain 12 lead ECG
Complete Chest Pain checklist
3. Aspirin 81 mg PO
4. Nitroglycerin 0.4 mg SL; May repeat q 5 minutes for 2 doses (max. 3 doses) if BP > 100
5. **CONTACT BIOTEL**
6. **TREATMENT CONSIDERATIONS:**
 - a. Morphine 2 mg-4 mg IVP
 - b. Nitronox (patient administered)
 - c. Additional doses of nitroglycerin
 - d. If cocaine induced chest pain and / or tachycardia:
Valium 2-5 mg IVP may be added

* PEDIATRIC DOSES

This is a very unusual complaint in pediatrics.

CONTACT BIOTEL

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EYE INJURY

DEFINITION: Patients who have blunt or penetrating trauma to the eye or chemical substances in the eye.

TREATMENT:

*If patient has multi-system trauma, evaluate per **TRAUMA** Protocol.*

*Transport patient with head slightly elevated and **BOTH** eyes closed or loosely patched (unless specific treatment indicated).*

1. Types of injury:

- a. Penetrating injury with embedded foreign body:

Stabilize Foreign Body
**DO NOT REMOVE FOREIGN BODY
OR USE ANESTHETIC**

- b. Corneal burn, corneal abrasion or chemical exposure:

1-2 drops Anesthetic[*] to affected eye(s)
(Anesthetic [] not for penetrating injuries)*
Irrigate with NS for at least 20 minutes and continue irrigation enroute

2. CONTACT BIOTEL

*[*Any FDA-approved ophthalmological anesthetic agent may be substituted for Alcaine.]*

PAIN MANAGEMENT

DEFINITION: Patients with severe pain/discomfort, including those with pain from isolated extremity injuries and / or musculoskeletal/soft tissue injures; flank pain secondary to suspected kidney stone; and women in ACTIVE labor or about to deliver; amputations, burns; nasal endotracheal tube placement (Xylocaine jelly only). Vital signs must be stable.

TREATMENT:

Evaluate patient for life-threatening medical problems or injuries.

1. Consider oxygen, monitor, and IV with NS.
2. Offer comfort and reassurance
3. Nitronox (patient self-administered)

Relative contraindications to Nitronox:

- | | |
|---|--------------------------------------|
| a. Unable to self administer | e. Major facial trauma |
| b. Altered mental status or head injury | f. Abdominal trauma |
| c. COPD | g. Pregnancy other than active labor |
| d. Chest trauma or suspected/known pneumothorax | h. Acutely psychotic patient |
4. Morphine 2-4 mg SLOW IVP * (may titrate to effect, considering patient's weight; first check for allergies before administering)
 5. Splint injured extremities
 6. **CONTACT BIOTEL**
 7. **TREATMENT CONSIDERATIONS**
Additional Morphine as ordered

* PEDIATRIC DOSES

Initial considerations as above

Nitronox PRN (self-administer only, use only if no contraindications)

CONTACT BIOTEL

Morphine 0.1 mg/kg SLOW IVP (may titrate to effect; first check for allergies)

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PERSISTENT EMESIS (VOMITING)

DEFINITION: Patients who are actively vomiting or have persistent vomiting after EMS arrival, this protocol is to be used.

*If trauma suspected, refer to **TRAUMA** protocol.*

*If altered level of consciousness, go to **ALTERED LEVEL OF CONSCIOUSNESS** protocol*

TREATMENT:

1. Assure patent airway
2. Phenergan 25 mg IVP* or IM (IV NS if administered IV)
3. **CONTACT BIOTEL**

* PEDIATRIC DOSES

It is very unusual to need treatment for emesis in pedis; therefore,
CONTACT BIOTEL

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POISONED PATIENT and OVERDOSES

DEFINITION: Patients with an acute overdose or intoxication. All patients with suspected suicide must be reported to BioTel

TREATMENT:

1. Oxygen, monitor lead II, ECG, IV NS
2. Rapid assessment of vital signs
3. Assess medication and risk for sedation or seizure potential
4. Assess mental status
 - a. If patient alert with stable V/S and no apparent risk of sedation: Activated charcoal 1 gm/kg PO(†)
 - b. If patient not alert, or unstable V/S or risk of sedation: **CONTACT BIOTEL**
5. **CONTACT BIOTEL**
6. Conditions:
 - a. Altered heart rate:
 - **Bradycardia:**
Follow **BRADYCARDIA** protocol
 - **Tachycardia:**
Follow **TACHYCARDIA** protocol
 - b. Hypotension(††)
If bradycardia is present, follow:
BRADYCARDIA protocol
SHOCK protocol
 - c. Hypoglycemia:
Follow **ALTERED LEVEL OF CONSCIOUSNESS** protocol
 - d. Chest pain with cocaine:
Follow **CHEST PAIN PROTOCOL** And give Valium 2-5 mg IVP

TREATMENT CONSIDERATIONS:

If Ca-channel blocker or B-blocker:
CaCL 10-15 mg/kg IV slow push
Glucagon 1 mg IVP over 2-5min or IM*

TREATMENT CONSIDERATIONS:

If cyclic antidepressants with wide complex tachycardia:

Sodium bicarbonate 1 mEq/kg IVP

If cocaine ingested with tachycardia:

Valium 2-5 mg IVP

If tachycardia wide QRS also give:

Lidocaine 1.0 mg/kg IVP

TREATMENT CONSIDERATIONS:

If Ca-channel blocker or B-blocker:
CaCL 10-15 mg/kg IV slow push
Glucagon 1 mg IVP over 2-5min or IM*

Special considerations:

(†) Do not use activated charcoal if patient has ingested a liquid, chemical or caustic agent. Note amount, dose, and time of ingestion, and possibility of co-ingestion of other substances. If available, bring pill bottles to ED. If syrup of Ipecac given to patient prior to arrival, prepare for vomiting and for possible **airway compromise** if patient develops altered level of consciousness. If charcoal given, keep patient in semi-sitting position (head of bed at 30°)

(††) Patients with significant Ca-channel blocker or B-blocker intoxication may present with bradycardia, heart blocks, and hypotension.

* PEDIATRIC DOSES

CONTACT BIOTEL

Activated charcoal 1 gm/kg PO

Glucagon 1 mg IM

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PULSELESS ELECTRICAL ACTIVITY (PEA)

DEFINITION: Patients who are apneic and pulseless with any electrical activity on the monitor **EXCEPT** for VF/VT. Examples include: electromechanical dissociation (EMD), pseudo-EMD, idioventricular rhythms, ventricular escape rhythms, bradysystolic rhythms and post-defibrillation idioventricular rhythms.

TREATMENT:

If patient has diabetic ketoacidosis or renal failure, contact BioTel after first round of drugs.

1. CPR
2. Intubate / Ventilate 100% oxygen / monitor lead II ECG / IV NS
Consider possible causes: hypovolemia, hypoxia, overzealous ventilation (especially COPD or asthma), cardiac tamponade, tension pneumothorax, hypothermia, massive pulmonary embolus, drug overdose, hyperkalemia, acidosis, massive MI.
3. Epinephrine 1 mg IVP, repeat every 3-5 minutes*
4. If heart rate < 60: Atropine 1 mg IVP, repeat every 3-5 minutes (max dose 0.04 mg/kg)*
5. **CONTACT BIOTEL (after 3rd round of drugs administered)**
6. **TREATMENT CONSIDERATIONS:**
 - a. Epinephrine 1 mg IVP, repeat every 3-5 minutes*
 - b. IV fluid bolus
 - c. Chest needle decompression
 - d. Sodium Bicarbonate (NaHCO₃) 1 meq/kg IVP
 - e. Calcium Chloride (10% solution) 10-15 mg/kg IVP

NOTE: Item "f" may be considered in the post resuscitation phase

- f. Levophed drip 8-12 mcg/minute (refer Drug Drip Charts)

PRINCIPLE: Flush drugs with IV fluid 10-15 seconds (squeezing the bag) while maintaining chest compressions

* PEDIATRIC DOSES

Epinephrine (1:10,000) 0.01 mg/kg IVP; repeat every 3-5 minutes
Atropine 0.02 mg/kg (minimum dose 0.1mg) - may repeat once

NOTE: *If patient's rhythm changes at any time during resuscitation, refer to appropriate protocol.*

RESPIRATORY DISTRESS

DEFINITION: Patients who are complaining of shortness of breath, or who have labored respirations, dyspnea, wheezes or rales. Applies to patients with a history of asthma, COPD, bronchitis, emphysema, congestive heart failure, etc....

TREATMENT:

Place patient in position of comfort and transport on stretcher. Carefully monitor respirations and pulse. Assist ventilations PRN.

1. Oxygen:
 - Increase oxygen concentration up to 100% PRN to alleviate hypoxia, respiratory distress or cyanosis
 - Be prepared to intubate
 - Do not withhold oxygen from the COPD patient
2. Monitor lead II ECG, IV NS TKO
3. Conditions:
 - a. If wheezes present:
(or Hx of asthma) Albuterol 2.5 mg via nebulizer*
May repeat 2 doses (total 3 doses)
 - b. If signs of CHF present:
(rales, peripheral edema, Hx of CHF) Obtain 12 lead ECG
Lasix 40 mg IVP* **OR**
Patient's usual dose IVP (BP > 100)
Also give Nitroglycerin 0.4 mg SL (BP > 100)
May repeat twice (BP > 100)
 - c. If pulmonary edema is present:
4. **CONTACT BIOTEL**
5. **TREATMENT CONSIDERATIONS:-**
 - a. Wheezes only
Additional Albuterol*
Epinephrine 1:1,000 0.3-0.5 mg SC*
(no more effective than albuterol)
 - b. Signs of CHF
Albuterol*
Morphine 2-4 mg IVP
Additional Nitroglycerin 0.4 mg SL
Additional Lasix doses*

* PEDIATRIC DOSES

CONTACT BIOTEL

Albuterol 2.5mg via nebulizer
Epinephrine 1:1,000 0.01 mg/kg SC (max. 0.3mg)
Lasix 1 mg/kg IVP

August 2001 UTSW / BioTel EMS System

SEIZURE (ADULT)
(Age ≥ 13 years)

DEFINITION: Patients actively seizing or who have a history of seizures prior to arrival.

TREATMENT:

*If trauma suspected, immobilize & refer to **TRAUMA** Protocol.*

If no trauma, place patient in left lateral position and strap loosely to stretcher.

Consider possible causes: e.g. OD, hypoxia, head injury, hypoglycemia, alcohol withdrawal, etc..
Refer to appropriate protocol.

1. Maintain open airway
Have suction available; monitor respirations
If patient is seizing/has another seizure, **DO NOT** force anything into patient's mouth or attempt to restrain patient.
2. Oxygen, monitor lead II ECG, IV NS
3. Rapid glucose determination
4. Conditions:
 - a. Glucose < 60 **OR** known diabetic with glucose < 90:
 - If IV established:
D50 25Gm –50 Gm IVP*
Narcan 2 mg IVP*¹
 - If no IV obtainable and patient conscious and able to swallow:
Glucose 25-50 Gm SL*
Narcan 2 mg IM*¹
 - If no IV obtainable and patient unconscious or decreased LOC:
Glucagon 1 mg IM or SQ
Narcan 2 mg IM*¹
 - b. If patient seizing:
Valium, slow IVP until seizure stops or to a max. 10 mg
Intubate, if necessary

5. CONTACT BIOTEL

6. TREATMENT CONSIDERATIONS:

- a. Additional Valium

Notes: ¹ If patient becomes alert and oriented after Glucose administration, do not give Narcan.

SEIZURE (PEDIATRIC) (Age < 13 years)

DEFINITION: Patients actively seizing or who have a history of seizures prior to arrival.

TREATMENT:

*If trauma suspected, immobilize & refer to **TRAUMA** protocol.*

If no trauma, place patient in left lateral position and strap loosely to stretcher.

Consider possible causes: e.g. fever, ingestion, hypoxia, head injury, hypoglycemia, etc....
Refer to appropriate protocol.

1. Maintain open airway
Have suction available; monitor respirations
If patient is seizing/has another seizure, **DO NOT** force anything into patient's mouth or attempt to restrain patient.
2. Oxygen, monitor lead II ECG, IV NS
3. Rapid glucose determination
4. Conditions:
 - a. Glucose < 60 **OR** known diabetic with glucose < 90 :
 - If IV established: give 0.5 Gm/kg IVP
age newborn to 1 month D10 (dilute D50 1:4) 5 ml/kg
age 1 month to 2 years D25 (dilute D50 1:1) 2 ml/kg
age > 2 years D50 1 ml/kg
 - If no IV obtainable and patient conscious and able to swallow:
Glucose 0.5 gm/kg SL
 - If no IV obtainable and patient unconscious or decreased LOC:
Glucagon 1 mg IM or SQ
 - b. If patient actively seizing from EMS call to arrival (usually > 10 minutes) or who has recurrent seizures:

Valium, 0.5mg/kg rectally (max dose 5 mg)

5. CONTACT BIOTEL

Teaching point: Seizures in children are usually benign. It is most important to treat the cause if possible. Lowering the fever, relieving hypoxia, or correcting glucose is usually the most effective ways of treating pediatric seizures. Valium is used when other efforts fail.

SHOCK

DEFINITION: Patients who present with hypotension, tachycardia or altered mental status believed to be secondary to shock. See also **TRAUMA, ARRHYTHMIA & ALLERGIC REACTION** protocols.

TREATMENT:

If trauma present, refer to **TRAUMA** protocol.

1. Oxygen, monitor lead II ECG, IV NS
2. Rapid assessment for etiology of shock

3. Conditions:

- | | |
|--|---|
| a. If hypovolemia:
(non-trauma) | NS or RL 250-1,000 ml bolus (peds 20 ml/kg *) then titrate to systolic B/P > 90mmHg |
| b. If cardiogenic: | If arrhythmia exists see specific protocol
CONTACT BIOTEL |
| c. If neurogenic/septic:
(low resistance) | NS or RL 250-1,000 ml bolus (peds 20 ml/kg *) then titrate to systolic B/P > 90mmHg |
| d. If anaphylactic:
(low resistance) | See ALLERGIC REACTION Protocol |
| e. If poisoning | CONTACT BIOTEL |

4. **CONTACT BIOTEL**

5. **TREATMENT CONSIDERATIONS:**

- | | |
|-----------------------------------|---|
| a. Hypovolemia, neurogenic/septic | Additional fluid boluses |
| b. Cardiogenic | Obtain 12 lead ECG |
| | Antiarrhythmic medications as indicated |
| | Transcutaneous (external) Pacer— |
| | Set rate: 70 BPM (beats per minute) |
| | Milliamps: adjust for MECHANICAL capture
(palpable pulse) |
| | Atropine 1.0 mg IVP |
| If BP 70-90 | Dopamine drip 2-10 mcg/kg/minute
(refer to Drug Drip Charts) |
| If BP < 70 | Levophed drip 8-12 mcg/minute
(refer to Drug Drip Charts) |
| | Fluid Bolus |
| c. Anaphylactic | Additional Epinephrine, Benadryl |

* PEDIATRIC DOSES

* BioTel may order repeat fluid bolus
August 2001 UTSW/BioTel EMS System

SUPRAVENTRICULAR TACHYCARDIA (NARROW COMPLEX TACHYCARDIA)

DEFINITION: Patients with a sustained narrow complex tachycardia with a heart rate > 150 (slower rates seldom require treatment). Includes rhythms known or felt to be PSVT, A-Fib, A-Flutter, and unknown narrow complex rhythms.

Do not use this protocol for wide QRS tachycardias

TREATMENT:

1. Oxygen, monitor lead II ECG, IV NS
2. Conditions:
 - a. Conscious:
 - Obtain 12 lead ECG
 - Valsalva Maneuver (*not for known A-fib/A-flutter*)
 - Adenosine: (*not for known A-fib/A-flutter*)¹
 - Initial dose 6 mg RAPID IVP
 - Flush with NS 10 ml IVP
 - Repeat dose 12 mg RAPID IVP
 - Flush with NS 10 ml IVP
 - Repeat dose 12 mg RAPID IVP
 - Flush with NS 10 ml IVP
 - b. Unconscious: Synchronized cardioversion - 100/200/300/360 joules (*Before IV*)
3. CONTACT BIOTEL
4. TREATMENT CONSIDERATIONS:
 - a. Conscious
 - Diltiazem: Initial dose = 0.25 mg/kg (SLOW IVP over 2 minutes)
 - Repeat dose = 0.35 mg/kg 15 minutes after initial dose (SLOW IVP over 2 minutes)
 - Valium: 5-10 mg IVP and synchronized cardioversion
 - b. Unconscious
 - Adenosine
 - Diltiazem
 - Continued synchronized cardioversion
 - 12 lead ECG

Notes: ¹ Do not give Adenosine to patients receiving Persantine (dipyridamole) or to patients who have ingested or inhaled certain poisons or toxic chemicals such as organophosphates. If the patient has an overdose or accidental ingestion or inhalation, contact BioTel before treating the SVT.

* PEDIATRIC DOSES

CONTACT BIOTEL

Rev August 2002 UTSW/BioTel EMS System

TRAUMA

DEFINITION: Patients with multiple trauma. See also specific protocols for specific injuries.
See also **TRAUMATIC ARREST** protocol.

TREATMENT:

1. If primary survey abnormal—**LOAD & GO**. Limit scene time
2. Oxygen (intubate PRN), monitor lead II ECG, IV NS or RL, immobilize
3. Conditions:
 - a. If systolic BP < 90: 2 large bore IV NS or RL, give fluid only to raise systolic to 90 to 100 mmHg if bleeding is uncontrolled*
 - b. If systolic BP \geq 90: IV TKO
4. Trauma Triage Criteria: The following patients must be taken to a designated Level 1 or Level 2 trauma facility:
 - a. **LEVEL 1 ACTIVATION:**
 - Trauma arrest/CPR (with signs of life on EMS arrival)
 - Systolic B/P <90
 - Decreased level of consciousness (LOC) with GCS of < 10
 - Penetrating injuries to head, torso, and neck
 - RTS of < 10
 - Amputations (proximal to wrist or ankle)
 - b. **TRAUMA CENTER:**
 - Multi-system blunt trauma with unstable vital signs (BP < 90, RTS < 11, GCS < 14)
 - Burns > 20% TBSA (2nd & 3rd degree) or burns to the face, airway, hands, feet or genitals
 - Amputations (with reimplantation potential)
 - Paralysis, numbness, or other signs of spinal cord injury
 - Flail chest
 - Open or suspected depressed skull fracture
 - Unstable pelvis or suspected pelvis fracture
 - Two or more long-bone fractures
 - Fall > 10 feet
 - c. Other patients, in the judgment of the paramedic and/or in conjunction with BioTel, may also benefit from transportation to a designated trauma facility. Pay particular attention to patients who meet the following criteria:
 - High energy event
 - Ejection from the vehicle
 - Death of occupant in same vehicle
 - Rollover mechanism
 - Bent steering wheel
 - Auto-pedestrian impact
 - Motorcycle or bicycle involvement
 - Significant intentional injury
5. **CONTACT BIOTEL FOR CODE 3 TRANSPORTS**

* PEDIATRIC DOSES

Fluid resuscitation 20 ml/kg bolus IVP; BioTel may repeat
Rev April 2002 UTSW/BioTel EMS System

VENTRICULAR TACHYCARDIA (WIDE COMPLEX TACHYCARDIA)

DEFINITION: Patients with a sustained or non-sustained wide complex tachycardia with a heart rate > 150 (slower rates seldom need treatment, contact BioTel for assistance). Includes rhythms known or presumed to be VT or unknown wide complex rhythms. Any wide complex tachycardia that is or becomes pulseless, should be treated as VF.

TREATMENT:

1. Oxygen, monitor lead II ECG, IV NS

2. Conditions:

a. If Non-sustained or PVC's: Obtain 12-lead ECG

b. If Sustained:

1. Conscious Obtain 12-lead ECG
Lidocaine 1 mg/kg IVP

2. Unconscious: Synchronized cardioversion 100/200/300/360 joules
(*Before IV*)
Lidocaine 1.5 mg/kg IVP

3. CONTACT BIOTEL

4. TREATMENT CONSIDERATIONS:

a. Non-sustained or PVC's: Lidocaine: *1 mg/kg IVP followed by
0.5 mg/kg rebofus and drip (1-4 mg/minute)

b. If Sustained

1. Conscious Additional Lidocaine*
Valium 5-10 mg IVP & synchronized cardioversion
(100/200/300/360 joules)
Magnesium Sulfate 2Gm SLOW IVP
Amiodarone 150 mg IV over 10 minutes

2. Unconscious: Synchronized cardioversion
Additional Lidocaine*
Magnesium Sulfate
Amiodarone 150 mg IV over 10 minutes
12-lead ECG

* Max loading dose of Lidocaine 3 mg/kg

* PEDIATRIC DOSES

This is a very unusual presentation in pediatrics.
CONTACT BIOTEL

**UTSW / BIOTEL EMS SYSTEM
DRUG LIST / DESCRIPTION**

NAME / DOSE / ROUTE	DESCRIPTION
Activated Charcoal (Actidose) <i>1 gm/kg PO in solution (adult)</i> <i>1 gm/kg PO in solution (pedi)</i>	Binds and absorbs ingested toxins
Adenosine (Adenocard) <i>6 mg IVP Rapid</i> <i>Repeat doses 12 mg IVP Rapid</i>	Slows conduction through the AV node in narrow complex tachycardias, dilates blood vessels
Albuterol <i>2.5mg in NS for nebulizer</i> <i>200mcg for rotocaps</i>	Bronchodilator for obstructive airway disease
Alcaine <i>1-2 drops</i>	Topical anesthetic for eyes
Amiodarone (Cordarone) <i>300 mg IVP 1st dose in CPR</i> <i>150 mg IVP repeat dose in CPR</i> <i>150 mg IVP slow over 10 min. for VT</i>	Anti-arrhythmic
Aspirin (ASA) <i>81 mg PO</i>	Decreases platelet sticking in suspected AMI
Atropine <i>1.0 mg (adult) IVP, ETT</i> <i>Max. 0.04mg/kg IVP, ETT</i> <i>0.02 mg/kg (pedi)</i> <i>Minimum of 0.1 mg IVP, ETT</i>	Increases heart rate in bradyarrhythmias, reverses vagal tone in CPR's
Benadryl (diphenhydramine) <i>50mg (adult) IVP, IM</i> <i>1-2 mg/kg (pedi) IVP, IM</i>	Antihistamine, blocks side effects of phenothiazines
Calcium Chloride 10% <i>10-15 mg/kg (adult) IVP slow</i>	For hyperkalemic cardiac arrest, magnesium sulfate and calcium channel blocker toxicity
Dextrose 50% <i>25-50Gm IVP (adult) > 2 years</i> Dextrose 25% <i>0.5Gm/kg solution IVP (pedi)</i> <i>(dilute D50 1:1, 2cc/kg)</i> Dextrose 10% <i>0.5 Gm/kg solution IVP (pedi)</i> <i>(dilute D50 1:4, 5cc/kg)</i>	Restores circulating blood sugar level in hypoglycemia
Diltiazem (Cardizem) <i>0.25mg/kg IVP slow</i> <i>2nd bolus 0.35mg/kg IVP slow</i>	Slows conduction through AV node, used in narrow complex tachycardias; vasodilator
Dopamine (Intropin) <i>400mg/250cc D5W or NS IVPB</i> <i>800mg/500cc D5W or NS IVPB</i> <i>2 - 10 mcg/kg/min</i>	Peripheral vasoconstrictor, increases the force and rate of contractions

NAME/ DOSE/ROUTE	DESCRIPTION
Epinephrine 1:10,000 <i>1mg (adult CPR) IVP</i> <i>0.01mg/kg (pedi CPR) IVP</i> <i>0.3-0.5 mg (adult allergic rx) IVP</i> <i>0.01mg/kg (pedi allergic rx) IVP</i>	Stimulates heart, improves force of ventricular contractions, bronchodilator, vasoconstrictor
Epinephrine 1:1,000 <i>2.5mg (adult CPR) ETT ONLY</i> <i>dilute with 7.5 cc NS</i> <i>0.1mg/kg (pedi CPR) ETT ONLY</i> <i>dilute with 2-3 cc NS</i> <i>0.3-0.5 mg SQ (adult allergic rx/ asthma)</i> <i>0.01mg/kg SQ (pedi allergic rx)</i>	Stimulates heart, improves force of ventricular contractions, bronchodilator, vasoconstrictor
Glucagon <i>1 mg IM, SQ (adult & pedi)</i>	Converts stored glycogen to glucose, increasing blood sugar levels
Glucose (oral glucose) <i>25Gm (full tube) PO</i>	Increases blood sugar for patients tolerating oral administration
Lasix (furosemide) <i>40mg IVP slow or patient's usual dose 1mg/kg IVP slow (pedi)</i>	Diuretic, vasodilator
Levophed Drip (norepinephrine) <i>4mg/250cc D5W or NS IVPB</i> <i>8mg/500cc D5W or NS IVPB</i> <i>8 - 12 mcg/min</i>	Potent peripheral vasoconstrictor, increases blood pressure, especially post resuscitation
Lidocaine <i>1.0-1.5mg/kg IVP, ETT</i>	Suppresses ventricular ectopic activity
Lidocaine Drip <i>After initial bolus:</i> <i>1Gm/250cc DFW or NS IVPB (4mg/cc)</i> <i>2Gm/500cc D5W or NSIVPB (4mg/cc)</i> <i>1-4 mg/min (15-60 gtts/min)</i>	Suppresses ventricular ectopic activity
Lidocaine Jelly <i>Cover end of ET tube</i>	Provides local anesthetic and lubrication for nasal intubation
Magnesium Sulfate <i>1-4 Gm (10% solution)</i> <i>(50% - 2cc (1Gm) diluted with 8cc NS)</i>	Anti-arrhythmic for refractory VF, wide complex tachycardias
Morphine Sulfate <i>2-4 mg (adult)</i> <i>0.1mg/kg (pedi)</i>	Narcotic analgesic, decreases peripheral vascular resistance

NAME/ DOSE/ROUTE	DESCRIPTION
Narcan (naxolone) 2mg IVP, ETT, IM (adult) 0.1mg/kg IVP, ETT, IM (pedi up to 20kg OR 5yrs)	Narcotic antagonist
Nitroglycerin (nitrolingual spray) 0.4mg metered dose 1 spray SL	Coronary and peripheral vasodilator
Nitronox Mix of O ₂ & nitrous Oxide (inhalation- self admin)	Analgesic
Phenergan (promethazine) 25 mg IVP, IM (adult) 1 mg/kg IVP, IM (pedi)	Anti-emetic
Sodium Bicarbonate 1.0 mEq/kg IVP (adult & pedi)	Hyperkalemic arrest and tricyclic OD
Valium (diazepam) 5-10 mg IV, IM, ETT(adult) 0.5mg/kg (pedi-rectal admin)	Muscle relaxant; causes amnesia

UTSW / BIOTEL EMS SYSTEM

DRUG DRIP CHARTS

DOPAMINE (Intropin)

	400mg / 250 cc = 1600 mcg/cc						800 mg / 500 cc = 1600 mcg/cc						
Desired Dose	LBS	99	110	121	132	143	154	165	176	187	198	209	220
mcg / kg / min	KG	45	50	55	60	65	70	75	80	85	90	95	100
2		3	4	4	5	5	5	6	6	6	7	7	8
5		8	9	10	11	12	13	14	15	16	17	18	19
10		17	19	21	23	24	26	28	30	32	34	36	38
15		25	28	31	34	37	39	42	45	48	51	53	56
20		34	38	41	45	49	52	56	60	64	68	71	75

NOREPHINEPHRINE (Levophed)

4mg / 250 cc = 16mcg/cc		8mg / 500 cc = 16mcg/cc	
mcg/min		microdrops / min	
2		8	
4		16	
6		22	
8		30	
10		38	
12		46	
14		52	
16		60	
18		68	
20		76	

UTSW / BIOTEL EMS SYSTEM

American Heart Association (AHA)- Derived Chest Pain Checklist

For use by the EMT/Paramedics to screen for Acute Coronary Syndrome (ACS) and to help identify indications and contraindications for possible fibrinolytic therapy and /or percutaneous coronary intervention (PCI).

Screening for Fibrinolytic Therapy and PCI Candidates:

I. Fibrinolysis INCLUSION Criteria: For a patient to be an immediate candidate for fibrinolysis or PCI, it generally requires that the first 4 items below are checked "Yes" and also that the 12 lead ECG indicates S-T elevations in two contiguous leads and/or there is a new or presumably new Left Bundle Branch Block (LBBB):

	YES	NO
• 12 lead ECG performed	<input type="checkbox"/>	___
• Ongoing non-pleuritic chest discomfort (>20 min and < 12 hours)	<input type="checkbox"/>	___
• Patient is orientated and can cooperate	<input type="checkbox"/>	___
• Age >35 years for men or >45 years for female	<input type="checkbox"/>	___

Note: Primary Percutaneous Coronary Intervention (PCI) may also be indicated.

II. Fibrinolysis EXCLUSION Criteria: In order to be considered an immediate candidate for fibrinolysis, all the following answers generally should be checked "No":

	YES	NO
• BP >180/110 mmHg	___	<input type="checkbox"/>
• History of stroke or TIA	___	<input type="checkbox"/>
• Known bleeding disorder	___	<input type="checkbox"/>
• Active internal bleeding in past 4 weeks	___	<input type="checkbox"/>
• Surgery or significant trauma in past 3 weeks	___	<input type="checkbox"/>
• Terminal illness	___	<input type="checkbox"/>
• Jaundice, hepatitis, kidney failure	___	<input type="checkbox"/>
• Use of anticoagulants	___	<input type="checkbox"/>

Systolic/Diastolic Blood Pressure

Right arm ____/____ mmHg Left Arm ____/____ mmHg

III. High-Risk Indications for transport to Specialized Center: If **any** of the following is present, consider direct transport to a center with immediate catheterization and cardiac surgical support capable of angiography and revascularization:

- Heart rate >100 bpm and Systolic Blood Pressure <100 mm Hg, **OR**
- Pulmonary edema (rales \geq 1/2 way up), **OR**
- Signs of Shock

Completed by: _____
Paramedic Signature

Printed name: _____

Date: _____

***For any questions regarding specific elements, always contact BioTel**

Endotracheal Tube Placement Check-Off

City _____

Code / Name: _____ MICU: _____ Incident: _____ Date: _____ Time: _____

This form will be completed when an oral or nasal endotracheal (ET) tube or alternate airway is inserted. The checklist includes the methods that the paramedic is REQUIRED to use in the BioTel EMS System to confirm that the ET tube is correctly placed in the trachea.

Yes	No	N/A	CRITERIA
			AGE: _____ SEX (Circle one): M F
			Visualized that the ET tube passed through the vocal cords (if oral intubation); noting cords above the ET tube balloon
			In nasotracheal intubation, patient spontaneously breathed through the tube after mouth and nares closed off (recognizing, however, that the ET tube may still be sitting near the entrance of the vocal cords)
			Noted ET tube depth marking _____ cm at front teeth (in oral intubation)
			OR
			Noted Nasal ET tube depth marking _____ cm at nasal opening (in nasal intubation)
			Absence of epigastric sounds upon delivery of first ventilation
			Auscultated bilateral breath sounds (below clavicles first)
			Visualized equal, bilateral rise and fall of the chest wall
			Applied a cervical collar on the patient to minimize movement of the ET tube
			Taped/secured ET tube in place, ensuring same depth of original front teeth marking
			OR
			Taped/secured Nasal tube in place, ensuring same depth of original nasal opening marking
			Re-assessed ET tube placement after securing tube, after any patient movement, or after possible ET movement
			Bulb or syringe (Esophageal Detection Device) showed free flow of air
			Capnography reading was appropriate for tracheal placement (rise and fall after 5 breaths) Capnography reading <i>PEAK</i> : _____ <i>AFTER 5 MINS</i> : _____
			Pulse oximeter showed good saturation (>95% on 100% oxygen) in patients with full circulation. Pulse oximeter reading <i>POST INTUBATION</i> : _____ %
			Alternate Airway used: ___ Combitube ___ LMA ___ Other _____

COMMENTS: _____

Paramedics involved in the intubation procedure:

			Success (Circle one)	
Name	Employee #	# of Attempts	Y	N
_____	_____	_____	Y	N
_____	_____	_____	Y	N
_____	_____	_____	Y	N

Medical Director Reviewed: _____

UTSW / BIOTEL EMS SYSTEM

Termination of Field Resuscitation Non-Traumatic Resuscitation

DEFINITION: The protocol for a termination of resuscitation efforts in the out-of- hospital setting will apply to the **ADULT** patient who experiences a non- traumatic cardiac arrest and meets the specific criteria indicating futility for further resuscitation efforts.

INCLUSION CRITERIA:

The paramedic at the scene may initiate the policy to terminate field resuscitation efforts based on the following criteria:

1. Patients will be an adult (≥ 18 years old).
2. Patients must have had a presumed primary cardiac arrest (i.e., the arrest is **NOT** associated with hypothermia, hyperthermia, drug overdose, toxicological exposures, airway obstruction, or electrocution).
3. Patients should have an appropriately placed endotracheal tube (confirmed by methods discussed in *Airway Management* in the EMS Protocols), patent IV access and have advanced life support (ALS) measures applied throughout initial resuscitation effort.
4. On-scene resuscitation efforts by paramedics will be sustained for a minimum of 20 minutes regardless of previous CPR time and the arrest interval. Time begins with paramedic initiation of ALS (IV, ETT) care.
5. In the event a patient has an arrest in the presence of EMS personnel, the time of on-scene advanced resuscitation efforts by paramedics will be extended to 30 minutes.

EXCLUSION CRITERIA:

Resuscitation efforts will **NOT** be terminated on-scene if the patient meets the following exclusion criteria:

1. Patients is < 18 years old
2. Patient is visibly pregnant (> 20 weeks)
3. The patient whose cardiac arrest **MAY BE** associated with hypothermia, hyperthermia, drug overdose, toxicological exposures, airway obstruction, or electrocution).
4. Patient is in a crowded public place (excluding nursing homes, etc).
5. Scene situations place the EMS personnel in jeopardy.
6. Family member conflict and/or inability to communicate with family.
7. The patient who has persistent pulseless ventricular fibrillation (VF), ventricular tachycardia (VT), any narrow complex or any organized complex at a rate of ≥ 40 .
8. The patient who demonstrates any neurological signs (i.e. spontaneous eye or body movement)
9. If the patient has had a return of spontaneous pulse (even a transient pulse) and then reverts back to a pulseless rhythm, the time begins again for an additional 20 minutes.

GUIDELINES:

1. If a patient remains unresponsive to ALS resuscitation measures after 10 minutes and meets Section 1, 2, and 3 of the Inclusion Criteria, BioTel will be contacted.
2. The paramedic on scene will discuss the situation with the BioTel physician.
3. The BioTel physician may then give permission to terminate the resuscitation effort and pronounce the patient dead, assuming there is no further response. Land-line conversation between physician and family members is an option (do not use the radio).
4. During the initial resuscitative effort, EMS personnel or appropriate fire/rescue personnel will apprise the family of the progress of the resuscitative efforts (or lack thereof) and will begin to advise the family of the on-line medical direction and eventually the recommendation to terminate efforts if there is no further response to treatment.
5. After a full disclosure of resuscitation efforts and possible termination procedure, if any family member or responsible party indicates their objection to termination of resuscitation efforts, the resuscitation will continue until care is assumed by the receiving emergency department physician. As usual, EMS personnel will take EMS and community safety into consideration during transport.
6. Upon termination of the resuscitation effort, EMS personnel shall tie off any established intravenous lines (IV) and remove the IV fluid bag. DO NOT remove the IV catheter from the site or the endotracheal tubes (ETT) from the oral or nasal orifice.
7. EMS personnel or designee will contact the dispatch center for notification of the Medical Examiner (ME) and/or chaplain (if applicable according to local fire department standards). Management of scene will be according to locally established protocols.
8. At all times, the EMS personnel will be attentive to the social and psychological support needs of the survivors (e.g. family, friends, witness) and provide support as needed.

NOTE: *it is generally recommended that a decision be made to either transport or cease resuscitation once ALS efforts have persisted for 20 minutes (**EXCEPTION: PERSISTENT V-FIB**). Transport may be initiated sooner if logistics or scene situations warrant the movement of the patient.*

DOCUMENTATION:

Information surrounding the events of the resuscitative efforts and the time of death will be properly recorded on the EMS run form. Documentation should include but not limited to:

- patient demographics
- medical condition of the patient (history, medications, allergies)
- treatment rendered
- response to treatment
- scene situation, including family response to event
- witness(s) on scene
- time of pronouncement by physician
- pronouncing physician's name
- paramedic names

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Intraosseous Infusion for Pediatric Patients

INDICATIONS:

Children \leq 5yrs - in shock, cardiac arrest, unconscious or unresponsive to verbal stimuli and:

- unconscious or seriously ill with immediate need for venous access to administer fluids or drugs when 1 or 2 attempts at peripheral venipuncture have been unsuccessful within 90 seconds.
- Go immediately to an IO if peripheral veins are **NOT** readily obtainable in the unconscious seriously ill or injured pediatric patient.

CONTRAINDICATIONS:

1. Multiple bone fractures of that extremity.
2. Osteomyelitis.
3. Bony lesion at site.

TECHNIQUE:

1. Identify landmarks and prep insertion site with iodine or alcohol solution. Site for insertion:
 - Proximal tibia approximately 1 finger width below the tibial tuberosity and 1 finger width medial over the flat part of the anteromedial tibia.
 - Two finger widths above the medial malleolus over the anteromedial aspect of the distal tibia.
2. For insertion into the proximal tibia, insert the aspiration needle at a 45-degree angle in the midline directed distally, so as to not affect the growth plate.
3. Insert using a twisting motion into the bone until you feel a pop.
4. Remove the stylet and confirm placement by aspirating bone marrow using a 10-cc syringe.
5. Try infusing 5 ml of saline with the syringe.
6. Detach syringe and connect IV tubing and begin infusion.
7. Secure in position with tape.

COMPLICATIONS:

1. Bone fracture.
2. Injury to the growth plate if improper insertion.
3. Possible infiltration.
4. Local abscess or cellulitis.

Note: Improper insertion can occur by not going deep enough (approx. 1 cm) to actually enter the marrow cavity.

MATERIALS:

1. Alcohol and Iodine Preps.
2. IV Infusion Set.
3. Intraosseous Aspiration Needle.
4. 10 CC Syringe for aspirating bone marrow and flushing site.

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Chest Needle Decompression

SIGNS / SYMPTOMS:

- Decreased ability to ventilate
- Marked distention of jugular veins
- Breath sounds are diminished on affected side
- Increased tympany on affected side
- Tracheal deviation (late sign)

PROCEDURE:

1. Locate landmarks for needles insertion – 2nd intercostal space (between 2nd & 3rd ribs) at the midclavicular line on the affected side.
2. Insert needle at a 90 degree angle to the chest wall at the superior border of the 3rd rib.
3. Advance and confirm the location of the needle in the pleural space:
 - a. Feel a “POP” and a giving way sensation of the needle
 - b. Obtained a sudden rush of air into syringe by aspiration or free movement
4. Advance catheter into space off the trochar until hub is flush with skin.
5. Assess breath sounds for improvement.
6. Document patient response to intervention.

UTSW / BIOTEL EMS SYSTEM

How to interpret a 12 Lead ECG

PURPOSE: To provide steps to interpret a 12 lead ECG quick and efficiently

PROCESS:

1. Identify rate and rhythm
2. Look for grouped Lead S-T segment elevation or depression as discussed in the chart below. Remember that ST segment elevation is found in groupings in the 12 lead, based upon where the positive pole of the ECG is located. Also, remember that when one group shows ST elevation, you may see “reciprocal depression” in the other leads. You MAY find ST segment elevation in more than one group at a time, such as in myocardial infarctions that involve more than one “wall” (antero-lateral, infero-lateral, etc.)

12 lead ECG Lead Groupings	Interpretation
Elevated (↑) ST segment in II, III, and aVF (May have reciprocal depression in other leads)	<i>Inferior MI</i>
Elevated (↑) ST segment in I, aVL & V6 (May have reciprocal depression in other leads)	<i>Lateral MI</i>
Elevated (↑) ST segment in V1, V2, V3, V4 (May have reciprocal depression in other leads)	<i>Anterior MI</i>

3. If Inferior MI present, you may perform V4R:
 - a. Remove V1 & V2
 - b. Move V4 to V4 on RIGHT side of chest
 - c. Press “12 Lead” button TWICE
 - d. Look for ST segment elevation in V4R of ≥ 1 mm
 - e. Notify BioTel of this finding and ask for further orders
4. Make rough estimate of axis (remember that leads I and aVF should have upright R waves to be a normal axis):

Axis	Interpretation
Positive QRS in I and positive QRS in aVF	<i>Normal</i>
Positive QRS in I and negative QRS in aVF (often found in people with a history of hypertension)	<i>Left Axis Deviation</i>
Negative QRS in I and positive QRS in aVF (often found in people with a history of right heart failure, COPD)	<i>Right Axis Deviation</i>
Negative QRS in I and negative QRS in aVF (uncommon, but found in both extreme right and extreme left axis deviation)	<i>Indeterminate</i>