700

EMERGENCY MEDICAL SERVICES

TREATMENT PROTOCOLS

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Signed

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GENERAL INFORMATION
701.1: INTRODUCTION TO PLANO FIRE DEPARTMENT EMS TREATMENT PROTOCOLS

These protocols are written to direct and assist Plano Fire Department paramedics in providing the highest standard of out-of-hospital emergency medical care. Standing orders within the protocols are meant to direct patient care prior to reporting and consulting with an on-line medical control (OLMC) physician. Standing orders shall be carried out in a respective protocol unless a contraindication to the action(s) exists. Plano Fire Department paramedics may consult with an OLMC physician prior to the completion of standing orders if in doubt as to which set of standing orders should be followed or as patient condition may otherwise dictate. Furthermore, Plano Fire Department paramedics may consult with an OLMC physician at any time in the course of patient treatment if in the best interest of the patient. In some circumstances within these protocols, Plano Fire Department paramedics are specifically directed to report and consult with an OLMC physician before certain medications and/or interventions may be administered. These directives are to be uniformly followed.

As with all endeavors of providing excellent patient care, these protocols and accompanying instruction are subject to continued revision input from all appropriate parties.
701.2: SCOPE OF PRACTICE

EMT-Basic/EMT-Intermediate

- Patient Assessment
- CPR (including by AutoPulse)
- Oxygen administration (including by BVM)
- Suctioning
- Oro/nasopharyngeal airways
- Automated External Defibrillator
- Bandaging/Splinting (including Traction splinting)
- Spinal Immobilization
- Vaginal birth delivery
- Physical Restraint
- Epinephrine Auto-Injector administration (assisting pt with pt's own)
- Bronchodilator administration (assisting pt with pt's own)
- Glucometer (Blood sample must be obtained by EMT-Paramedic)
- Nerve Agent Antidote (Atropine, Pralidoxime Chloride, Diazepam) Auto-Injector administration

EMT-Paramedic

- All of the above skills plus:
- Endotracheal intubation (nasal and oral)
- Combitube placement
- Airway Foreign Body Removal by Magill forceps
- CPAP Administration
- Percutaneous & Incision-Assisted Percutaneous Cricothyotomy
- Defibrillation
- Cardioversion
- Transcutaneous Pacing
- Vagal Maneuvers
- ECG Interpretation
- Medication Administration by the following routes:
  - Intravenous: Intraosseous; Subcutaneous; Intramuscular; Endotracheally;
  - Nebulization; Inhaled; Sublingual; Oral; Ocular
- Peripheral Intravenous Access (including External Jugular)
- Needle Thoracostomy
- Umbilical Vein Cannulation
- Single attempt to reduce dislocated/fractured extremity with absent distal pulse.
- Chemical Restraint
701.3: GENERAL INSTRUCTIONS REGARDING ALL PROTOCOLS:

Protocols may be in flow chart or list format. When referring to a specific protocol, all formats and any additional text contained under that protocol heading should be considered a part of that protocol.

Throughout the course of patient assessment and treatment, uniform compliance with universal blood and body fluid precautions is mandated. Federal laws require this proper management of patients such that the patient and the provider(s) are protected from undue exposure to communicable diseases.

Scene times should be kept to the minimum, particularly in trauma patients. While most protocols will contain directions to transport the patient towards the end of the protocol, transport should begin as soon as possible after primary assessment of the patient and, as indicated, performance of immediate airway, respiratory, or cardiac interventions. Trauma patients should be appropriately immobilized prior to transport. One exception to absolute minimum scene times is the case of the non-traumatic cardiopulmonary arrest victim. Immediate and maximum efforts will usually be necessary prior to rapid transport in order to best achieve stable cardiac rhythms.

These protocols are only authorized for use by the Plano Fire Department EMS personnel approved by the EMS Medical Director. Further, these protocols are only authorized for use during the performance of medical treatment while such personnel are on duty representing the Plano Fire Department.
701.4. RADIO REPORT GUIDELINES

The goal of communication between the paramedic in the field and the OLMC physician at the hospital is for both to have a clear mental picture of the patient, the circumstances, the nature of the problem, the patient’s response to therapy so far and especially what therapy is needed/requested next. Plano Fire department paramedics should contact the OLMC physician whenever they need assistance in providing proper medical care to the patient. Radio contact with the OLMC Physician should be initiated when directed by the respective treatment protocol, when standing orders do not cover the patient’s illness, injury, and/or circumstance, or when the paramedic has any questions or concern about the patient.

In order to be clear, concise, and consistent, radio reports should consist of the following items and be delivered in the following order:

1) Identification of the unit and personnel involved.
2) Destination, Priority/Code, and ETA
3) Requested orders or areas to be clarified by the OLMC physician
4) Age and sex of the patient; approximate weight should also be reported for children or for other cases where weight-based medications are used
5) Patient’s chief complaint
6) A BRIEF history of present illness/injury
7) A BRIEF pertinent past medical history (including medications and allergies if applicable)
8) Level of consciousness and vital signs (including pulse, blood pressure, respiratory rate and pulse oximetry)
   NOTE: level of consciousness should be reported using standard terminology:
   Patient is ALERT
   Patient responds to VERBAL stimuli
   Patient responds to PAINFUL stimuli
   Patient is UNRESPONSIVE
9) For any patient with altered level of consciousness, report the Glasgow Coma Scale Score

Special Circumstances:

For radio reports concerning trauma victims:

   Include the mechanism of injury as the history of present illness
   Report level of consciousness as Glasgow Coma Scale Score

For radio reports concerning cardiac arrest victims:

   State that the patient is in cardiac arrest immediately after identifying the unit and personnel involved.
   Provide initial rhythm as part of the chief complaint.
   Summarize therapy (medications and defibrillations) administered so far.
   State current rhythm and requested orders or areas to be clarified.
1. The primary determinant of transport mode should be getting the patient to the most appropriate hospital in the shortest amount of time.

2. Utilizing incident information obtained from Public Safety Communications, the Officer-In-Charge (OIC) may elect to direct Public Safety Communications to place an aeromedical crew on “standby” for possible response to the incident. The final decision to request an aeromedical crew to be placed on “standby” status rests with the OIC.

3. The decision to activate a helicopter response should be made based upon initial patient assessment, mechanism(s) of injury, anticipated scene time, and anticipated ground transport time to an appropriate hospital. Helicopters should not be activated until a paramedic has initially assessed the patient. The final decision to activate a helicopter response rests with the OIC.

4. Utilize the red and blue criteria on the Helicopter Activation Card (see 701.5 pg 2) to determine if helicopter activation is in the best interest of the patient, if uncertain, contact the OLMC physician for consultation and determination of transport mode and destination.

5. If uncertain whether helicopter activation is in the best interest of the patient, contact the OLMC physician for consultation and determination of transport mode and destination.

6. If the estimated time of helicopter arrival to the landing area exceeds 15 minutes beyond the time of estimated patient disentanglement / extrication, the helicopter should be canceled and the patient should be transported by ground to the nearest appropriate hospital emergency department.

7. Once a helicopter is responding to the scene, it is generally unwise to cancel that response. The paramedic should avoid requesting a helicopter response, canceling the response, and then having to request the helicopter again. Such situations prolong scene times and helicopter response times in addition to conveying indecisive patient management.

8. Helicopters should not be activated for traumatic arrest or non-traumatic cardiac arrest patients. Patients in cardiac arrest should be transported to the nearest appropriate hospital for stabilization prior to additional transport.

9. Transport destination is at the discretion of the helicopter flight crew. Trauma flight destination should be a Level I or II trauma hospital.
PEDI TRAUMA PATIENT < 13 years of age
HELICOPTER ACTIVATION = 1 RED or 2 BLUE Criteria

ONE OR MORE RED CRITERIA
- Intubation required
- Deep penetrating injury to head, neck, torso or proximal to elbow or knee
- Suspected spinal cord injury (paralysis, sensory loss)
- Amputation proximal to wrist or ankle
- ≥ 10% TBSA 2nd / 3rd degree burns
- Pulseless injured extremity
- Flail chest
- ≥ 2 proximal long bone fractures
- Pelvic fracture
- Open or depressed skull fracture

TWO OR MORE BLUE CRITERIA
- GCS < 14 due to trauma
- Reliable loss of consciousness > 5 minutes
- Sustained respiratory rate ≥ 40/min
- Sustained heart rate ≥ 150/min
- Systolic BP < 70+(2 x age in years) mm Hg

ADULT TRAUMA PATIENT ≥ 13 years of age
HELICOPTER ACTIVATION = 1 RED or 2 BLUE Criteria

ONE OR MORE RED CRITERIA
- Amputation proximal to wrist or ankle
- ≥ 20% BSA 2nd / 3rd degree burns
- Deep penetrating injury to head, neck, torso or proximal to elbow or knee
- Open or depressed skull fracture

TWO OR MORE BLUE CRITERIA
- GCS < 14 due to trauma
- Suspected spinal cord injury (paralysis, sensory loss)
- Intubation required
- Reliable loss of consciousness > 5 minutes
- Sustained respiratory rate ≥ 30/min
- Sustained heart rate ≥ 120/min
- Systolic BP < 90 mm Hg
- Flail chest
- ≥ 2 proximal long bone fractures
- Pelvic fracture
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GENERAL TREATMENT PROTOCOLS
702.1: GENERAL MEDICAL TREATMENT

The following will outline the approach to the General Medical Treatment of the adult patient in our EMS system. Refer also to the General Trauma Treatment and Pediatric Principles pages as appropriate:

Patients should be approached and assessed in ABC order:

1. **Airway Management**

   The passage of an endotracheal tube is the preferred definitive form of airway management in the field.

   Patients should be intubated for respiratory failure and for airway protection in cases of persistent altered mental status defined as a Glasgow Coma Scale Score < 8. Note that these indications are independent of respiratory rate, spontaneous effort, or pulse oximetry readings.

   See also the Airway Management protocol as well as protocols for BVM assisted ventilation, Confirmation of Endotracheal Intubation, Nasotracheal Intubation, Combitube and Cricothyrotomy.

2. **Breathing**

   Expose the chest as required. Note rate, depth and pattern of respirations and degree of respiratory distress or effort. Obtain pulse oximetry reading on all patients. Auscultate breath sounds bilaterally.

   Administer oxygen as needed to ease pain and/or respiratory distress and/or titrate to pulse oximetry of at least 90% as appropriate.

   Patients with a history of COPD may need supplemental oxygen based on their chief complaint, history and assessment. Such patients should receive the lowest concentration of oxygen that corrects their dyspnea & achieves a pulse oximetry reading > 90%, since excess oxygen may depress their respiratory drive. Patients with mild COPD exacerbation may be given oxygen initially by nasal cannula and reassessed closely for improvement. However, oxygen should never be withheld for fear of depressing respirations. Instead monitor such patients closely and be prepared to assist ventilations/intubate as necessary.

   See also the Acute Dyspnea protocol as well as protocols for BVM assisted ventilation, Capnography, and Continuous Positive Airway Pressure (CPAP).

3. **Circulation**

   The adequacy of a patient's circulation is best assessed first by assessing their level of consciousness and mental status. Next assess the location, rate and character of the patient's pulse. Then check a blood pressure and apply the cardiac monitor.

   Treat identified deficiencies in circulation via the Non-traumatic Shock protocol as appropriate. If the etiology of circulatory failure is primarily cardiac in origin, treat in this order - Rate - Rhythm - Blood Pressure.

   See also the Bradycardia, Tachycardia, and Unstable Tachycardia protocols.

   Cardiac Arrest is an exception. Aggressively search for and treat VF and pulseless VT in these patients. The usual ABC order is NOT followed in such patients.
Intravenous Fluids

Normal Saline is an appropriate fluid for most patients. Patients generally require either an IV to keep open (30-60 microdrips/min or 10-15 drops/min) or volume resuscitation. Volume resuscitation is generally best provided via 250-500cc bolus followed by frequent reevaluation. Refer to specific protocols where indicated.

Intraosseous Medication/Fluid Administration

Intraosseous access in the adult medical patient is warranted when a critical condition exists, the condition will rapidly worsen without medication and/or fluid administration, and intravenous access proves unsuccessful after 2 IV attempts in at least 90 seconds. See also the Intraosseous Access Protocol.

After addressing the ABCs and any other life-threatening conditions, complete the assessment of the patient. This includes obtaining a history, physical exam, and a complete set of vital signs.

Next continue to assess and treat the patient based on the appropriate protocol(s) and standing order(s).

Contact the OLMC physician for all non-standing order interventions and for any questions or problems. Contact the OLMC physician anytime in the patient's course that you feel uncomfortable or need guidance. Do not hesitate to call the physician even for interventions that are available by standing orders if you need their help. When in doubt, contact the OLMC physician.

Transport medical patients in the position of comfort. Reassess patients frequently. Vital signs and reassessment should be performed at least every five minutes in unstable patients.
702.2 GENERAL TRAUMA TREATMENT

Before entering any trauma scene, ensure your personal safety. Do not attempt patient contact until hazards can be appropriately mitigated. In addition to scene safety, consider mechanisms of injury, number of patients, and special equipment/extrication needs.

All trauma patients should be assessed utilizing primary, secondary, and reassessment surveys as outlined below.

The primary survey is to be conducted on all trauma patients. It is designed to rapidly identify life-threatening or potentially life threatening injuries. The primary survey should be completed within 2 minutes of patient contact. THE PRIMARY SURVEY IS ONLY INTERRUPTED FOR AIRWAY OBSTRUCTION OR RESPIRATORY/CARDIAC ARREST.

The following are the steps of the primary survey:

1) manually control the c-spine while assessing the airway and level of consciousness
2) evaluate breathing – present? rapid? normal? slow? shallow?
3) evaluate circulation – carotid and radial pulses? Control external hemorrhage.
4) exam the head for deformity, contusions, abrasions, penetrations, burns, lacerations, or swelling.
5) exam the neck for deformity, abrasions, penetrations, contusion, swelling, subcutaneous emphysema, burns, lacerations, or swelling.
6) exam the chest for deformity, contusions, abrasions, penetrations, paradoxical movement, burns, lacerations, or swelling (DCAPP-BLS)
7) auscultate the chest for breath sounds in the mid-axilla bilaterally – present? equal?
8) exam the abdomen and pelvis for DCAPP-BLS
9) exam the extremities for pulse, movement, sensation and stop active bleeding

Primary survey interventions include airway management (see airway management protocol), sealing open chest wounds, needle thoracostomy for tension pneumothorax (see needle thoracostomy protocol), oxygen administration and controlling any obvious external hemorrhage. Remember to expose the patient to conduct an appropriate exam.

Any trauma patient with altered LOC, abnormal respiration, abnormal circulation, or signs of conditions likely to lead to shock (distended abdomen, pelvic instability, bilateral femur fractures) should be rapidly immobilized and transported after completing the primary survey. These are “LOAD & GO” patients.

The secondary survey is always done enroute on critical patients. If no critical conditions are found in the primary survey, the secondary survey may be conducted on the scene and should be completed within 5 minutes after the primary survey is completed.

The following are the steps of the secondary survey:

1) obtain vital signs (pulse, respiratory rate, blood pressure, pulse oximetry)
2) obtain history of traumatic event and pertinent patient medical history (allergies, medications, past injury/illness, last oral intake)
3) head to toe exam – look for DCAP-BLS in every body area, GCS score
4) perform indicated bandaging and splinting
The **reassessment survey** is an abbreviated exam after interventions and done at least every five minutes for critical patients. To conduct a reassessment survey, do a repeat primary survey and include repeat vital signs and GCS scores and check every intervention to ensure proper placement of intubation, IV, etc and the results of the interventions (improved respirations, improved blood pressure, etc.).

Unless the traumatic event is extremely minor in estimated force and apparent injury, all trauma patients should receive 100% oxygen.

In the critical trauma patient, nearly all interventions should be performed enroute. Exceptions include airway management and spinal immobilization. **Intravenous fluid administration** in the trauma patient should be guided by the patient's systolic blood pressure. All patients with significant or multi-system trauma should have two large-bore IVs initiated. Patients with minor trauma should have one, and preferably large-bore, IV initiated. These IVs are to be run at TKO rate unless the patient's systolic blood pressure is <90mmHg. For patients with traumatic shock (sys B/P <90mmHg and pulse >120 bpm) run the IVs wide open until a 500cc bolus is given and recheck the blood pressure. If the systolic pressure is now 90mmHg or greater slow the IVs to TKO and recheck the blood pressure no later than 5 minutes. If the pressure still remains less than 90mmHg, initiate a second 500cc bolus and contact the on-line medical control physician.

**Intraosseous fluid administration** in the traumatic shock patient (sys B/P <90mmHg and pulse >120 bpm) is indicated if intravenous access proves unsuccessful after 2 IV attempts in at least 90 seconds. Due to the increased intraosseous resistance to rapid fluid administration, do not anticipate being able to deliver more than 250-500cc of normal saline in the field. Ensure that any intraosseous fluid bolusing is optimized by utilizing a pressure infusor set at 300mmHg on the intravenous fluid bag. Readjust the pressure infusor cuff to maintain a pressure at 300mmHg as fluid is infused. See also Intraosseous Access Protocol.

Remember that nearly all traumatic shock is hypovolemic, hemorrhagic in nature. Internal hemorrhage cannot be controlled in the field. These patients should be rapidly transported to an appropriate hospital to allow quicker surgical and definitive hemorrhage control.

The **SAM sling** may be applied for pelvic fractures.

The **XP-1** (or similar spinal immobilization device) should be utilized in moving seated patients for long backboard spinal immobilization in patients indicating significant neck and/or back pain or any other significant indication of probable spinal injury due to an acute traumatic injury mechanism leading to a heightened index of suspicion that the patient has a spinal injury.

**Sucking chest wounds** should be covered with either Vaseline gauze or a defibrillation pad. Reassess frequently for developing tension pneumothorax. If tension pneumothorax is suspected, briefly remove the gauze or pad to allow air escape.

**Impaled objects** should be stabilized in place. The exception to this is impaled objects through the cheek or objects causing significant airway compromise.

**Eviscerations** should be covered with sterile saline damp dressings and if available, foil or plastic cover should be applied over the dressings and taped to the abdomen to minimize contamination and control heat loss. Do not reduce eviscerated contents into the abdomen.

**Scene times** for “LOAD & GO” patients should be 10 minutes or less, unless extenuating circumstances are present (multiple casualty incident, extrication). Reasons for delayed scene time should be clearly documented on the patient report.
Transportation destination of the major trauma patient is dependent upon extent of traumatic injury, scene location in relation to hospitals and traffic flow, weather conditions, and lastly and leastly patient preference. In the setting of minor trauma, patient preference should be a primary factor in determining the destination hospital.

The North Central Texas Trauma Regional Advisory Council recommends that the following patients be transported to an appropriate trauma facility. Appropriate trauma facilities by ground transport are Medical Center of Plano, Presbyterian Hospital of Plano, Centennial Medical Center and Baylor Regional Medical Center at Plano.

- Multi-system blunt trauma with unstable vital signs (sys B/P <90mmHg, pulse>120, GCS < 14)
- Penetrating injury to the head, neck, chest, or abdomen
- Paralysis or other signs of spinal cord injury
- Flail chest
- Open or suspected depressed skull fracture
- Unstable pelvis/suspected pelvic fracture
- Two or more long bone fractures
- High energy injuries such as falls >10 feet high, ejection from a vehicle, death of another person in the vehicle, rollover mechanism of injury, bent steering wheel, auto-pedestrian impact, motorcycle or bicycle collisions, significant intentional injury.

Refer to the helicopter transport protocol as well. For helicopter activated trauma patients requiring intubation that cannot be rapidly achieved or are hypotensive (sys <90 mm hg) secondary to blood loss requiring blood transfusion, rapidly transport to closest emergency department (MCP, PHOP, Centennial or Baylor Plano) capable of this required stabilization if a helicopter cannot be on scene in < 15 minutes.

In general any trauma patient may be safely transported to the closest local emergency department for evaluation, stabilization and subsequent disposition with the following exceptions:

- Otherwise directed by the on-line medical control physician.
- Only isolated extremity trauma in adults (> 18 years of age) may be transported to Richardson Regional Medical Center. If any doubt exists to the possibility of other trauma, the patient is to be transported to a more appropriate emergency department for those suspected injuries.
- Amputations proximal to the finger or toe tip should be transported to Parkland Hospital
- Trauma with pregnancies will not be transported to Baylor Regional Medical Center at Plano
- Burns of the following extent, location, and/or severity should be transported to Parkland Hospital:
  - >20% 2nd & 3rd degree in an adult,
  - >10% 2nd and 3rd degree in a child (<13 yrs of age) or adult >65 yrs of age,
  - 3rd degree >5%,
  - extensive burns to face, hands, feet, genitalia, or circumferential extremity burns.

- No major trauma patient will be transported to Presbyterian Hospital of Allen. Minor trauma patients without significant mechanisms of injury and without apparent fractures or other internal injuries may be transported to Presbyterian Hospital of Allen by Patient preference.
702.3: DO NOT RESUSCITATE GUIDELINES

1. As long as there is any possibility of survival every effort should be made to resuscitate the patient and transport them to the hospital.

2. Resuscitation should not be attempted in cases of:

   Decapitation
   Decomposition
   Dependent Lividity
   Injury incompatible with life and patient is apneic & pulseless (Such as visually massive brain or cardiac injury)
   Rigor Mortis

3. If a patient presents with a complete Texas Department of Health DNR form or approved identification device:

   Cease or withhold BVM assisted ventilations, intubation, defibrillation, CPR, and antiarrhythmic medications.
   Provide all other appropriate care, in accordance with applicable protocols and procedures.
   Contact the OLMC Physician for release from further resuscitation.

   A DNR order from the patient's physician physically present at the scene will be honored in the event of a respiratory or cardiac arrest.

   Contact the OLMC Physician for all cases involving:

   Out of state DNR orders
   Unclear DNR orders
   Scene disputes
   Physician issuing the order is not the patient's personal physician
   Blunt traumatic cardiac arrest with initial rhythm of asystole.

   A medic's action should not be changed by a Living Will described or produced by the family or bystanders.

   Any time there are questions, problems or concerns regarding a DNR order, begin basic CPR and contact the OLMC Physician as soon as possible.
1. **Airway**

Position the patient on their back with the head in a neutral position. Avoid flexion or overextension.

Suction the mouth and then each nostril with a bulb syringe. Suction only for 5 seconds at a time. Suction meconium through an endotracheal tube using a meconium aspirator.

Dry the patient and stimulate them as needed by flicking the soles of the feet or rubbing the back.

2. **Breathing**

Ventilate for:
- Apnea/Bradypnea (<30 Breaths Per Minute)
- Bradycardia (<100 BPM)
- Central cyanosis unresponsive to 100% oxygen

Use small tidal volumes and a rate of 30 breaths per minute.

Intubate for:
- Ineffective BVM ventilation
- When prolonged ventilation is needed
- To suction meconium

**Tube sizes:**
- Premie 2.5mm
- Term 3.0-3.5mm

3. **Circulation**

Perform chest compressions for profound bradycardia (<60 BPM)

Encircle the thorax with both hands, compressing the mid-sternum with both thumbs to a depth of approximately 1/3 of the anterior-posterior diameter. Compressions should be done in a 3:1 ratio to ventilations for a total of 120 events/minute (90 compressions: 30 ventilations)

Drug therapy is rarely needed, but the dose of epinephrine is 0.01mg/kg IVP. In the newborn, drugs should be delivered via the umbilical vein. Refer to the umbilical vein cannulation protocol.
702.5: PEDIATRIC GUIDELINES

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

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.

<table>
<thead>
<tr>
<th>AGE</th>
<th>HEART RATE (BPM)</th>
<th>RESP. RATE (BPM)</th>
<th>SYSTOLIC BP (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premature</td>
<td>100-190</td>
<td>40-60</td>
<td></td>
</tr>
<tr>
<td>Neonate</td>
<td>90-190</td>
<td>30-60</td>
<td>50-70</td>
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<tr>
<td>6 months</td>
<td>80-180</td>
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<td>1 year</td>
<td>80-150</td>
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<td>3-4 years</td>
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<td>7-8 years</td>
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<tr>
<td>11-12 years</td>
<td>60-110</td>
<td>15-20</td>
<td>95-135</td>
</tr>
</tbody>
</table>

The average normal systolic BP can also be estimated by: 80 + (2 x age) in years. Lower limits of normal systolic BP can also be estimated by: 70 + (2 x age) in years.

2. Pediatric respiratory distress may look just like respiratory distress in adults, but may also present as:
   * slow respirations
   * accessory muscle use
   * mottling
   * stridor
   * nasal flaring
   * tachypnea
   * grunting
   * cyanosis
   * retraction
   * decreased breath sounds
   * pale appearance

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
   * pale/cool/mottled skin
   * capillary refill > 2 seconds
   * narrowing pulse pressure
   * tachypnea

4. Use of the Broslow 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: (age + 16)/4 or by using a tube the diameter 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.

6. The following table can be used to calculate Glasgow Coma Scale scores in pediatric patients ages 4 and under. After age 4, Glasgow Coma Scale scores should be able to be calculated using the standard adult table.
Pediatric Glasgow Coma Scale Scores

<table>
<thead>
<tr>
<th>Points*</th>
<th>Best eye</th>
<th>Best verbal</th>
<th>Best Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>--</td>
<td>--</td>
<td>obeys</td>
</tr>
<tr>
<td>5</td>
<td>--</td>
<td>smiles, oriented to sound, follows objects, interacts</td>
<td>localizes pain</td>
</tr>
<tr>
<td>4</td>
<td>spontaneous</td>
<td>Crying</td>
<td>inappropriate</td>
</tr>
<tr>
<td>3</td>
<td>to speech</td>
<td>consolable</td>
<td>moaning</td>
</tr>
<tr>
<td>2</td>
<td>to pain</td>
<td>inconsolable</td>
<td>restless</td>
</tr>
<tr>
<td>1</td>
<td>none</td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

* Range of total points: 3 (worst) to 15 (normal)

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 patient is:
   a. Under 1 month of age and heart rate < 60 after 30 seconds of ventilation with supplemental oxygen.
   b. 1 month - 1 year of age if heart rate < 60 after 30 seconds of ventilation with supplemental oxygen.
   c. 1 year - 12 years of age if no spontaneous pulse.

4. CPR in the infant (>1 day to 1 year of age) & in the child (1-12 year of age) should be performed as follows:
   b. After advanced airway placement 100 - compressions per minute & 8-10 ventilations per minute without pausing compressions for these ventilations.

5. Although VF is unusual, when present, defibrillate at 2 joules/kg initially and repeat at 4 joules/kg. for all subsequent defibrillation.

6. Synchronized cardioversion for unstable, hemodynamically unstable tachycardia > 180 beats per minute should be performed using the following energy settings: 0.5 joules/kg. initially followed by 1 joule/kg. & 2 joules/kg. as needed.

7. TCP is not usually needed, but when necessary, place the pads anterior/posterior and contact the OLMC physician for settings.

8. Asystole is the most common rhythm in pediatric cardiac arrest. The dose of epinephrine 1:10,000 is 0.01mg/kg IVP/1OP. The dose of atropine is 0.02mg/kg IVP/1OP with a minimum dose of 0.1mg to prevent paradoxical increased vagal/parasympathic tone prolonging asystole. Vasopressin is not currently indicated for treatment of pediatric cardiac arrest.
TRAUMA

1. Minimal on-scene time is critical for the injured pediatric patient.

2. Mechanism of injury is critical in order to triage the pediatric trauma patient to the correct facility. The mechanism of injury must be taken into account even if the child appears stable on initial assessment.

The North Central Texas Trauma Regional Advisory Council recommends that the following patients be transported to an appropriate trauma facility. Appropriate trauma facilities by ground transport are Medical Center of Plano, Presbyterian Hospital of Plano, and Centennial Medical Center.

- Multi-system blunt trauma with unstable vital signs
  - \( \text{sys B/P} < 70 + (2 \times \text{age in years}, \text{pulse}>150 \text{ bpm, GCS} < 14) \)
- Penetrating injury to the head, neck, chest, or abdomen
- Paralysis or other signs of spinal cord injury
- Flail chest
- Open or suspected depressed skull fracture
- Unstable pelvis/suspected pelvic fracture
- Two or more long bone fractures
- High energy injuries such as falls >10 feet high, ejection from a vehicle, death of another person in the vehicle, rollover mechanism of injury, bent steering wheel, auto-pedestrian impact, motorcycle or bicycle collisions, significant intentional injury.

Refer to the helicopter transport protocol as well. For helicopter activated pediatric trauma patients requiring intubation that cannot be rapidly achieved or are hypotensive (\( \text{sys} < 70 + 2x \text{ age in years} \)) secondary to blood loss requiring blood transfusion, rapidly transport to closest emergency department (MCP, PHOP or Centennial) capable of this required stabilization if a helicopter cannot be on scene in < 15 minutes. In general any trauma patient may be safely transported to the closest local emergency department for evaluation, stabilization and subsequent disposition with the following exceptions:

- Otherwise directed by the on-line medical control physician.
- Pediatric trauma will not be transported to Richardson Regional Medical Center or Baylor Regional Medical Center at Plano
- Amputations proximal to the finger or toe tip should be transported to Children’s Medical Center of Dallas.
- Burns of the following extent, location, and/or severity should be transported to Parkland Hospital:
  - \( >20\% \ 2^\text{nd} \ 3^\text{rd} \degree \text{in an adult}, \)
  - \( >10\% \ 2^\text{nd} \ 3^\text{rd} \degree \text{in a child (<13 yrs of age) or adult >65 yrs of age,} \)
  - \( 3^\text{rd} \degree >5\%, \)
  - extensive burns to face, hands, feet, genitalia, or circumferential extremity burns.
- No major trauma patient will be transported to Presbyterian Hospital of Allen. Minor trauma patients without significant mechanisms of injury and without apparent fractures or other internal injuries may be transported to Presbyterian Hospital of Allen by parent/guardian preference.
FLUID THERAPY

1. Use a microdrip on patient < 70 lbs. for IVs; regular tubing for intraosseous (IO).

2. Intraosseous (IO) access is indicated as first line vascular access in respiratory or cardiac arrest. IO access is also indicated for shock, status epilepticus (unresponsive to rectal diazepam), unconscious or unresponsive to verbal stimuli and with an immediate need for venous access to administer fluids or drugs when 2 attempts at peripheral venipuncture have been unsuccessful within 90 seconds.

3. NS for initial pre-hospital fluid resuscitation is given at 20cc/kg then the patient should be reassessed. Contact the OLMC physician if the patient is still exhibiting signs of hypovolemia (tachycardia, delayed capillary refill, altered mental status).

STANDING ORDERS

Standing orders for pediatric patients are the same as those for adults (on protocols). Contact the OLMC physician for assistance anytime there are questions - even if the situation is covered by standing orders.
702.6: CONSENT/PATIENT REFUSAL

Patient Refusal of Care Against Medical Advise (AMA)

1. Competent adults are entitled to make decisions about their health care. They have the right to refuse medical care when they have been properly informed of the benefits, risks, and alternatives to the recommended care. This policy defines the mechanisms by which a patient who summoned an ambulance, or for whom such an ambulance was summoned, may refuse care and transport.

2. For the purpose of this policy, patients, legal representatives of patients (by legal custody or Durable Power of Attorney for Health Care) or parents of minor patients may refuse medical care if they are:

   A. Competent - able to understand the nature of potential injury/or illness and the consequences of refusing medical care and/or transportation to the hospital

   AND

   B. At least one of the following:
   1. Adult - 18 years of age or older
   2. An emancipated minor - defined as less than 18 years of age, but living away from parents or guardians and financially responsible for him/herself.
   3. A minor who is married
   4. A minor who is in the military

Pregnant minors must still have adult consent (unless the emergency medical care being requested or refused is directly related to the pregnancy) if they do not meet one of the above exceptions.

3. At no time may a spouse or relative who is not the legal representative of the patient make a decision to refuse evaluation, treatment, or transportation for the patient.

4. The following are considered NOT to be competent to make medical decisions:

   A. Any patient who presents with an altered level of consciousness or a history of altered level of consciousness within 6 hours of the call, including, but not limited to:
   1. Patients under the influence of drugs or alcohol.
   2. Patients with head injuries.

   B. Any patient who has attempted suicide or has threatened suicide (verbally or otherwise). This suicide attempt or threat must be recent and related to the call.

   C. Any patient who appears to be suffering from cerebral hypoxia from whatever cause (history of recent head injury, prolonged seizures, altered mental status of undetermined/untreated cause).

   D. Any adult patient with severely altered vital signs (pulse > 120; respiratory rate > 30 or < 8; pulse oximetry < 85% if history of chronic respiratory problems or < 90% if previously healthy; systolic blood pressure > 220 mmHg or < 90 mmHg). Any pediatric patient with severely altered vital signs (pulse > 160; respiratory rate >45 or < 12; pulse oximetry < 90%; systolic blood pressure > 140 mmHg or < 70+ {2 X age} in years). Any patient with hypoglycemia (blood sugar < 60mg/dl).
E. Any patient who makes largely irrational decisions in the presence of an obvious potentially life or limb threatening condition, including persons who are emotionally unstable.

F. Any patient under a psychiatric hold which has been invoked by a person authorized to invoke such a hold.

G. Any patient with a known mental retardation or deficiency to the degree they are unable to take care of themselves without constant assistance or supervision.

5. Anytime a patient refuses emergency medical evaluation, treatment, or transportation, the OLMC physician MUST be contacted if:

   A. The patient has abnormal vital signs (see parameters in 4d on previous page).

   B. The patient has a potentially life or limb threatening condition.

   C. The patient has sustained a head injury.

   D. The patient is determined to be NOT competent to refuse evaluation, treatment or transportation as defined in sections 1, 2, and 4 of this protocol.

   E. A communication barrier exists (language or handicap).

   F. The patient is a minor (emancipated, married, or otherwise) or is being represented by a legal representative and the paramedic believes the patient should be treated and transported by ambulance.

The patient may only refuse evaluation, treatment, or transportation if the OLMC physician concurs.

6. All patients who are allowed to refuse evaluation, treatment, or transportation must:

   A. Not be excluded by the criteria in sections 1, 2 or 4 of this protocol.

   B. Have the risks, benefits, and alternatives of their decisions explained to them by the paramedics and demonstrate an understanding of this discussion. The details of this must be documented on Medical Report.

   C. Sign the release form.

      1. This form must be signed by the patient, the paramedic, and a witness (preferably a relative or friend of the patient).

      2. In the event that the decision is being made by a legal representative of the patient or by the parent of a minor patient, this person must sign in place of the patient.

7. If a patient, who is allowed to refuse evaluation, treatment or transportation, refuses to sign a valid refusal form, the paramedic will also document the details of the encounter, including why the patient refused to sign. The paramedic will also document on the refusal form “Patient refused to sign.”

8. If a patient is determined to be NOT competent to make medical decisions, the patient should be treated by implied consent. If this patient continues to refuse evaluation, treatment or transportation, all reasonable measures, including police assistance and/or appropriate use of physical restraint should be used to evaluate, treat and transport the patient.
At no time should PFD personnel place themselves in physical danger. If this should occur, all of the following steps will be taken:

- Attempt to leave the patient in the care of a responsible adult, if at all possible.
- Withdraw to a position of safety and request police assistance if necessary.
- Fully document the occurrence on the Medical Report.
- Complete an incident report to be forwarded with a copy of the Medical Report to the PFD EMS Coordinator.

9. Paramedics have a duty to act in the best interest of all patients.

   A. No patient should be encouraged to refuse evaluation, treatment or transportation.
   B. Paramedics will offer to transport all patients to an appropriate hospital-based emergency department.
   C. No person will be denied evaluation, treatment or transportation on the basis of age, sex, race, creed, color, origin, economic status, language, sexual preference, disease, or injury.

**Process of Informed Refusal**

To allow a patient to exercise their rights and protect yourself, you need to follow the following steps - each time - every time - with every patient who is not transported or treated.

1. Perform a complete assessment - maintain a high index of suspicion - results should be consistent with the mechanism of injury and/or illness.

2. Evaluate the Differential Diagnosis. Avoid rendering any definitive conclusion or diagnosis. Assume the worst and determine other possibilities for presenting complaints/symptoms. Clinical thinking should “rule in” vs. “rule out” possibilities. These possibilities must be communicated to the patient.

3. Rigorously Ascertain the Patient’s Mentation. The patient must be alert and oriented to time, place, and events. You must determine the patient’s competency to make an informed refusal, evaluate choices and decision making capacity. The patient must have an understanding and capacity to comprehend or assimilate information at the scene.

   The paramedic must evaluate factors that could impede or impair the patient’s decision making capacity or comprehension. These factors include **clinical, physical, emotional, physiologic and psychological status**. The patient must have an awareness of the medical facts in order to make an informed refusal. The paramedic must also evaluate the appropriateness and feasibility of the patient’s choice and the patient’s ability to execute their choice. Finally, the patient’s behavior and psychological status must be appropriate.

4. The Risks of the Differential Diagnosis must be explained. The risks and differential diagnosis must be explained, and the patient must be able to assimilate and comprehend the risks of his/her condition, your recommendations and his/her choices.

5. The Patient Must Be Offered Transport. The unqualified willingness to transport the patient must be given. The intentional or unintentional discouragement from transport may be a breach of duty.
6. **Requirement For Timely Physician Examination.** The patient must be advised to seek further medical care and examination by a licensed physician if the patient continues to refuse care or transport. The limitations of the paramedic's scope of practice/assessment must be explained to the patient.

7. **Consequences must be thoroughly explained.** The paramedic must discuss the actual and potential consequences of the patient's failure to follow medical advice at the scene. Document any admonishments given and the patient's reaction, including their comments in quotes whenever possible.

8. **OLMC Physician Consultation.** Any time a question or uncertainty exists in your mind about the need to transport a patient or about the patient's refusal of vital care or transport - consult the OLMC physician. If a question does exist, and your judgement is incorrect, you will be held accountable. Increase your protection and ask for help advising the patient. At your discretion, you may also allow the patient to talk to the OLMC physician. A patient's personal physician can be a good resource to consult. In addition to speaking directly with the patient, the personal physician can phone the OLMC physician directly on the taped line to provide further information and insight.

9. **Sign a release.** Complete this form thoroughly and have the patient sign it. As you may know, the release may or may not actually “release” you or the fire department from liability. One of the many purposes of using a release, however, is to further demonstrate your good faith and diligence in meeting your responsibilities to the patient. Together with all of your prudent actions, it helps to defend against assertions of abandonment. If the patient refuses to sign, complete the release anyway, and note this with at least one partner as a witness. Document the patient's behavior as it relates to the refusal to sign. Have other witnesses sign the release, if feasible.

10. **Document Everything.** Extraordinary documentation is often required in non-transport situations. Document the following:

    - your complete assessment
    - differential diagnosis and risks
    - the patient's complete mentation
    - the choices offered and information given the patient
    - the patient's response to this information
    - advice to seek physician follow-up
    - consequences of the patient's choices explained to the patient
    - OLMC physician contacted

**MULTIPLE PATIENT INCIDENTS/ PATIENT REFUSALS**

A reasonable and good faith effort must be utilized to determine potential injuries and latent effects from unknown injuries before refusals should be accepted. A reasonable effort may be impacted by a multiple patient incident. The number, priority & treatment of patients may impact reasonability when it comes to how thorough we can be in such situations.

Given the dynamic and variety of circumstances multiple patient incidents entail, the judgement of what constitutes a reasonable effort must be considered on a case by case basis. Some guidelines are: everyone with a chief complaint, suspected chief complaint, or suspicious mechanism of injury must be assessed and evaluated. Every assessment must be documented. When triage decisions must be made, the need for additional resources in evaluating refusals must be considered as a part of due diligence.
CONCLUSION

Be careful to avoid rationalizing a reduced effort to transport and/or treat the patient due to underestimating the patient’s condition. Every patient has a right to our full service and attention. Remember also that, your perception of “system needs”, while commendable, cannot supercede your patient’s needs and rights. Further, we take our patients one at a time. Morally, ethically, and legally they deserve the best you can give them.

A red flag needs to be raised in your mind anytime you hear yourself refer to the patient as “just a drunk”, or anytime you think “it’s not that bad, he can't afford this”, or “a paramedic unit should not be tied up on this type of call”. These rationalizations encourage underestimating the patient’s condition, and/or shortcuts, which result in substandard patient care and endangerment of patients.

The safest thing you can do for your patients, yourself, and the fire department, is to transport. Remember also that one provides services without regard to the ability of a citizen to pay. Patient care and transport decisions must never be made on economic or any non-medical grounds.

Every citizen has a right to our service and the best care we can provide for them. In those situations where the patient wishes to exercise their right to refuse service, the paramedic must use extreme caution, as the patient’s rights and health must be protected to the extent humanly possible.
703

RESPIRATORY
703.1
AIRWAY MANAGEMENT

Airway Patent?

Spontaneous Respirations?

Yes

Suspected C-spine Injury?

Yes

Jaw-thrust In-line Stabilization

No

Head-tilt Chin-lift

Airway Patent?

Yes

Respiratory Distress?

Suction if Blood, Vomitus, Secretions Present

No

Supplemental O2 via NC or NRB as appropriate

Yes

Respiratory Distress Improves?

Treat Suspected Underlying Cause(s) by Appropriate Protocol

Assist Ventilations with BVM

Yes

Gag Reflex?

No

Yes

Nasal Intubation

Oral or Nasal Intubation

Medication-assisted Oral Intubation Refer to: 707.2.5 ETOMIDATE

Combitube Placement

unsuccessful x3

unsuccessful x3

unsuccessful x3

unsuccessful x3

unsuccessful x3

Foreign Body?

Suspected Cause of Airway Obstruction

Traumatic Obstruction/Edema?

Laryngoscopy Possible?

Yes

No

Oral Intubation

Cricothyotomy

unsuccessful x3

unsuccessful x3

unsuccessful x3

unsuccessful x3

unsuccessful x3

703.1
1 of 1
02/01/07
703.1.1 AIRWAY MANAGEMENT

COMMENTS

1. For patients successfully intubated and exhibiting movement that may lead to extubation, give Etomidate 0.3 mg/kg intravenous or intraosseous push over 30-60 seconds. For patients that received Etomidate to achieve intubation and are now exhibiting movement that may lead to extubation, contact the on-line medical control physician and request Valium 5-10mg intravenous (or intraosseous if IO access previously established for other indication) push.

2. For rare cases of laryngeal gag reflex or vocal cord spasm despite using Etomidate, administer 20mg of 2% Lidocaine (1cc of 2% Lidocaine) onto the larynx/vocal cords using the endotracheal medication catheter.

3. For patients in which the vocal cords are not well visualized using the laryngoscope alone, bimanual laryngoscopy is advised. Bimanual laryngoscopy is achieved by maintaining the laryngoscope with the left hand and manipulating the patients thyroid cartilage with the right hand so that the vocal cords are better visualized for safer and surer intubation. Once the optimal positioning is achieved, the intubating paramedic is to have either an EMT or another paramedic maintain the thyroid cartilage manipulation while the intubating paramedic passes the endotracheal tube through the vocal cords with the freed right hand. Manual cervical spine stabilization is to be maintained throughout active airway management in any patient with suspected spinal injury.

4. For patients in which the vocal cords are completely or partially visualized yet the endotracheal tube cannot be successfully manipulated through the vocal cords, the airway bougie may be utilized with the curved tip always pointing anterior during its passage through the vocal cords. The tracheal rings will be felt as the bougie tip is further passed down the trachea, additionally verifying proper bougie placement in the trachea and not in the esophagus. The endotracheal tube can then be successfully passed over the bougie into the trachea and subsequently confirmed by Confirmation of Endotracheal Intubation protocol (703.2).
703.2: CONFIRMATION OF ENDOTRACHEAL INTUBATION

The following sequence is to be used to verify correct endotracheal placement:

1) **Visualization of endotracheal tube passage between the vocal cords.** This is not applicable in cases of nasotracheal intubation for obvious reasons. This may or may not be applicable with utilization of the airway bougie.

2) **Auscultation of the epigastrum.** If epigastric sounds are heard, intubation should be reattempted. The endotracheal tube placed in the esophagus may be left in place, at the paramedic’s discretion, until another endotracheal tube is correctly placed and verified. If no epigastric sounds are heard, proceed to **auscultation of the thorax bilaterally.** Breath sounds are best auscultated in the anterior to mid axillary lines. If breath sounds are present on the right and absent on the left, this suggests a right main stem intubation. Withdraw the endotracheal tube 1cm and repeat breath sound auscultation. If necessary, the tube may be withdrawn an additional 1-2cm.

3) **Physiologic changes should be observed.** These include equal rise and fall of the chest, condensation in the endotracheal tube on exhalation, improvement in the patient’s color, and improvement in the patient’s respiratory distress or failure.

4) **Use the esophageal detection device.** Place the device on the endotracheal tube and aspirate a full syringe or bulb. If there is no resistance to aspiration, proceed. If there is resistance to aspiration, intubation should be reattempted.

5) **Use end-tidal carbon dioxide detection** Measure end-tidal carbon dioxide. If the patient is intubated by a paramedic engine or truck company prior to ambulance arrival, use a bag-valve with CO2 litmus paper in the ventilatory circuit. Distinct color change from purple to yellow indicates detection of CO2, verifying correct endotracheal tube placement. If there is no color change and the detection paper remains continuously purple, intubation should be reattempted. Do not use the device if the detection paper becomes wet; a new device should be used. When the LifePak 12 capnograph is available, the capnograph should be used as the means of detecting end-tidal CO2. The detector should be placed on the end of the endotracheal tube. The normal waveform indicating correct endotracheal placement reflects a rapid upstroke with the beginning of exhalation, the exhalation plateau ending at the point of end-tidal CO2 measurement, and a rapid downstroke with the beginning of inhalation. In a patient with spontaneous circulation any waveform that does not show rhythmic rise and fall of end-tidal CO2 with assisted ventilations indicates incorrect tube placement. See also 703.5 Capnography for discussion of CO2 values.

6) **Secure the endotracheal tube with the tube holder and place the patient in a cervical collar.**

This sequence is to be followed and documented on every intubation. When intubated patients are moved during prehospital care, the capnograph should be rechecked for any change. If the waveform continues to show a normal pattern of rapid upstroke with exhalation, exhalation plateau, and rapid downstroke with inhalation, no further repeat confirmation is required. If at any time, the capnograph waveform is abnormal, steps 2-5 should be rechecked and documented. If at any time during patient care there is doubt as to correct endotracheal placement of intubation, you should either reverify by this sequence or reattempt correct endotracheal placement. The paramedic that intubates (or re-intubates) a patient must contact the EMS Medical Director (or the EMS Medical Director’s designee if the EMS Medical Director so indicates) to report the intubation and the steps completed in confirming the intubation. This contact shall occur at the first available opportunity and shall be prior to the end of the paramedic’s shift. Further details of this requirement may be found in Plano Fire Department SOP 361.0: Advanced Airway Placement Confirmation Patient Safety Initiative.

It is the responsibility of the receiving emergency department or medical helicopter personnel to verify correct endotracheal tube placement once patient care has been transferred to these personnel.
ACUTE AIRWAY OBSTRUCTION

UNCONSCIOUS PATIENT?

No

ABLE TO TALK?

Yes

TRANSPORT CAREFULLY

No

POSITION PATIENT SUPINE

INITIATE VENTILATION ATTEMPTS WITH MASK/OXYGEN

HEIMLICH MANEUVER / ABDOMINAL THRUSTS

IS THE FOREIGN BODY EXPELLED?

No

ATTEMPT TO VISUALIZE WITH LARYNGOSCOPE

CAN YOU SEE THE FOREIGN BODY?

Yes

GRASP AND REMOVE WITH MAGILL FORCEPS

FOREIGN BODY REMOVED?

Yes

Can you intubate?

No

GIVE 100% OXYGEN BVM VENTILATIONS

INTUBATE

BASIC CARE MEASURES TRANSPORT

Yes

BMV VENTILATIONS AND 100% OXYGEN

IS CHEST RISING WITH VENTILATIONS?

No

REPEAT HEIMLICH MANEUVER / ABDOMINAL THRUSTS

Yes

* IF RETURNING TO ABOVE STEP IN PROTOCOL FOR THE SECOND TIME CONTACT OLMC PHYSICIAN FOR CONSULTATION ABOUT CRICOTHYROTOMY

Yes

TRANSPORT CAREFULLY

07/01/02
**703.4 ACUTE DYSPNEA**

**GENERAL MEDICAL TREATMENT**

**SUSPECTED CONGESTIVE HEART FAILURE NO WHEEZING**

**CARDIAC MONITOR / 12 Lead ECG**

**ALBUTEROL 2.5 mg IN 3 cc NS VIA NEBULIZER. MAY REPEAT ENROUTE x2 IF NECESSARY**

**CONSIDER CPAP REFER TO 703.6 CPAP CONTRAINDICATED IN ASTHMA**

**IV NS @ TKO IF SEVERE DYSPNEA**

**TRANSPORT**

**FAILURE TO IMPROVE WITH ALBUTEROL?**

- **YES**
  - **PT WITH ASTHMA OR COPD HISTORY BRETHINE 0.25mg SQ REFER TO 707.2.9 FOR PRECAUTIONS IN USE**

- **NO**
  - **PT WITH ASTHMA HISTORY**
    - **OLMC PHYSICIAN ORDER ONLY**
    - **EPINEPHRINE 1:1000 0.3mg SQ**

**SYSTOLIC BP > 100 mmHg**

- **YES**
  - **NTG 0.4 mg SL MAY REPEAT x2 q 5 min. IF SYSTOLIC BP REMAINS > 100 mmHg**
    - **YES**
      - *** LASIX 40 mg IVP or PATIENT'S USUAL DOSE OF ORAL LASIX IVP (e.g. PATIENT TAKES 80 mg TWICE A DAY, GIVE 80 mg IVP)**
    - **NO**
      - **CONTACT OLMCP**
        - **OLMC PHYSICIAN ORDER ONLY**
        - **DOPAMINE 5-20 mcg/kg/min TITRATE TO SYSTOLIC BP ≥100 mmHg**

- **NO**
  - **CONTACT OLMCP**
    - **OLMC PHYSICIAN ORDER ONLY**
    - **DOPAMINE 5-20 mcg/kg/min TITRATE TO SYSTOLIC BP ≥100 mmHg**

**CONSIDER CPAP REFER TO 703.6 CPAP**

**TRANSPORT**

---

**SUSPECTED ASTHMA, COPD, OR PNEUMONIA**

**WHEEZING**

**CARDIAC MONITOR / 12 Lead ECG**

**ALBUTEROL 2.5 mg IN 3 cc NS VIA NEBULIZER. MAY REPEAT ENROUTE x2 IF NECESSARY**

**WHEEZING**

**HISTORY OF CHF AND COPD UNCERTAIN ETIOLOGY OF DYSPNEA**

**YES**

**NO**

---

* OLMC PHYSICIAN MAY INCREASE DOSE
703.4.1: ACUTE DYSPNEA

Comments

1. Patients exhibiting severe dyspnea, decompensating towards respiratory arrest, may require intubation.

2. Do not withhold 100% O₂ from COPD patients exhibiting moderate or severe dyspnea. If 100% O₂ starts to depress the COPD patients hypoxic respiratory drive, initiate assisted ventilations with the BVM and continue use of 100% O₂.

3. Nebulization treatments of albuterol should be given with the oxygen flow meter on 6 or 8 lpm flow.

4. Observe for side effects of albuterol. These include palpitations, tachycardia, anxiety, muscle tremors, headache, and nausea. In addition, in rare instances, albuterol may induce paradoxical bronchospasm. Albuterol administration should be discontinued in the presence of significant side effects.

5. Patients in significant congestive heart failure frequently have PVCs, usually from hypoxia and acidosis. These PVCs frequently resolve with oxygen. They may, however, require treatment with lidocaine.

6. Ventricular tachycardia, atrial fibrillation with a rapid ventricular response and supraventricular tachycardia may CAUSE congestive heart failure with pulmonary edema. Correcting the rhythm disturbance first may improve or resolve the pulmonary edema.

7. Patients exhibiting moderate to severe dyspnea secondary to CHF or COPD exacerbations may require application of CPAP prior to 3 nitroglycerin administrations and/or prior to 3 albuterol nebulizations. Good paramedic clinical judgment must be utilized in the timing of CPAP incorporation into the treatment course.

8. A 12-lead ECG is indicated in acute dyspnea of suspected CHF or CHF verus COPD etiology. Acute myocardial ischemia and infarct may precipitate a CHF exacerbation. Anytime the etiology of acute dyspnea in an adult patient is unclear, a 12-lead ECG should be strongly considered to evaluate for underlying or atypical myocardial ischemia and/or infarct.
703.5: CAPNOGRAPHY (END-TIDAL CO2 MEASUREMENT)

Indications:

Confirmation of endotracheal intubation in all intubated patients
Ventilation assessment in COPD and asthma patients

Contraindications:

None

Procedure:

For intubated patients, see 703.2 Confirmation of Endotracheal Intubation.

For COPD and asthma patients, treat per acute dyspnea protocol. Obtain baseline and post-nebulizer treatment values of end-tidal carbon dioxide using the capnograph. Remember that oxygen and/or albuterol therapy may be given throughout capnography measurements using the LifePak 12 capnograph.

Comments:

The normal range of end-tidal CO2 on the LifePak 12 capnograph is 35-45 mmHg.

COPD patients may have chronic abnormal end-tidal CO2 levels in the 45-55 mmHg range due to CO2 retention. These patients no longer operate on the hypercarbic (high CO2) breathing stimulus. COPD patients operate on the hypoxic (low O2) breathing stimulus. Consider assisting the COPD patient with a nebulized breathing treatment by BVM for end-tidal CO2 levels above 60 mmHg.

Capnography measurements below 30 mmHg will often be seen in asthma, hypotension, and cardiac arrest. CO2 is produced peripherally and returns by venous circulation to the lungs where it is subsequently exhaled. Any impairment in circulation or exhalation can lower the amount of end-tidal CO2 detected (regardless of high peripheral levels). Improvement in the asthmatic, hypotensive, or cardiac arrest patient may be indicated by rise of the end-tidal CO2 into the normal range of 35-45 mmHg.

The effectiveness of hyperventilation in the intubated head injury patient should be assessed using the capnograph. End-tidal CO2 levels should be kept in the 30-35 mmHg range. This range indicates effective prevention of cerebral vasodilation and avoidance of excessive cerebral vasoconstriction. For CO2 levels below 30 mmHg, the rate of bag-valve-endotracheal tube ventilations should be decreased to allow the CO2 level to rise and stay within the 30-35 mmHg range.
**703.6: CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)**

**Indications:**
- Moderate to Severe Congestive Heart Failure
- Moderate to Severe Chronic Obstructive Pulmonary Disease

**Contraindications:**
- Asthma

**Procedure:**
For patients experiencing acute dyspnea due to CHF or COPD and not improving with standard therapy per the acute dyspnea protocol (see 703.4 Acute Dyspnea), consider the application of CPAP.

Hook the Down’s Flow Regulator (CPAP Regulator) to a portable oxygen cylinder. Ensure the “FiO2” control knob is turned to its outermost position; this ensures delivery of nearly 100% oxygen. Ensure oxygen flow through the CPAP mask and fit it to the patient using the supplied head straps. The mask must be securely fitted to the face to prevent loss of pressure due to poor mask fit. However, excessive pressure in fitting the mask should be avoided. Look and listen for the valve in the CPAP mask to open, indicating the appropriate delivery of oxygen at 10cm H2O pressure. The valve should remain open throughout the inhalation-exhalation cycle.

Closely monitor the patient’s respiratory status. Failure to improve may require BVM-assisted ventilations or endotracheal intubation. Improvement in respiratory status may require several minutes, though some patients do show rapid improvement in dyspnea.

Closely monitor for nausea and impending emesis. Prompt removal of the mask and head straps will be necessary to prevent aspiration. While patient discomfort due to claustrophobic reaction to the face mask is the most commonly encountered side effect, the risk of aspiration is the most serious.

**Comments:**
CPAP works in the setting of CHF by impacting the osmotic pressures that lead to pulmonary edema. CPAP reverses the pressure gradients causing intraalveolar fluid to be reabsorbed into the intravascular space. CPAP works in the setting of COPD by assisting weakened muscles of respiration. CPAP should not be used in the setting of asthma due to higher airway pressures associated in asthmatic exacerbations. Use of CPAP in asthma could cause pneumothoraces.

Use of the end-tidal capnography may assist in determining which COPD patients are suitable for CPAP vs. intubation. In COPD exacerbation patients with end-tidal CO2 levels below 70mmHg, CPAP will often be enough to reverse their dyspnea. However, COPD patients with end-tidal CO2 levels above 70mmHg are most often beyond the stage of responding well to CPAP and should be strong candidates for oral intubation. CPAP use is not contraindicated in these extremely hypercarbic patients, though its use alone most often does not result in marked improvement.

At any time in deciding whether CPAP is indicated or during CPAP administration, if questions arise, consult the on-line medical control physician for advice.
704
CARDIAC
ACUTE CORONARY SYNDROME (Chest Pain or Equivalent Symptoms)

O₂ VIA NC or NRB AS APPROPRIATE CARDIAC MONITOR/12 LEAD ECG IV NS TKO

TREAT ANY CARDIAC ARRHYTHMIAS BY THE RESPECTIVE PROTOCOL

ASPIRIN 324mg CHEWED BY PT (NOT JUST SWALLOWED)

SYSTOLIC B/P > 140 mmHg?

Yes

ACUTE INFERIOR ISCHEMIA OR INFARCT? *

No

SYSTOLIC BP ≥ 100 mmHg?

Yes

ACUTE RIGHT VENTRICULAR INFARCT?**

No

250 cc BOLUS NS

SYSTOLIC BP ≥ 100 mmHg?

Yes

*** GIVE NTG 0.4 mg SL. MAY REPEAT NTG X 2 q 5 MIN IF SYSTOLIC BP ≥ 100 mmHg AND PT STILL HAVING CHEST PAIN

TRANSPORT & FAX 12 LEAD ECG

PT WITH ACUTE MYOCARDIAL INFARCTION BASED ON OLMC PHYSICIAN OVERREAD 12 LEAD ECG & STILL HAVING CHEST PAIN

** OLMC PHYSICIAN ORDER ONLY** DOPAMINE DRIP 5-20 mcg/kg/min TITRATE TO SYSTOLIC BP > 100 mmHg

NO

YES

**ACUTE RIGHT VENTRICULAR INFARCT IS INDICATED BY ST SEGMENT ELEVATION IN AT LEAST 2 OF THESE 4 LEADS: V1, V2, V3, V4.

ACUTE INFERIOR INFARCT IS INDICATED BY ST SEGMENT ELEVATION IN AT LEAST 2 OF THESE 3 LEADS: II, III, aVF.

IF A 12-LEAD ECG IS UNAVAILABLE AND ST SEGMENT ELEVATION OR DEPRESSION AND/OR T WAVE INVERSION IS SEEN IN LEAD II AND LEAD III, PRESUME ACUTE INFERIOR ISCHEMIA OR INFARCT.

A right sided 12 lead ECG will be done in patients exhibiting acute inferior ischemia or infarct.

**ACUTE RIGHT VENTRICULAR INFARCT IS INDICATED BY ST SEGMENT ELEVATION IN AT LEAST 2 OF THESE 4 LEADS: V1, V2, V3, V4.

***DO NOT GIVE NTG TO PATIENTS TAKING VIAGRA OR LEVITRA WITHIN THE PAST 24 HOURS OR CIALIS WITHIN THE PAST 48 HOURS WITHOUT AN ORDER FROM THE ON LINE MEDICAL CONTROL PHYSICIAN.

* ACUTE INFERIOR ISCHEMIA IS INDICATED BY ST SEGMENT DEPRESSION AND/OR T WAVE INVERSION IN AT LEAST 2 OF THESE 3 LEADS: II, III, aVF (UNLESS REPRESENTING "RECIPROCAL CHANGE" OF ACUTE ANTERIOR INFARCT).

**ACUTE INFERIOR INFARCT IS INDICATED BY ST SEGMENT ELEVATION IN AT LEAST 2 OF THESE 3 LEADS: II, III, aVF.

3 in 5 minutes of patient contact:
1) Vital signs
2) O₂
3) ECG rhythm

5 in 10 minutes of patient contact:
1) ASA
2) IV
3) 12 lead ECG
4) NTG or fluids (BP/Inf. M/I?)
5) Repeat vital signs

Does systolic BP decrease with fluid challenge?

Yes

CONTACT OLMC PHYSICIAN

NO

REPEAT 250 cc BOLUS NS & TRANSPORT

Systolic BP NOW ≥ 100 mmHg?

Yes

NO

CONTACT OLMC PHYSICIAN

Systolic BP NOW ≥ 100 mmHg?

NO

ADMINISTER 250 cc BOLUS NS

Systolic BP NOW ≥ 100 mmHg?

NO

YES

ACUTE INFERIOR ISCHEMIA OR INFARCT? *
1. Acute Coronary Syndrome refers to presumed cardiac related chest pain and/or chest pain equivalent symptoms of dyspnea, nausea/vomiting, diaphoresis, discomfort in jaw/arms in patients that frequently fail to display classic chest pain with threatened or actual myocardial infarcts (elderly patients, diabetic, chronically non-communicative patients).

2. If in doubt as to the cause of a patient’s chest pain, it is generally safe to treat according to this protocol. If you suspect a non-cardiac cause of chest pain, refer to the appropriate protocol for treatment or contact the OLMC physician for treatment direction.

3. If a 12-lead ECG monitor is not immediately available, monitor the patient with a standard 3-lead ECG monitor. Evaluate the ST segments and T waves in Lead II and III. If you see ST segment depression or elevation and/or T wave inversion that is present in both leads, presume the patients is having an acute right ventricular infarct and treat according to the protocol. A 12-lead ECG and an additional 12-lead ECG with right-sided leads should be performed when available.

4. Medically-related scene times should rarely exceed 20 minutes. A 12-lead ECG should be obtained rapidly after patient contact and should be accomplished concurrently with patient history, oxygen administration, vital sign assessment, and IV initiation. Obtaining a 12-lead ECG and, if indicated, a 12-lead ECG with right-sided leads should not significantly delay administration of nitroglycerin.

5. Intravenous access is to be accomplished prior to nitroglycerin administration. Nitroglycerin may cause marked hypotension in a subset of patients, requiring immediate fluid resuscitation. In cases of chest pain patients in which intravenous access proves impossible in the field, contact the OLMCP for all order requests of nitroglycerin without established intravenous access.

6. Data transmission of the 12-lead ECG(s) should be initiated as soon as possible to allow the OLMC physician to order morphine sulfate, and/or to expedite thrombolytic administration or emergency cardiac catheterization if indicated.

7. No additional aspirin dosing is indicated for patients that have self-medicated aspirin at 324+mg within the prior 12 hours.

8. Viagra (sildenafil), Levitra (vardenafil), and Cialis (tadalafil) are phosphodiesterase type 5 (PDE-5) inhibitors prescribed in the treatment of erectile dysfunction. Combined with vascular smooth muscle relaxation from PDE-5 inhibitors, nitroglycerin may produce marked hypotension. Viagra typically produces active effect for 4 hours, Levitra for 6 hours, and Cialis for up to 36 hours. Prior to nitroglycerin administration in patients taking Viagra or Levitra within the past 24 hours or Cialis within the past 48 hours, consult with the OLMCP for advice and nitroglycerin orders, specifically reporting the PDE-5 inhibitor the patient is taking and time of last usage. Nitroglycerin should be utilized with extra caution in patients taking Viagra or Levitra within the prior 24 hours or Cialis within the prior 48 hours. Nitroglycerin may be utilized safely (and without requiring an OLMCP order) if the last dose of Viagra or Levitra was taken greater than 24 hours ago or the last dose of Cialis was taken greater than 48 hours ago.

9. In the event of acute myocardial ischemia or infarct showing on 12-lead ECG with the patient complaining of chest pain equivalent symptoms (see comment #1 above) without chest pain, treat these chest pain equivalent symptoms as chest pain with aspirin and nitroglycerin per this protocol.
704.2
ASYSTOLE

CPR (AutoPulse when available)
INTUBATE
IO / IV NS
CONFIRM ASYSTOLE IN TWO LEADS

CONSIDER POSSIBLE CAUSES.
TREAT WHERE APPROPRIATE:

HYPOXIA - BAG VALVE VENTILATION WITH 100% O2

HYPOVOLEMIA - 1000cc NS BOLUS; IF PULM EDEMA/CHF,
**OLMCP ORDER ONLY**
DOPAMINE DRIP 5-20 mcg/kg/min IO / IVPB

HYPERKALEMIA - CALCIUM CHLORIDE 10mg/kg IO / IVP &
SODIUM BICARBONATE 50mEq IO / IVP

HYPOKALEMIA - RAPID TRANSPORT

PRE-EXISTING ACIDOSIS - BAG VALVE VENTILATION with
100% O2 & SODIUM BICARBONATE 50mEq IO / IVP

HYPOGLYCEMIA – DEXTROSE 50% 25grams IO / IVP

HYPOTHERMIA - Rewarm Patient

TOXINS / DRUG OVERDOSE
SUSPECTED NARCOTIC? Narcan 2-4 mg IO / IVP,
SUSPECTED TCA? SODIUM BICARBONATE 50mEq IO / IVP

CARDIAC TAMPOANADE – RAPID TRANSPORT
500cc NS IO / IV BOLUS

THROMBOSIS (AMI or PE) – RAPID TRANSPORT

TENSION PNEUMOTHORAX – NEEDLE THORACOSTOMY

TRAUMA – SEE ALSO TRAUMA PROTOCOLS

VASOPRESSIN 40 UNITS IO / IVP

ATROPHINE 1mg IO / IVP
REPEAT EVERY 3-5 MINUTES TO TOTAL
DOSE OF 3mg

EPINEPHRINE 1mg IO / IVP
REPEAT EVERY 3-5 MINUTES

TRANSPORT
704.2.1: ASYSTOLE

Comments

1. A fluid bolus of normal saline should be done after each medication is injected, either 10cc intraosseously or 20cc intravenously.

2. Sodium bicarbonate should only be administered to patients in cardiac arrest suspected of having hyperkalemia (e.g. renal failure patients), pre-existing acidosis, tricyclic antidepressant overdose, or in asystolic cardiac arrest with estimated cardiac arrest duration exceeding 20 minutes.
PULSELESS ELECTRICAL ACTIVITY

Includes Electromechanical Dissociation, Pseudo-EMD, Idioventricular rhythms, Ventricular escape rhythms, Bradyasystolic rhythms, Postdefibrillation idioventricular rhythms.

CPR (AutoPulse when available)
INTUBATE
IO / IV NS

CONSIDER POSSIBLE CAUSES.
TREAT WHERE APPROPRIATE:

HYPOXIA - BAG VALVE VENTILATION WITH 100% O2

HYPOVOLEMIA -1000cc NS BOLUS; IF PULM EDEMA/CHF, **OLMCP ORDER ONLY**
DOPAMINE DRIP 5-20 mcg/kg/min IO / IVPB

HYPERKALEMIA - CALCIUM CHLORIDE 10mg/kg IO / IVP & SODIUM BICARBONATE 50mEq IO / IVP

HYPOKALEMIA - RAPID TRANSPORT

PRE-EXISTING ACIDOSIS - BAG VALVE VENTILATION with 100% O2 & SODIUM BICARBONATE 50mEq IO / IVP

HYPOGLYCEMIA – DEXTROSE 50% 25grams IO / IVP

HYPOTHERMIA - Rewarm Patient

TOXINS / DRUG OVERDOSE
SUSPECTED NARCOTIC? Narcan 2-4 mg IO / IVP,
SUSPECTED TCA? SODIUM BICARBONATE 50mEq IO / IVP

CARDIAC TAMPOONADE – RAPID TRANSPORT
500cc NS IO / IV BOLUS

THROMBOSIS (AMI or PE) – RAPID TRANSPORT

TENSION PNEUMOTHORAX – NEEDLE THORACOSTOMY

TRAUMA – SEE ALSO TRAUMA PROTOCOLS

EPINEPHRINE 1mg IO / IVP
EVERY 3-5 MINUTES

IF HR <60 BPM, GIVE
ATROPINE 1mg IO / IVP
EVERY 3-5 MINUTES
TO MAX 3mg

TRANSPORT
1. Extreme cases of cardiogenic shock may present as apparent PEA (pseudo-PEA). These patients *do* have electrical-mechanical association producing cardiac output, but have profound hypotension requiring fluid bolusing and/or dopamine infusion. If you are treating a patient in apparent PEA, but have a strong suspicion of pseudo-PEA, contact the OLMC physician immediately for consultation. In the immediate time and in times of delayed physician contact, treat these patients per the PEA algorithm.
BRADYCARDIA
(Heart Rate < 60 Beats per minute)

GENERAL MEDICAL TREATMENT

CHEST PAIN, DYSPNEA, ALTERED MENTAL STATUS, HYPOTENSION, SHOCK, OR CONGESTIVE HEART FAILURE?

TYPE II SECOND-DEGREE AV HEART BLOCK?
OR THIRD DEGREE AV HEART BLOCK?

TRANSPORT

TRANSCUTANEOUS PACING IF SYMPTOMS DEVELOP OR IF HEART RATE < 40 BEATS PER MINUTE (SEE PACING PROTOCOL)

TRANSPORT

ATROPINE 0.5-1 MG IVP MAY REPEAT q 3-5 MIN TO A MAXIMUM DOSE OF 3 MG (MAY UTILIZE INTRAOSSEOUS ACCESS IN CRITICAL CONDITIONS)

TRANSCUTANEOUS PACING (SEE PACING PROTOCOL)

TRANSPORT
704.4.1: BRADYCARDIA

Comments

1. Bradycardia should be only treated per this protocol if symptomatic.

   Symptoms of bradycardia include:
   - Chest pain
   - Shortness of breath
   - Altered mental status
   - Hypotension (systolic BP < 90mmHg)
   - Shock
   - Congestive heart failure
   - High-grade AV block (Second degree type II or Third degree)

2. DO NOT USE lidocaine at 0.5-1 mg/kg doses intravenously or intraosseously in high grade AV blocks with PVCs. It may suppress the ventricular pacemaker and lead to asystole. In a rare instance, lidocaine may be indicated in the course of treatment of the conscious, symptomatic bradycardia patient being treated with atropine intraosseously. In this one specific instance, lidocaine, up to 40mg (but keeping the dose less than 0.25 mg/kg) intraosseously may be given for local intraosseous anesthetic effect.

3. If the patient has a transplanted heart, the heart rate will not respond to atropine and transcutaneous pacing should be the initial treatment choice.

4. If the bradycardia patient has hypotension not responding to atropine and/or pacing, contact the OLMCP for dopamine orders.

5. Bradycardia in the 40-60 beat per minute range may be seen in response to cerebral injury and/or ischemia (CVA). In these cases, bradycardia will be accompanied by hypertension. This distinct bradycardia should not be treated with atropine or pacing as the hypertension and intracranial pressure will worsen. Contact the OLMCP for any concerns with these bradycardic patients.

6. In the setting of bradycardia with acute myocardial ischemia/infarct, careful assessment must be made concerning atropine administration and/or transtcutaneous pacing. Most instances of bradycardia accompanying acute coronary syndromes involve the coronary perfusion deficiencies to the inferior wall of the left ventricle. Hypotension with inferior wall ischemia/infarct will often rapidly improve with intravenous fluid bolusing (see also 704.1 Acute Coronary Syndrome Protocol). Fluid bolusing that improves hypotension in the setting of bradycardia increases the systemic and coronary perfusion pressures without increasing the ischemic or infarcting myocardial workload that would otherwise occur when the heart rate is increased by atropine or transcutaneous pacing. Therefore, fluid bolusing should be the first treatment of choice in the setting of bradycardia with acute myocardial ischemia/infarct unless the patient is exhibiting “profound bradycardia” of less than 40 beats per minute. In the setting of “profound bradycardia,” even with acute myocardial ischemia/infarct, proceed expeditiously with atropine or transcutaneous pacing (based upon the type of bradycardia) to prevent the patient from decompensating into bradycardic PEA or asystole.
704.5
PREMATURE VENTRICULAR CONTRACTIONS (PVCs)

- BIGEMINY
- COUPLETS
- SHORT RUNS OF V TACH
- MULTIFOCAL
- R ON T
- PVCs ASSOCIATED WITH CHEST PAIN
- PVCs IN A PATIENT WITH SYNCOPE

GENERAL MEDICAL TREATMENT*

IS VENTRICULAR RATE > 60?

NO ➔ SEE 704.4 BRADYCARDIA

YES ➔ AMIODARONE INFUSION

150mg in 100 cc NS IVPB

INFUSE OVER 10 MINS

PVCs ABATED?

NO ➔ AMIODARONE INFUSION

150mg in 100 cc NS IVPB

INFUSE OVER 10 MINS

YES ➔ AMIODARONE DRIP

150mg in 150 cc NS IVPB

DRIP RATE AT 1mg/minute

YES ➔ PVCs ABATED?

NO ➔ TRANSPORT.

CONTACT OLMCP

*PVCs ARE COMMONLY DUE TO MYOCARDIAL ISCHEMIA. OXYGEN ADMINISTRATION MAY RAPIDLY ABATE PVCs

GENERAL MEDICAL TREATMENT*

AMIODARONE INFUSION

150mg in 100 cc NS IVPB

INFUSE OVER 10 MINS

PVCs ABATED?

AMIODARONE INFUSION

150mg in 100 cc NS IVPB

INFUSE OVER 10 MINS

TRANSPORT.

CONTACT OLMCP

OLMCP TREATMENT OPTIONS INCLUDE:
1) LIDOCAINE 1mg/kg IVP (RATE OF <50 mg/min)
2) MONITOR & CONTINUE TRANSPORT

08/01/06
TACHYCARDIA

GENERAL MEDICAL TREATMENT

HEART RATE >150/MIN?

NO

TREAT PER OTHER RELEVANT PROTOCOL(S)

YES

TACHYCARDIA PROTOCOL

UNSTABLE WITH SYMPTOMS AND SYSTOLIC BP <100 mmHg?

YES

SEE 704.7 UNSTABLE TACHYCARDIA PROTOCOL

NO

ATRIAL FIBRILLATION OR ATRIAL FLUTTER

DILTIAZEM 20mg SLOW IVP

TRANSPORT

PSVT

VAGAL MANEUVER

ADENOSINE 12mg RAPID IVP MAY REPEAT x1 IF NEEDED

DILTIAZEM 20mg SLOW IVP

TRANSPORT

UNKNOWN TYPE WIDE-COMPLEX TACHYCARDIA OR VENTRICULAR TACHYCARDIA

AMIODARONE INFUSION 150mg in 100 cc NS IVPB INFUSE OVER 10 MINS

AMIODARONE DRIP 150mg in 150 cc NS IVPB DRIP RATE AT 1mg/minute

TRANSPORT

IF ABOVE MEASURES DO NOT CONTROL RATE OF ATRIAL FIB/FLUTTER OR PSVT OR CONVERT WIDE COMPLEX TACHYCARDIA/VTACH, CONTACT OLMCP.

OLMCP TREATMENT OPTIONS INCLUDE:

NARROW COMPLEX TACHYCARDIA
1) DILTIAZEM 25MG SLOW IVP (must be at least 15 mins after initial diltiazem dose)
2) AMIODARONE INFUSION 150mg in 100cc NS IVPB INFUSE OVER 10 MINS
3) SYNCHRONIZED CARDIOVERSION
4) MONITOR & TRANSPORT

WIDE COMPLEX TACHYCARDIA
1) REPEAT AMIODARONE INFUSION 150mg in 100cc NS IVPB INFUSE OVER 10 MINS
2) LIDOCAINE UP TO 1 MG/KG IVP RATE at <50 mg/min
3) SYNCHRONIZED CARDIOVERSION
4) MONITOR & TRANSPORT
UNSTABLE TACHYCARDIA

GENERAL MEDICAL TREATMENT

HEART RATE >150/MIN?

YES

UNSTABLE WITH SYMPTOMS* AND SYSTOLIC BP <100 mmHg?

YES

SYNCHRONIZED CARDIOVERSION

PRETREAT WITH VALIUM 5mg IV/IOP
IF RAPID VASCULAR ACCESS OBTAINABLE

BEGIN AT 100J SYNCHRONIZED
IF RHYTHM PERSISTS & PATIENT REMAINS UNSTABLE
REPEAT AT SYNCHRONIZED SETTINGS OF 200J, 300J, 360J

TACHYCARDIA RESOLVES?

YES

FOR VENTRICULAR TACHYCARDIA ONLY:
AMIODARONE INFUSION
150mg in 100 cc NS IVPB
INFUSE OVER 10 MINS

CONSULT OLMC PHYSICIAN

NO

TREAT PER OTHER RELEVANT PROTOCOL(S)

NO

CONSULT OLMC PHYSICIAN

NO

TRANSPORT

* Unstable (or symptomatic) tachycardia is defined by any of the following symptoms:
dyspnea
chest pain
weakness
altered mental status
hypoxemia
pulmonary edema/congestive heart failure

TACHYCARDIA RESOLVES?

NO

CONSULT OLMC PHYSICIAN

NO

TRANSPORT
VENTRICULAR FIBRILLATION/ PULSELESS VENTRICULAR TACHYCARDIA

WITH ESTIMATED CARDIAC ARREST DURATION GREATER THAN 4 MINS AND WITHOUT GOOD QUALITY BYSTANDER CPR
3 MINUTES CPR (AutoPulse when available) PRIOR TO DEFIBRILLATION

DEFIBRILLATE - 200J

CPR (AutoPulse when available)
INTUBATE IO / IV NS

VASOPRESSIN 40 UNITS IO / IVP

DEFIBRILLATE 300J

EPINEPHRINE 1mg IO / IVP
AMIODARONE 300mg IO / IVP

DEFIBRILLATE 360J

EPINEPHRINE 1mg IO / IVP

DEFIBRILLATE 360J

EPINEPHRINE 1mg IO / IVP
AMIODARONE 150mg IO / IVP

DEFIBRILLATE 360J

EPINEPHRINE 1mg IO / IVP

DEFIBRILLATE 360J

EPINEPHRINE 1mg IO / IVP
LIDOCAINE 1.5mg/kg IO / IVP

DEFIBRILLATE 360J

EPINEPHRINE 1mg IO / IVP
(REPEAT DOSE EVERY 3-5 MINS)

TRANSPORT

WITH ESTIMATED CARDIAC ARREST DURATION LESS THAN OR EQUAL TO 4 MINS OR GOOD QUALITY BYSTANDER CPR 3 + MINS IMMEDIATE DEFIBRILLATION

Allow sufficient time for circulation of drugs (2 minutes of CPR)

Contact OLMCP if maximum doses of all antiarrhythmics have been given

Upon Return of Spontaneous Circulation (ROSC), establish intravenous access and give an Amiodarone Infusion of 150mg in 100cc NS IVPB over 10 mins. Following this infusion, if the patient is not at the hospital, start an Amiodarone Drip of 150mg in 150cc NS IVPB at a rate of 1mg/minute.
704.8.1 VENTRICULAR FIBRILLATION/PULSELESS VENTRICULAR TACHYCARDIA

COMMENTS

1) All initial adult CPR should be performed with 100% oxygen BVM ventilations with 2 ventilations: 30 chest compressions cycles with a compression depth of 1/3 - 1/2 the anterior-posterior chest depth if done manually. Once a paramedic establishes and confirms correct placement of an advanced airway (endotracheal intubation, Combitube placement or cricothyrotomy) then all adult CPR should be performed with 100% oxygen bag valve-advanced airway ventilations 8-10 breaths per minute and approximately 100 chest compressions per minute with a compression depth of 1/3 - 1/2 the anterior-posterior chest depth if done manually. In non-traumatic cardiac arrest, the AutoPulse Resuscitation System should be utilized for mechanical chest compressions whenever available. Manual chest compressions should always be performed while the AutoPulse Resuscitation System is being deployed.

2) “Good” adult bystander CPR is defined as chest compressions of at least 60 compressions per minute with a compression depth of 1/3 - 1/2 the anterior-posterior chest depth.

3) In cases of adult cardiac arrest with estimated arrest time exceeding 4 minutes and without “good” bystander CPR prior to EMS arrival, 3 minutes of CPR should precede defibrillation of ventricular fibrillation/pulseless ventricular tachycardia. This “CPR-First” defibrillation DOES NOT constitute delayed defibrillation.

4) Timely defibrillation of ventricular fibrillation/pulseless ventricular tachycardia remains an important component in the EMS response to out of hospital cardiac arrest. However, without good bystander CPR, the heart rapidly becomes acidic and depleted of high energy phosphates. Based upon sound scientific study, defibrillating such a myocardium results in higher than anticipated post-defibrillation asystole or intractable bradydysrhythmic pulseless electrical activity. “CPR-First” defibrillation as specified in this protocol works to better prepare the prolonged ventricular fibrillation/pulseless ventricular tachycardia cardiac arrest myocardium for successful defibrillation.

5) “CPR-First” defibrillation specifically DOES NOT apply to cardiac arrest in patients younger than 18 years of age, traumatic-induced cardiac arrest, cardiac arrest patients that have already received at least 3 minutes of “good” bystander CPR upon EMS arrival, and any cardiac arrest of estimated duration less than or equal to 4 minutes (e.g. EMS-witnessed cardiac arrest).

6) In cases indicated for “CPR-First” defibrillation, defibrillation should be immediately delivered at the conclusion of the 3 minutes of CPR. Chest compressions should be restarted immediately after any defibrillation, with post-defibrillation rhythm check occurring 30-60 seconds later.

7) In cases indicated for “CPR-First” defibrillation, the 3 minutes of CPR should not be interrupted repeatedly or for durations longer than 5 seconds to evaluate the underlying cardiac dysrhythmia.

8) The following constituted the major bibliography at the time of this protocol's initial release in February 2004:
704.9: CARDIAC ARREST GUIDELINES

1. Pre-arrival instructions from the emergency medical dispatcher for adult cardiac arrest of suspected cardiac etiology will emphasize chest compressions. The instructions will prompt the caller to deliver 400 chest compressions at a rate of approximately 100 compression per minute then a 100 compression:2 ventilation ratio will be utilized. It will be likely to find bystander CPR in these cases occurring without mouth to mouth ventilation prior to PFD arrival.

2. Pre-arrival instructions from the emergency medical dispatcher for any case of cardiac arrest of suspected respiratory arrest etiology (pediatric, choking, hanging, overdose, suffocation, etc) will include mouth to mouth ventilation initially and a 2 ventilation:30 compression ratio will be utilized. It will be likely to find bystander CPR in these cases occurring with mouth to mouth ventilation prior to PFD arrival.

3. Upon adult cardiac arrest patient contact, CPR should be initiated with 100% oxygen BVM ventilations with 2 ventilations: 30 chest compressions cycles with a compression depth of 1/3 - 1/2 the anterior-posterior chest depth manually. The AutoPulse Resuscitation System when available should be rapidly deployed. (Manual chest compressions should always be performed while the AutoPulse Resuscitation System is being deployed.) CPR should be done for 3 minutes prior to rhythm determination unless:

   Approximately 3 minutes of bystander CPR has already been performed by emergency medical dispatch instruction with an estimated 60+ chest compressions per minute

   Estimated downtime in cardiac arrest is less than or equal to 4 minutes

In these exceptions, continue CPR only until the initial rhythm determination and defibrillation, if applicable, can be made and then continue CPR as appropriate.

4. Minimize any interruption in chest compressions to avoid inadvertent decline in coronary perfusion pressure. This includes attempting to intubate without stopping chest compressions, announcing an upcoming need to stop compressions to minimize the time in determining the underlying rhythm, and performing chest compressions while the defibrillator is charging. DO NOT ATTEMPT CHEST COMPRESSIONS WHILE THE DEFIBRILLATOR IS DISCHARGING. Chest compressions should be restarted immediately after any defibrillation, with post-defibrillation rhythm check occurring 30-60 seconds later.

5. After the initial 3 minute period of CPR upon adult cardiac arrest patient contact, periods of continuous CPR should be for 2 minute intervals between rhythm checks and drug administration. Previous 30-60 second medication circulation times are no longer supported by more recent research factoring coronary perfusion pressure dynamics.

6. Once a paramedic establishes and confirms correct placement of an advanced airway (endotracheal intubation, Combitube placement or cricothyrotomy) then adult cardiac arrest patients should only be ventilated at 8-10 times per minute to minimize the positive pressure ventilation effect of decreasing coronary perfusion pressure. Deliver an even “squeeze” bag-valve ventilation over 1 second to deliver appropriate oxygenation/ventilation without excess pressure.

A short period of 30-60 seconds of hyperventilation of up to 20 times per minute just prior to endotracheal intubation is permissible. Consult with the on-line medical control physician in cases you question that require prolonged hyperventilation for pre-existing acidosis.
7. Upon the conversion of an adult cardiac arrest to an organized rhythm, continue CPR for 2 minutes before checking for a pulse. This short period of mechanical pressure assist will produce a greater likelihood of sustained return of spontaneous circulation. In the very unlikely event a patient awakens during this period, promptly cease chest compressions. This practice is supported by recent research indicating no immediate sustainable blood pressure after successful defibrillation.

8. Refer to 702.4 Neonatal Resuscitation Guidelines and 702.5 Pediatric Guidelines for cardiac arrest management in these age groups. Given the infrequent occurrence of cardiac arrest in these age groups, consult the on-line medical control physician early and liberally for direction.

9. In many cases of cardiac arrest, rhythm changes may occur frequently. When returning to a pulseless, shockable rhythm (ventricular fibrillation, pulseless ventricular tachycardia), the energy setting should be the same as was previously successful in converting the pulseless, shockable rhythm. Example: ventricular fibrillation converted to normal sinus rhythm with a pulse at 300J. Recurrence of ventricular fibrillation or pulseless ventricular tachycardia would be defibrillated starting at 300J. When a pulsatile, shockable rhythm (unstable, hemodynamically unstable PSVT, ventricular tachycardia, or atrial fibrillation/flutter with rapid ventricular response) occurs after conversion of a pulseless, shockable rhythm, the lowest applicable energy setting should be used in initiating synchronized cardioversion. Example: ventricular fibrillation converted to normal sinus rhythm with a pulse at 300J. Pulsatile ventricular tachycardia occurs and would be synchronized cardioverted at 100J. This emphasis on lowest energy is designed to minimize myocardial damage.

10. First line vascular access in the cardiac arrest patient shall be the intraosseous route. In instances that intraosseous access is contraindicated or unsuccessful, vascular access should be achieved intravenously.

11. The AutoPulse Resuscitation System is approved for use by the EMS Medical Director for any non-traumatic cardiac arrest patient 13+ years of age weighing 90-300 lbs.
705

MEDICAL
NON-TRAUMATIC SHOCK ADULT PATIENT

GENERAL MEDICAL TREATMENT

ANY EVIDENCE OF:
* HYPOVOLEMIC SHOCK
* CARDIGENIC SHOCK
* SEPTIC SHOCK
* NEUROGENIC SHOCK
* ANAPHYLATIC SHOCK
* MEDICATION OVERDOSE

(Treatment can be determined based on evidence of shock type)

FLUID CHALLENGE
500 cc NS

DOES SYSTOLIC BP DECREASE WITH FLUID CHALLENGE?

SYSTOLIC BP > 100 mmHg?

CONTACT OLMCP
**OLMC PHYSICIAN
ORDER ONLY**
DOPAMINE DRIP
5 - 20 mcg/kg/min
TITRATE TO SYSTOLIC BP
≥ 100 mmHg

DOES SYSTOLIC BP DROP BELOW 100 mmHg?

MONITOR.

TRANSPORT

REPEAT FLUID CHALLENGE
500 cc NS

DOES SYSTOLIC BP DECREASE WITH 2nd FLUID CHALLENGE?

SYSTOLIC BP > 100 mmHg?

CONTACT OLMCP
**OLMC PHYSICIAN
ORDER ONLY**
DOPAMINE DRIP
5 - 20 mcg/kg/min
TITRATE TO SYSTOLIC BP
≥ 100 mmHg

MONITOR.

TRANSPORT

RUN FLUID WIDE OPEN UNTIL TOTAL OF 2 LITERS GIVEN

MONITOR.

TRANSPORT
705.1.1: NON-TRAUMATIC SHOCK

COMMENTS

1) Non-traumatic shock may be due to multiple causes including:
   A) Hemorrhage not associated with trauma (e.g. GI bleeding)
   B) Hypovolemia (e.g. dehydration)
   C) Cardiogenic shock (e.g. AMI)
   D) Septic shock (e.g. infection)
   E) Anaphylactic shock
   F) Medication Overdose

2) CARDIOGENIC SHOCK should be treated under the appropriate arrhythmia protocol if arrhythmias are present, or under the ACUTE CORONARY SYNDROME (704.1) or ACUTE DYSPNEA (703.4) secondary to CHF protocol depending on the paramedic's assessment.

3) SEPTIC SHOCK should be treated per this protocol with special emphasis on rapid transport to the hospital for antibiotics. Also pay strict attention to compliance with universal blood and body fluid precautions.

4) ANAPHYLACTIC SHOCK should be treated per the ALLERGIC REACTION protocol.

5) MEDICATION OVERDOSE should be treated per the GENERAL MEDICAL TREATMENT protocol and with attention to the appropriate arrhythmia protocol if arrhythmias are present. Also pay attention to the ALTERED MENTAL STATUS protocol if there are changes in the patient's usual mental status. The NON-TRAUMATIC SHOCK protocol should also be followed.

   For suspected tricyclic antidepressant overdose, Sodium Bicarbonate 50mEq IVP is given if any of the following 3 signs are present: hypotension (systolic BP <100mmHg); widened QRS complex (>0.12 sec); or ventricular tachycardia. Hemodynamically unstable (systolic BP <100mmHg) ventricular tachycardia, even in the TCA overdose setting, should first be treated with synchronized cardioversion as detailed in 704.7 UNSTABLE TACHYCARDIA, before administration of Sodium Bicarbonate and Amiodarone. Hemodynamically stable ventricular tachycardia, in the setting of TCA overdose, should be treated first with Sodium Bicarbonate, and then followed by Amiodarone as detailed in 704.6 TACHYCARDIA.

6) For adult patients with systolic blood pressures 90-100mmHg and a history of usual systolic blood pressures in this range, treatment (unless conditions otherwise dictate e.g. active GI bleeding, anaphylaxis, etc.) with IO / IV fluid bolusing and/or requests for dopamine infusion should not be initiated. Be certain to document the patient’s statement(s) of his or her usual blood pressure.

All other forms of non-traumatic shock should be treated per this protocol.
705.2
ALLERGIC REACTION

GENERAL MEDICAL TREATMENT

MILD
(RASH, ITCH, HIVES)

MODERATE
(SOB, WHEEZING)

CARDIAC MONITOR

SEVERE = ANAPHYLAXIS
SYSTOLIC BP <100mmHg (Adult)
SYSTOLIC BP < 70+2 X AGE YRS (Pedi)
& ANY OF THE MILD / MODERATE
ALLERGIC REACTION SYMPTOMS

NS 500cc BOLUS
(PEDI 20cc/kg NS BOLUS)
IO ACCESS IF IV UNSUCCESSFUL

CARDIAC MONITOR

EPINEPHRINE 1:1000
0.3mg SQ
(PEDI 0.01mg/kg TO MAX 0.3mg)
OR
**OLMC PHYSICIAN ORDER ONLY**
EPINEPHRINE 1:10000
0.5-1mg SLOW IO / IVP
PEDI 0.01mg/kg TO MAX 0.3mg

BENADRYL 25-50mg IM or IV
(PEDI 1mg/kg MAX DOSE OF 50mg)

NEBULIZED ALBUTEROL
2.5 mg IN 3cc NS
MAY REPEAT X 2

**OLMC PHYSICIAN ORDER ONLY**
EPINEPHRINE 1:1000
0.3mg SQ
(PEDI 0.01mg/kg TO MAX 0.3mg)

BENADRYL 25-50mg IM or IV
(PEDI 1mg/kg MAX DOSE 50mg)

NEBULIZED ALBUTEROL
2.5mg IN 3cc NS
MAY REPEAT X 2

TRANSPORT

YES
SYS BP ≥ 100 mm Hg?

NO

CONTACT OLMCP
**OLMC PHYSICIAN ORDER ONLY**
DOPAMINE DRIP
5-20 mcg/kg/min
TITRATE TO SYSTOLIC BP ≥ 100 mmHg

02/01/07
**COLD INJURIES/ILLNESS**

**GENERAL MEDICAL TREATMENT**

- **EXPOSURE OR SOFT TISSUE INVOLVEMENT**
  - **SOFT TISSUE FROSTBITE**
    - Firm, pale skin may become itchy, red on rewarming
    - Remove patient from cold/slow rewarming
    - Prevent refreezing of injured part
    - Basic care
    - Transport

- **MILD-MODERATE HYPOTHERMIA**
  - Shivering, loss of coordination, difficulty speaking, impaired judgment
  - Core T 90-95F
  - Remove from cold
  - IV NS TKO and oxygen
  - External rewarming with blankets
  - Transport

- **SEVERE HYPOTHERMIA**
  - Shivering unlikely, dilated pupils, decreased respirations, decreased BP and pulse, cardiac arrhythmias
  - Core T <90 F
  - Remove from cold
  - IV NS TKO and oxygen. Begin external rewarming. Minimize invasive procedures and movement of patient. Avoid CPR in apparent pulselessness (PEA) unless monitor shows asystole or ventricular fibrillation.
  - Transport

**COMA OR DECREASED LOC?**

- Yes
  - Transport

- No
  - Transport
HEAT ILLNESS

GENERAL MEDICAL TREATMENT

ALTERED MENTAL STATUS?

CRAMPS ONLY?

Yes

HEAT CRAMPS

REMOVE PATIENT FROM HOT ENVIRONMENT

TRANSPORT

No

HEAT EXHAUSTION

FATIGUE, DIZZINESS, HEADACHE, NAUSEA, DRY MEMBRANES, TACHYCARDIA

CORE T <105F

REMOVE FROM HEAT/SUN

HEALTHY ADULTS IV NS-BOLUS 500cc

COOL WHILE AVOIDING CREATING SHIVERING

TRANSPORT

SWEATING MAY HAVE STOPPED

CORE T >105F

HEAT STROKE

REMOVE PATIENT FROM HEAT

IV NS TKO AND HIGH-FLOW OXYGEN

COOL RAPIDLY WITH ICE PACKS TO GROIN, NECK AND AXILLA PLUS USE EVAPORATIVE COOLING MEASURES IF POSSIBLE AVOID SHIVERING

TRANSPORT
705.5
SEIZURES

GENERAL MEDICAL TREATMENT
IV NS TKO

IF ADULT PATIENT IS ACTIVELY SEIZING ADMINISTER 5mg VALIUM SLOW IVP
OR IO IF IV UNSUCCESSFUL AND PATIENT CONTINUES TO SEIZE
IF SEIZURE PERSISTS, MAY REPEAT EITHER DOSE (IVP OR IO) x1

PEDI-PATIENT 0.3mg/kg IVP
OR APPROXIMATELY 0.5mg/kg PER RECTUM USING THE PREFILLED DIASTAT
10mg RECTAL SYRINGE

DETERMINE BLOOD SUGAR
IF GLUCOSE <80, ADMINISTER:
ADULT & CHILD > 25kg: DEXTROSE 50%
1cc/kg IO / IVP, UP TO 50cc
CHILD < 25kg: DEXTROSE 25%,
2cc/kg IO / IVP, UP TO 50cc

*NOTIFY OLMC PHYSICIAN IF PATIENT CONTINUES SEIZING

TRANSPORT

* IF PATIENT EXHIBITS
POST TONIC-CLONIC
PERSISTENT MUSCULAR
RIGIDITY >2MINS DURATION,
ADMINISTER VALIUM PER
THIS PROTOCOL. IF MAX
DOSE VALIUM ALREADY
GIVEN, NOTIFY OLMC
PHYSICIAN.
705.6
ALTED MENTAL STATUS

DEXTROSE 50%*:
ADULT & CHILD > 25kg: 1cc/kg IVP, UP TO 50 cc.
CHILD < 25kg: DEXTROSE 25%, 2 cc/kg IVP, UP TO 50 cc.

DOES LEVEL OF CONSCIOUSNESS INCREASE TO BASELINE?

BLOOD GLUCOSE ≥ 80 mg/dl?

CONSIDER POSSIBLE CAUSES OF AMS:
& TREAT PER APPROPRIATE PROTOCOL/CONSULT WITH OLMC PHYSICIAN
* SHOCK, HYPOXIA
* HEAD INJURY
* STROKE, SEIZURE
* SEPSIS, MENINGITIS
* DRUGS/ALCOHOL
* HEAT INJURY

NALOXONE (NARCAN)
IF APNEA / AGONAL ADULT & CHILD: 2 mg IVP
IF NOT APNEA / AGONAL, 0.5 mg IVP EVERY 30 SECONDS TO DOSE OF 2 mg OR UNTIL RESP.
FUNCTION ADEQUATELY IMPROVES

DOES LEVEL OF CONSCIOUSNESS INCREASE?

REPEAT (NARCAN)
IF APNEA / AGONAL ADULT & CHILD: 2 mg IVP
IF NOT APNEA / AGONAL, 0.5 mg IVP EVERY 30 SECONDS TO DOSE OF 2 mg OR UNTIL RESP.
FUNCTION ADEQUATELY IMPROVES

DOES LEVEL OF CONSCIOUSNESS INCREASE?

TRANSPORT
CONSULT OLMCP

* IF UNABLE TO START IV, ADMINISTER ONE TUBE OF ORAL GLUCOSE. PT MUST HAVE INTACT GAG REFLEX TO RECEIVE ORAL GLUCOSE.

* BLOOD GLUCOSE > 80 mg/dl?
General Medical Care

SUPPLEMENTAL O₂, ONLY IF PULSE OX < 90% OR IF INTUBATED DUE TO FAILURE TO PROTECT AIRWAY

IV NS @ TKO

DETERMINE BLOOD GLUCOSE
GLUCOSE < 80 mg/dl ?

YES

REFER TO 705.6 ALTERED MENTAL STATUS

NO

CINCINNATI PREHOSPITAL STROKE SCALE
1) FACIAL DROOP?
2) ARM DRIFT?
3) ABNORMAL SPEECH?

EARLY RADIO NOTIFICATION

TRANSPORT
1. Oxygen should be withheld in suspected stroke patients if pulse oximetry shows oxygen saturation > 90% AND the patient shows no signs of respiratory distress AND the patient does not require intubation for either respiratory distress and/or airway protection due to altered mental status. Excessive oxygen in the acute stroke patient has been linked to free radical formation. Free radicals are known to cause vascular changes contributing to increased thromboembolic formation.

2. Administration of dextrose 50% should be given cautiously in the suspected stroke patient. For instance, a patient with altered mental status thought to be primarily due to hypoglycemia should receive the standard dose of dextrose 50% per the Altered Mental Status protocol. However, a patient with altered mental status thought to be primarily due to stroke and found to have a blood glucose in the 70-80 mg/dl range, should be given no more than half the standard dose of dextrose 50%. Induction of hyperglycemia in the suspected stroke patient has been associated with poorer neurologic outcomes. Consult with the OLMCP if you have doubts about the appropriate dose of dextrose 50% in the suspected stroke patient.

3. The Cincinnati Prehospital Stroke Scale has been associated with prehospital ability to positively predict stroke. The patient is asked to do the following three tests:
   
   a. Facial Droop - the patient smiles to accentuate the presence of possible facial motor weakness (**ABNORMAL response is facial droop noted)
   
   b. Arm Drift - the patient places both arms in front of them, straight out, palms up and then with eyes closed, holds the arms in position for 10 seconds (**ABNORMAL response is one arm drifts downward or the patient lacks the motor strength to raise an arm initially)
   
   c. Abnormal Speech - the patient repeats a phrase such as “You can't teach an old dog new tricks.” (**ABNORMAL response is aphasia, slurred speech, or incorrect words)

   If any 1 of the above 3 tests is abnormal, first ensure the finding is new for the patient compared with the usual neurologic baseline function. If the abnormality is new onset, there is a 72% chance the Cincinnati Prehospital Stroke Scale has identified a stroke patient. (Other possibilities include hypoglycemia; post-ictal from seizures; Bell's palsy - facial nerve palsy; meningitis; brain neoplasm)

4. Accurate assessment of the time of onset of neurologic deficit in the acute stroke patient is critical. In some thromboembolic (non-hemorrhagic) strokes, thrombolytic therapy may be indicated if the patient can be transported, evaluated by exam and computerized tomography (CT) imaging, and thrombolytic therapy is initiated within three hours of stroke onset. Rapid prehospital identification, emergency department notification, and transport are important in achieving this decision before the three hour deadline.
LOOK FOR “DUMBELS” SIGNS & SYMPTOMS

D - Diarrhea
U - Urination
M - Miosis (pinpoint pupils)
B - Bronchospasm, Bronchorrhea (copious respiratory secretion)
E - Emesis (nausea & vomiting)
L - Lacrimation (tearing)
S - Salivation
1. Nerve agent exposure should be considered at multiple casualty incidents in which patients are exhibiting the DUMBELS constellation of symptoms and signs. In particular, nerve agent exposure should be considered while responding to any reports of multiple casualties at a location of high occupancy (shopping malls, stadiums, etc), high visibility (crowds gathered for public speeches, protests, etc), or high political symbolism (places of worship, governmental offices, etc).

2. Immediate countermeasures to nerve agent exposure with developing DUMBELS symptoms and signs are administration of the Mark 1 autoinjectors, C-IV (Diazepam) autoinjector – as indicated, and evacuation from the exposure area for decontamination.

3. Any PFD personnel exposed to a nerve agent and requiring treatment with the Mark 1 autoinjectors is restricted from providing patient care and should be promptly transported for emergency physician evaluation.

4. Atropine is utilized in nerve agent exposure treatment to dry secretions, reduce bronchospasm, and decrease gastrointestinal motility. If significant bronchorrhea continues after three Mark 1 autoinjector kits have been administered in the adult patient, further atropine may be given as follows until the bronchorrhea subsides:

   Adult – 1 mg atropine IVP every 3-5 minutes
   Adult – 2 mg atropine IM every 5 minutes

In the case of nerve agent exposure with bronchorrhea, there is no maximum atropine dosing in the adult patient, though atropine should be withheld in the case of developing ventricular tachydysrhythmias. In this case, treat the ventricular tachydysrhythmia according to 704.7 Unstable Tachycardia or 704.8 Ventricular Fibrillation/Pulseless Ventricular Tachycardia as applicable.

5. 2-PAM or Pralidoxime Chloride is utilized in nerve agent exposure to reverse the nerve agent effect on acetylcholinesterase, the enzyme responsible for neurotransmitter regulation. 1800 mg should be considered the effective maximum dose in the adult patient.

6. C-IV (Diazepam) is utilized in nerve agent poisoning for the treatment or prophylaxis against seizures. Any patient exhibiting severe enough signs to warrant administration of three Mark 1 autoinjector kits should be administered the diazepam autoinjector even if not seizing.

7. Patients contaminated by vapor-only nerve agent exposures should be decontaminated by clothing removal (dry decon). Patients contaminated by liquid nerve agent exposures should be decontaminated by clothing removal and thoroughly washed with soap and water (wet decon).

8. In the absence of DUMBELS symptoms and signs, nerve agent exposure has not occurred. The Mark 1 autoinjectors are not authorized for patients not exhibiting DUMBELS symptoms and signs.

9. Pediatric patients (<25 kg weight) with DUMBELS symptoms and signs in the setting of suspected nerve agent exposures should be treated with one Mark 1 kit and the OLMCP should be contacted for further direction in relation to any further atropine and/or 2-PAM usage.

10. Patients treated with Mark 1 autoinjector kits should either have the atropine autoinjector hooked to their clothing or a prominent vertical mark made on their forehead for each kit administered to indicate to further healthcare providers the number of Mark 1 autoinjector kits the patient has received.
NERVE AGENT ANTIDOTE KIT PROTOCOL CARD

LOOK FOR “DUMBELS” SIGNS & SYMPTOMS

D - Diarrhea
U - Urination
M - Miosis (pinpoint pupils)
B - Bronchospasm Bronchorrhea (copious respiratory secretion)
E - Emesis (nausea & vomiting)
L - Lacrimation (tearing)
S - Salivation

MILD
- Miosis, Lacrimation, Rhinorrhea (nasal secretions)
- One Mark-1 Kit IM (Atropine 2mg, 2-Pam 600mg)
- Self-Evacuate Immediately
- Re-Evaluate for Symptom Progression Every 3-5 mins. Treat with Additional Mark-1 Kit(s) as Indicated

MODERATE
- Mild Symptoms + N/V, Dyspnea, Wheezing
- Two Mark-1 Kits IM (Give 1 Kit/Thigh) (Atropine 4mg, 2-Pam 1200mg)
- Self-Evacuate / Call for Aid Immediately
- Re-Evaluate for Symptom Progression Every 3-5 mins. Treat with Additional Mark-1 Kit(s) as Indicated

SEVERE
- Moderate Symptoms + Extreme Dyspnea, Seizures, Cardiac Arrest May Occur
- Three Mark-1 Kits IM (Alternate Thighs) (Atropine 6mg, 2-Pam 1800mg) + C-IV Autoinjector (Diazepam 10mg)
- Evacuate Patient Immediately
- Re-Evaluate for Symptom Progression Every 3-5 mins. Treat as Indicated per 705.8 Nerve Agent Protocol

NERVE AGENT EXPOSURE
- Re-Evaluate for Symptom Progression Every 3-5 mins. Treat as Indicated per 705.8 Nerve Agent Protocol

FRONT VIEW OF CARD

Nerve Agent Antidote Administration:

- To administer Atropine, remove yellow end cap.
  * Place green end on mid outer thigh.
  * Push hard until injector functions.
  * Hold in place for ten seconds, then withdraw.

- To Administer Pralidoxime Chloride, remove gray end cap.
  * Place black end on mid outer thigh.
  * Push hard until injector functions.
  * Hold in place for ten seconds, then withdraw.

- To administer C-IV Diazepam, remove gray end cap.
  * Place black end on mid outer thigh.
  * Push hard until injector functions.
  * Hold in place for ten seconds, then withdraw.

BACK VIEW OF CARD
706

TRAUMA
TREATMENT

See appropriate cardiac arrest protocols for drugs, etc. However, an airway and rapid transport are the most important interventions for victims of traumatic arrest.

1. LOAD AND GO - move as rapidly as possible towards appropriate facility.
2. Immobilize spine.
3. CPR. Do NOT utilize the AutoPulse in cases of Traumatic Cardiac Arrest
4. Intubate/Ventilate 100% oxygen/monitor lead II EKG/IO start NS fluid bolus wide open.
   If time permits enroute, initiate IV access and intravenous fluid bolus NS wide open.
5. Transport to appropriate receiving facility:
   a. Blunt Trauma CPR Closest Trauma Hospital
      Medical Center of Plano
      Presbyterian Hospital of Plano
      Centennial Medical Center
      Baylor Regional Medical Center of Plano
   b. Penetrating Trauma CPR
      SIGNS OF LIFE ever present Closest Trauma Hospital
      Medical Center of Plano or
      Presbyterian Hospital of Plano
      Centennial Medical Center
      Baylor Regional Medical Center of Plano
      NO SIGNS OF LIFE Closest Trauma Hospital
      Medical Center of Plano
      Presbyterian Hospital of Plano
      Centennial Medical Center
      Baylor Regional Medical Center of Plano
6. In the case of blunt traumatic arrest with an initial rhythm of asystole, initiate basic life support and immediately contact the OLMC physician. Your report to the OLMC physician should begin with a request for orders to terminate resuscitation of a patient with blunt traumatic arrest with an initial rhythm of asystole.
7. If the OLMC physician does not agree with termination of resuscitation, initiate complete advanced life support and transport as directed above.
706.2
BURNS

CHEMICAL, ELECTRICAL OR THERMAL ETIOLOGY?

CHEMICAL SOURCE

BRUSH OFF ANY DRY CHEMICALS
FLUSH WITH WATER FOR A MINIMUM OF 15 MINUTES
GENERAL TRAUMA TREATMENT

THERMAL SOURCE

GENERAL TRAUMA TREATMENT

STRIDOR, SHORTNESS OF BREATH OR HORSENESS?

Yes
MONITOR AIRWAY CLOSELY
INTUBATE PRN

No
REMOVE BURNED CLOTHING AND APPAREL
ASSESS BURN PERCENTAGE AND DEPTH
COVER LARGE BURNS WITH DRY (STERILE OR CLEAN) SHEET

**OLMC PHYSICIAN ORDER ONLY**
MORPHINE SULFATE 5mg
SLOW IVP

TRANSPORT

ELECTRICAL SOURCE

MONITOR CARDIAC RHYTHM
TREAT ARRHYTHMIAS PER RESPECTIVE PROTOCOL
GENERAL TRAUMA TREATMENT

FOR MAJOR THERMAL BURNS RUN IV at:
250cc BOLUS THEN
0.25cc NS X kg BODY WEIGHT X % TOTAL BODY SURFACE AREA BURNED PER HOUR
706.3
EYE INJURIES

GENERAL TRAUMA TREATMENT

TRAUMA CHEMICALS OR UV LIGHT?

CHEMICAL INJURIES

TETRACAINE 2 DROPS IN AFFECTED EYE(S)
REMOVE CONTACTS
FLUSH EYE(S) THOROUGHLY WITH 2 LITERS OR MORE OF NS
TRANSPORT

UV KERATITIS
FROM WELDER'S ARC SUN LAMP EXPOSURE

TETRACAINE 2 DROPS IN AFFECTED EYE(S)
COVER EYES
TRANSPORT

TRAUMA TO THE EYE

POSITION OF COMFORT
COVER/CLOSE BOTH EYES
STABILIZE IMPALED OBJECTS
DO NOT PUT PRESSURE ON EYES
ELEVATE HEAD OR BACKBOARD 30 DEGREES
TRANSPORT
707

PROCEDURES/ MEDICATIONS
707.1.1 BAG-VALVE-MASK (BVM) ASSISTED VENTILATIONS

Utilize the following mnemonic to guide correct BVM usage

C  Hold the mask with a **c-clamp** formed by one, preferably two hands.
O  Use an **oropharyngeal or nasopharyngeal airway**.
P  **Place in a sniffing position, unless spine immobilization required.**
E  **Elevate the jaw**, further opening the airway.
S  **Seal the mask** firmly over the mouth & nose, without excessive downward force.

Perform the **Sellick maneuver** *(Backward, Upward, (pt’s)Rightward Pressure on the)*
S  **Cricoid cartilage to occlude the esophagus* in the unconscious patient.
O  Use **100% oxygen** and the oxygen reservoir.
S  **Squeeze the bag slowly and smoothly** *(over 1 second)* delivering adequate ventilation volume *(approximately 8-10 cc of air/kg up to 1000 cc)* and provide adequate exhalation.

Adults in cardiac arrest are to be ventilated at 8-10 times per minute. Adults in shock are to be ventilated at 10-12 times per minute. Adults in perfusing rhythms without shock should be initially ventilated 12-15 times per minute with subsequent ventilation rates correlated to end-tidal CO2 measurements in perfusing rhythms. The head injury patient, regardless of age, should be initially hyperventilated in a controlled manner at 20 times per minute with subsequent ventilation rates correlated to end-tidal CO2 measurements in perfusing rhythms. Pediatric patients ages 1-12 should be initially ventilated 15 times per minute with subsequent ventilation rates correlated to end-tidal CO2 measurements in perfusing rhythms. Pediatric patients less than 1 year of age should be initially ventilated 20 times per minute with subsequent ventilation rates correlated to end-tidal CO2 measurements in perfusing rhythms.

Correct BVM assisted ventilations requires at least two personnel, preferably three (one to hold and seal the mask, one to provide cricoid pressure, and one to squeeze the bag).

Utilization of this technique is required and will improve oxygenation and ventilation, while decreasing gastric insufflation, vomiting, and aspiration.
707.1.2: CRICOTHYROTOMY

Cricothryotomy may be performed under standing order. If uncertain whether cricothyrotomy is indicated or how to correctly perform cricothyrotomy, immediately contact the on-line medical control physician.

Indication:
1. Failure of intubation and inability to adequately oxygenate and ventilate with BVM
2. Upper airway obstruction unable to be removed and inability to adequately oxygenate and ventilate with BVM

Contraindications:
1. Tracheal transection with retraction of the trachea into the chest.
2. Fractured larynx or cricoid cartilage.

Procedure utilizing the PerTrach Cricothyrotomy Kit:
1. Ensure adequate lighting and operating suction.
2. If rapidly available, wipe anterior neck with alcohol preps.
3. Locate the following landmarks: thyroid cartilage (“Adams’s apple”) & cricoid cartilage
4. The cricothyroid membrane is between these cartilages.
5. Once the structures are identified, using the non-dominant hand, spread the overlying skin taut with the thumb and fingers, and slightly depress the skin over the cricothyroid membrane with the index finger.
6. Do not release this position with the non-dominant hand until the procedure is complete!
7. A second paramedic should assist in the procedure by aspirating all air from the airway cuff.
8. Using the needle and syringe, enter the lower half of the cricothyroid membrane at a 45 degree angle toward the trachea. Once air is aspirated in the syringe, advance another few millimeters and remove the syringe.
9. Using the small scalpel, make a single vertical “stab” incision immediately to the side of the needle.
10. Place the tracheal hook in this incision and position the hook so as to pull anterior and superior on the inferior border of the thyroid cartilage.
11. The assistant paramedic should now control the tracheal hook
12. Palming the airway and the dilator stylet, advance through the needle until resistance is met.
13. The assistant paramedic should split the needle by compressing and widening the butterfly tips on the needle and then remove the two sides of the needle. Constant pressure on the airway and stylet must be maintained to avoid inadvertent displacement of the airway is completely in the trachea.
14. Continue to advance the stylet until the airway is completely in the trachea.
15. Remove the tracheal hook and stylet.
16. Verify correct airway placement by auscultating the epigastrum and lung field, by observing chest rise and fall, and by using the esophageal detection device, and capnography.
17. Secure the airway using the cloth tie while initiating ventilation with the BVM.

Procedure for patients with edema, subcutaneous air, or fat prohibiting landmark palpation:
1. Prepare as with any cricothyrotomy.
2. Make a single midline vertical incision in the neck from the suspected thyroid cartilage (“Adam’s apple”) to just superior of the sternal notch. The depth of the incision should be through skin and most, if not all, of the subcutaneous fat.

Identify the landmarks by palpation and proceed as above.

The paramedic that performs a cricothyrotomy must contact the EMS Medical Director (or the EMS Medical Director’s designee if the EMS Medical Director so indicates) to report the cricothyrotomy and the steps completed in confirming the cricothyrotomy. This contact shall occur at the first available opportunity and shall be prior to the end of the paramedic’s shift. Further details of this requirement may be found in Plano Fire Department SOP 361.0 : Advanced Airway Placement Confirmation Patient Safety Initiative.
**707.1.3: NEEDLE THORACOSTOMY (Chest Decompression)**

**Indication:** Treatment of Tension Pneumothorax

**Signs of Tension Pneumothorax may include:**

- Decreased breath sounds, usually unilaterally. Bilateral tension pneumothorax is rare.
- Tachypnea
- Tachycardia
- Hypotension
- Tracheal deviation away from the affected side (late finding)

**Procedure:**

1. Locate the second or third intercostal space at the midclavicular line by palpating the anterior chest wall on the side of the suspected tension pneumothorax.
2. Briefly cleanse this area with either alcohol or Betadine.
3. Insert a 2-inch 14 gauge angiocath just over the top of the third or fourth rib (second or third intercostal space.)
   - For pediatric patients, use a 1-1 1/4 inch 18 gauge angiocath inserted into the 4th or 5th intercostal space in the midaxillary line.
4. Advance the catheter until air return is noted.
5. Withdraw the stylet and secure the catheter in place.

**Note:**
A tension pneumothorax may recur if the catheter becomes kinked or clogged. Repeated needle thoracostomy may be required. Frequent reassessment is necessary. If multiple needle thoracostomy is required, consider a needle thoracostomy in the fifth intercostal space in the midaxillary line. Additional needle thoracostomy in the second or third intercostal space at the midclavicular line is highly preferred, though.
707.1.4: TRANSCUTANEOUS CARDIAC PACING

Indications:
Symptomatic bradycardia

Procedure:
1. Turn on external pacer
2. Place ECG electrodes on patient
3. Place pacing electrodes on patient in appropriate position:
   - A/P placement: (preferred placement)
     - electrode on left anterior chest ½ way between xiphoid and left nipple just below nipple line
     - + electrode on left upper back below the scapula and lateral to the spine
   - Apex/sternum placement: (to be utilized when A/P placement cannot be achieved)
     - electrode on right anterior upper chest subclavicular area
     - + electrode on left chest, forth intercostal space, mid-axillary line
   Pace at a rate of 80 BPM
4. Begin pacing at a rate of 20 milliamps for bradycardia and increase amperage as necessary until mechanical capture is achieved.
5. Administer Valium 2.5-5.0mg slow IV push if needed for patient comfort.

Comments:
For Pediatric patients, refer to 702.5 Pediatric Guidelines.
707.1.5  EXTERNAL JUGULAR VENOUS CANNULATION

External jugular (EJ) venous cannulation may be performed under standing order. It is considered a peripheral intravenous site. If uncertain whether EJ cannulation is indicated or how to correctly perform EJ cannulation, immediately contact the on-line medical control physician. **EJ cannulation is only authorized for patients 12 years of age or greater.** Attempts at EJ cannulation in pediatric patients less than 12 years of age are rarely successful due to poor vein visualization and small vein size.

**Indications:**
1. Peripheral venous access needed for intravenous fluid or medication administration and inability to establish intravenous access in other peripheral sites.
2. In the setting of non-traumatic cardiac arrest, an EJ cannulation should be performed rapidly if the antecubital veins cannot be successfully cannulated in patients that intraosseous access is contraindicated or unsuccessful.

**Contraindications:**
1. Inability to visualize the vein.
2. Landmarks obscured by trauma or subcutaneous emphysema.
3. Head, facial, or neck trauma.
4. Cervical spine immobilization required. This does not include patients that are c-collared only for post-intubation reasons.
5. Precautionary IV lines.
6. Failed attempt on the same side.

**Procedure:**
1. If the patient is conscious, explain the procedure briefly.
2. With the patient supine, turn the head away from the side to be cannulated.
3. Cleanse the skin with an alcohol prep.
4. Identify the external jugular vein. The external jugular vein is the large vein running from the angle of the jaw downward to the middle third of the clavicle. Avoid any vascular structure with prominent pulsations. This is likely to be the carotid artery.
5. Manually stabilize and compress the vein just above the clavicle.
6. Utilize a standard angiocath and cannulate the external jugular vein midway between the angle of the jaw and the level of the clavicle, observing for venous blood return.
7. Advance the needle and catheter another 2 mm and slide the needle off the catheter.
8. Attach and secure the IV line. Under no circumstance is circumferential taping of the catheter allowed. This could result in impaired airway, breathing, and or circulatory mechanics.
707.1.6 INTRAOSSEOUS ACCESS

Intraosseous (IO) access may be performed under standing order. If uncertain whether IO access is indicated or how to correctly perform IO access, contact the on-line medical control physician.

Indications:

1. First-line vascular access in cardiac arrest.
2. Shock (anaphylactic, cardiogenic, hemorrhagic, hypovolemic, neurogenic, septic) and inability to establish peripheral intravenous access after two attempts over at least 90 seconds. The 90 seconds plus timeframe is indicative for establishing IV access in likely successful sites and not hurried attempts before automatically proceeding to IO access.
3. Respiratory failure requiring medication-facilitated intubation with etomidate and inability to establish peripheral intravenous access after two attempts over at least 90 seconds.

Contraindications:

1. Inability to locate landmarks for proper placement.
2. Fracture or history of recent fracture on the same extremity.
3. Previous IO access within the past 24 hours in the same extremity.
4. Overlying infection at the placement site.
5. Total knee arthroplasty/replacement (look for notable surgical scar running from distal femur to proximal tibia in the midline over the patella)
6. Evidence of very poor circulation in the same extremity (partial amputation, history of gangrene, history of peripheral vascular bypass surgery)
7. Prophylactic vascular access (access in stable patients without immediate need of medications and/or fluids to correct life-threatening cardiopulmonary distress)

Procedure Using the EZ-IO System:

1. Inform patient or guardians when applicable about the procedure. The pain of IO access is reported by multiple patients to date of being equivalent to the insertion of a large bore IV catheter.
2. Position the patient supine, leg flat and midline.
3. An assistant EMT or EMT-Paramedic should manually immobilize the leg.
4. Palpate the patella and move distally until the proximal tibial tuberosity (the most bony prominence of the proximal tibia) is palpated.
5. In patients 13 years of age & older palpate one finger width medial to the proximal tibial tuberosity, to find the IO insertion site. The bony growth plate is nearly or completely fused and the bony cortex is thinner at this level. Additionally, the cancellous (spongy) bone is more plentiful enabling faster vascular uptake of medications and fluids. In patients 1-12 years of age, palpate one finger width below & then one finger width medial to the proximal tibial tuberosity for the IO insertion site. In patients < 1 year of age, palpate two fingers below the lower patella edge in the anterior midline of the leg & then one finger width medial for the IO insertion site.
6. Cleanse the area with an alcohol prep wipe.
7. Prepare the EZ-IO driver and needle set. Utilize the blue (adult) needle for any patient weighing ≥ 85 lbs. Utilize the pink (pedi) needle for any patient weighing < 85 lbs. The needle will attach by a magnetic connection to the driver.
8. Stretch the skin overlying the insertion site to prevent skin tearing.
9. Make skin contact at 90 degrees to the skin surface with the needle at the insertion site and depress the trigger on the EZ-IO driver, inserting the needle with smooth, continuous pressure until the catheter hub makes contact with the skin. Allow the EZ-IO driver to provide a majority of force in inserting the needle.

10. Remove the EZ-IO driver while stabilizing the catheter hub manually.

11. Remove the stylet by unscrewing it and withdrawing it.

12. If correctly positioned, the EZ-IO catheter should remain firmly upright in the bone without manual support.

13. DO NOT ASPIRATE BONE MARROW. Aspiration utilizing the EZ-IO catheter has been reported to cause clotting in the catheter.

14. Connect a flushed EZ-Connect 90 degree angled connector tubing set. This connector set must be utilized to prevent excessive pressure in the catheter from causing catheter dislodgement. Tape the connector set to the skin. No specific dressing is required around the EZ-IO catheter.

15. If the adult patient is conscious and able to perceive pain, flush the IO line with 40 mg of 2% lidocaine to minimize future pain with medication administrations and flushes and/or fluid bolus infusions. If the pediatric patient is conscious and able to perceive pain, flush the IO line with 0.5mg/kg of 2% lidocaine to minimize future pain with medication administrations and flushes and or fluid bolus infusions.

16. FLUSH THE IO LINE WITH 10 CC OF NORMAL SALINE. Failure to flush will likely result in a failure of subsequent medication administrations and flushes and/or fluid bolus infusions. This initial 10cc NS flush will clear the immediate area at the catheter tip of clotted marrow and bony particles.

17. The IO line is now ready for use. Any medication listed in Plano Fire Department EMS Treatment Protocols for IV administration may be given via the IO line in the same appropriate dosage. Any IO medication administration should be followed by a 10cc NS flush. Any fluid bolusing may be accomplished by attaching an IV bag and IV drip set to the EZ-Connect set. For proper fluid bolus flow, utilize a pressure infuser on the IV bag. The pressure infuser should be inflated and kept inflated at 300mmHg. Even with the pressure infuser, expect only 250-500cc of fluid bolusing prior to emergency department arrival in cases requiring wide open fluid infusion rates. Limited fluid flow rates are due to higher resistance within the intraosseous space than intravenous resistance.

18. Attach the EZ-IO alert wristband to one of the patient’s wrist and be certain to report any successful and failed IO attempts to the receiving medical personnel.
IMMINENT CHILDBIRTH

PRESENTING PART

PROLASPED UMBILICAL CORD

PLACE GLOVED HAND INTO VAGINA, PUSHING UP ON FETAL HEAD TO RELIEVE COMPRESSION ON CORD

TRANSPORT PRIORITY 1 WITH PATIENT IN KNEE-CHEST POSITION

NOTIFY OLMC PHYSICIAN

FETAL HEAD

PLACE MOTHER SUPINE, KNEES WIDELY SEPARATED, BUTTOCKS ELEVATED WITH PILLOW OR BLANKET

PLACE STERILE PAD OR SHEET UNDER AND AROUND VAGINA

PLACE ONE HAND OVER THE FETAL HEAD, APPLYING MINIMAL STABILIZING PRESSURE TO PREVENT EXPLOSIVE BIRTH

AS THE HEAD DELIVERS CHECK FOR UMBILICAL CORD WRAPPED AROUND THE FETAL NECK. IF PRESENT SLIP CORD DOWN OVER SHOULDER OR CLAMP & CUT

SUCTION THE MOUTH THEN EACH NOSTRIL WITH BULB SYRINGE, ALLOW THE FETAL HEAD TO ROTATE NATURALLY

DELIVER THE ANTERIOR (UPPER) SHOULDER WITH MILD DOWNWARD PRESSURE

DELIVER THE POSTERIOR (LOWER) SHOULDER WITH MILD UPWARD PRESSURE

DELIVER THE REST OF THE INFANT

CLAMP & CUT THE UMBILICAL CORD

BREECH, ARM, OR LEG

TRANSPORT PRIORITY 1

NOTIFY OLMC PHYSICIAN
707.1.7.1 IMMINENT CHILDBIRTH

COMMENTS

Usually most obstetric calls are made to EMS in a timely manner such that care of the expectant mother consists of applying 100% oxygen, establishing a large-bore IV with initial IV fluids at a TKO rate, monitoring vital signs and contraction length and intervals, while transporting left lateral recumbent. Most of these patients arrive at the hospital still in active labor, though early enough to allow for a prepared, anticipated delivery by the obstetrician.

Prehospital childbirth is a rare, though usually straightforward occurrence. Prior training, common sense, and a confident attitude will put the paramedic and the expectant parent(s) at greatest possible comfort. The on-line medical control physician should be contacted at any point in the delivery process if questions or concerns arise or in the case of any complicated delivery (preterm defined as <36 weeks gestation, prolapsed umbilical cord, single limb presentation, or breech delivery).

Unless childbirth is imminent on hospital arrival (crowning is observed), patients should be transported directly to the labor and delivery area of the hospital, unless local hospital policy does not allow direct EMS transport to the labor and delivery area. In such cases, transport the patient to the emergency department.

Once the infant is delivered, prevent hypothermia by wrapping the infant in a blanket. If there is any delay in spontaneous respiration or pulse, stimulate the infant by tapping on its foot soles or its back. See also 702.4 Neonatal Resuscitation Guidelines and contact the OLMC physician.

Calculate the APGAR score at one and five minutes post-delivery using the following table:

<table>
<thead>
<tr>
<th>SIGN</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate (beats/min)</td>
<td>Absent</td>
<td>Slow (&lt;100)</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Respirations</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Limp</td>
<td>Some flexion</td>
<td>Active motion</td>
</tr>
<tr>
<td>Reflex irritability</td>
<td>No response</td>
<td>Grimace</td>
<td>Cough or sneeze</td>
</tr>
<tr>
<td>(catheter in nares)</td>
<td>Blue or pale</td>
<td>Pink body with blue</td>
<td>Completely pink</td>
</tr>
<tr>
<td>Color</td>
<td></td>
<td>extremities</td>
<td></td>
</tr>
</tbody>
</table>
707.1.8: UMBILICAL VEIN CANNULATION

Indication: Newborn infant requiring resuscitation with intravenous fluid and/or intravenous medication.

Contraindication: None

Procedure:

1. Trim the infant’s umbilical cord just proximal to the clamp to provide a fresh end.
2. Clean the umbilical cord end with alcohol or Betadine.
3. Locate the umbilical vein. In the umbilical cord, there are three vessels. The two umbilical arteries are small and have thick walls. The single umbilical vein is the largest vessel and has thin walls.
4. Place an 18 or 20 gauge angiocath (without the needle) into the umbilical vein, providing constant manual stabilization of the umbilical cord.
5. The angiocath may be manually held in place during IV fluid bolus or medication administration (preferred method if no active umbilical bleeding) or may be secured by tying umbilical tape around the cord (preferred method if active umbilical bleeding).
In the course of providing prehospital emergency care, patients may require physical restraint. Physical restraint may be necessary to prevent the patient from harm to self, harm to others (including emergency medical personnel), and/or disruption of medically necessary interventions. Alternatives to physical restraint as outlined below are to be utilized so as to minimize the use of physical restraints. However, if alternatives to physical restraints are unsuccessful, then physical restraints will be applied in an effective and compassionate manner. Throughout the use of alternatives to physical restraint and physical restraint, the patient and the patient’s concerned parties (family, friends, co-workers, etc) shall be treated with respect and informed of the need for these procedures. This policy is not intended to place PFD personnel at risk for injury. If personal safety is compromised or threatened during the course of patient care, appropriate law enforcement personnel should be summoned for assistance. If at any time questions arise as to appropriateness of using alternatives to physical restraint or physical restraint, the on line medical control physician should be consulted for direction.

The following steps shall be taken and documented in determining the need for physical restraints:

1. **Assessment of mental status**

   Observe for uncontrolled agitation, combativeness, threats of violence to self or others, disorientation, altered mental status impeding necessary medical care, or pulling at necessary medical interventions (IV lines, endotracheal tubes).

2. **Alternatives to physical restraint**

   Reassurance, support of concerned parties (family, friends, co-workers, etc.) reorientation, diversionary activity, explanation of illness, injury, and necessary medical procedures.

3. **Justification for physical restraint**

   Failure of alternatives to physical restraint, prevent patient harm to self, prevent patient harm to others, enable medically necessary treatment per protocols.

4. **Inform patient and concerned parties of physical restraint use**

5. **Apply physical restraints**

   Restraints are to be soft and are not to impede airway patency, respiratory mechanics, or circulation. Patients will not be restrained prone unless an impaled object necessitates such positioning. Restraints will be applied in an effective, yet compassionate manner. Every effort will be made to avoid injury to the patient during application of physical restraints.

   Restraints authorized for use are those made from roll gauze, soft leather, and those designed as single-patient use, disposable foam with cloth ties. Restraints are to be non-locking (** see below for police-instituted restraints) and able to be released rapidly if patient condition mandates. In cases where more than two extremities are to be restrained, soft leather or foam with cloth tie restraints are to be utilized. These restraints will prove more effective and cause less damage to soft tissue.

   All patients restrained under this protocol should be restrained to a backboard. This facilitates patient transfer in the emergency department and in the case of airway secretions or vomiting, enables rapid positioning of the patient to prevent aspiration. Patients will not be transported “sandwiched” between two backboards; this positioning impedes patient care and increases risk of aspiration.
Once physical restraints are applied, they will be left in place until the patient is transferred to emergency department personnel. This policy prevents recurrent harm to self, harm to others, and disruption of intact medical devices and treatment. Despite assurance from the patient that they will comply with treatment, restraints shall be left in place unless a direct order from the online medical control physician is given to release the physical restraints. Such an order must be clearly documented on the patient care form.

Once the patient is transferred to the emergency department, PFD personnel may, at the direction of emergency department personnel, continue the physical restraints placed before arrival.

** Police Instituted Restraints

During treatment and transport of a patient in police-instituted restraints (including handcuffs), PFD personnel will ensure that such restraints do not compromise airway patency, respiratory mechanics, or circulation. Patients will not be transported with wrists cuffed to ankles either directly or indirectly (also referred to as “hog-tying”). These positions have been shown to impair respiratory mechanics and pose significant obstacles to definitive airway management if required enroute. During transport of patients in police-instituted locking restraints, a police officer must either accompany the patient in the MICU or provide PFD personnel means to unlock the restraints. This policy allows rapid restraint release should the patient deteriorate to a condition requiring restraint release to properly treat.
707.1.10 NASOTRACHEAL INTUBATION

Indications:
1. Respiratory failure (oxygenation or ventilation)
2. Failure to protect the airway due to altered mental status
3. Oral anatomy, injury, or jaw clenching preventing indicated orotracheal intubation

Contraindications:
1. Apnea
2. Basilar skull fracture
3. Midfacial fractures/instability
4. Patients on anticoagulants (relative contraindication)
5. Patient combativeness

Procedure:
1. Apply two sprays of Neosynephrine in each nare to induce local vasoconstriction. This will enlarge the nares and decrease epistaxis complications.
2. Apply lidocaine gel to the Endotrol nasotracheal tube cuff and attach the BAAM whistle tip to the tube adapter.
3. Insert the well-lubricated tube along the floor of the most patent nare, bevel side facing inward toward the septum. This positioning will prevent a turbinate from being trapped in the tube and subsequently being sheared off as the tube is advanced. Pass the tube straight back (not angulated upward) with constant, gentle pressure. Do not use an endotracheal stylet in nasotracheal intubations.
4. As the tube is advanced, there is a loss of resistance as the tube passes from the nasopharynx into the oropharynx. Continue advancing the tube.
5. As the tube nears the glottis, guide the tube by listening to the BAAM whistle tip. The awake patient should be instructed to deeply inspire to help guide the tube through the vocal cords and into the trachea. Correct endotracheal placement may also be assisted by rotating the tube 90 degrees so that the bevel is up and facing the glottis. Additionally, pulling on the Endotrol tip will help direct the tube anteriorly through the vocal cords.
6. Once the tube has been placed, the patient should not be capable of phonation. The ability to speak after "nasotracheal intubation" actually denotes "nasoesophageal intubation." In such cases, the tube should be slightly withdrawn and correct placement reattempted.
7. Nasotracheal intubation should be verified using 703.2 Confirmation of Endotracheal Intubation with the obvious exception of direct visualization through the vocal cords.

The paramedic that intubates (or re-intubates) a patient must contact the EMS Medical Director (or the EMS Medical Director's designee if the EMS Medical Director so indicates) to report the intubation and the steps completed in confirming the intubation. This contact shall occur at the first available opportunity and shall be prior to the end of the paramedic's shift. Further details of this requirement may be found in Plano Fire Department SOP 361.0: Advanced Airway Placement Confirmation Patient Safety Initiative.
707.1.11 COMBITUBE

Indications:
A rescue airway for use when a patient cannot be oral or nasally intubated and requires emergent airway control.

Contraindications:
1. Responsive patients with an intact gag reflex;
2. Patients with known esophageal disease;
3. Patients who have ingested caustic substances;
4. Patients under five (5) feet tall.

Procedure:
1. Prior to insertion, test cuff integrity by inflating each cuff with the prescribed volume of air. Inflate the proximal pharyngeal cuff (Blue Pilot Balloon) with 100ml of air. Inflate the distal white esophageal cuff (White Pilot Balloon) with 15ml of air. After checking cuff integrity, deflate cuffs.

2. Lubricate tube to facilitate insertion.

3. In the supine patient, lift the tongue and jaw upward with one hand. When the facial trauma has resulted in sharp, broken teeth or dentures, remove dentures and exercise extreme caution when passing the Combitube into the mouth to prevent the cuffs from tearing. Alternatively, the use of a laryngoscope to assist in opening the oropharynx/hypopharynx has been shown to improve Combitube passage. Regardless of technique, maintain cervical spine immobilization in patients with possible spinal injury.

4. With the other hand, hold the Combitube so that it curves in the same direction as the natural curvature of the pharynx. Maintain a mid-line position of the Combitube. Insert the tip into the mouth, advance in a downward curved movement until the teeth lie between the two printed bands. DO NOT FORCE THE COMBITUBE. If the tube does not advance easily, redirect it or withdraw and reinsert.

5. Inflate #1 Blue pilot balloon with 100ml of air using a 140ml syringe. The large latex cuff will fill and may cause the Combitube to move slightly from the patient's mouth. This is to be expected. Additional air may be added to the cuff if an inadequate seal is detected during ventilation.

6. Inflate #2 White pilot balloon with 15ml of air using a 20ml syringe.

7. Begin ventilation through the longer blue tube labeled No. 1. If auscultation of breath sounds is positive and auscultation of gastric insufflation is negative, continue ventilation. If possible, confirm by observing chest expansion.

8. If auscultation of breath sounds is negative, and gastric insufflation is positive, immediately begin ventilation through the shorter clear tube labeled No. 2. Confirm tracheal ventilation by following Confirmation of Endotracheal Intubation Protocol 703.2. The paramedic that performs Combitube placement of a patient must contact the EMS Medical Director (or the EMS Medical Director's designee if the EMS Medical Director so indicates) to report the Combitube placement and the steps completed in confirming the Combitube placement. This contact shall occur at the first available opportunity and shall be prior to the end of the paramedic's shift. Further details of this requirement may be found in Plano Fire Department SOP 361.0: Advanced Airway Placement Confirmation Patient Safety Initiative.
707.1.12 CHEMICAL RESTRAINT (VIOLENT / AGGRESSIVE BEHAVIOR MANAGEMENT)

- PHYSICALLY RESTRAIN PER PHYSICAL RESTRAINT PROTOCOL
  - PT. ACTIVELY & CONTINUOUSLY FIGHTING PHYSICAL RESTRAINTS
    - YES
    - CONTACT OLMCP FOR CHEMICAL RESTRAINT ORDERS: HALDOL 5-10mg IM/IO/IVP & VALIUM 5-10mg IM/IO/IVP
    - NO
      - PHYSICALLY RESTRAIN PER PHYSICAL RESTRAINT PROTOCOL
  - NO
    - TRANSPORT

- GENERAL MEDICAL TREATMENT
  - PT. ABLE TO BE SAFELY PHYSICALLY Restrained
    - YES
    - PHYSICALLY RESTRAIN PER PHYSICAL RESTRAINT PROTOCOL
    - NO
      - CONTACT OLMCP FOR CHEMICAL RESTRAINT ORDERS: HALDOL 5-10mg IM/IO/IVP & VALIUM 5-10mg IM/IO/IVP
  - NO
    - TRANSPORT

CONSIDER POSSIBLE CAUSES OF VIOLENT / AGGRESSIVE BEHAVIOR
TREAT PER APPROPRIATE PROTOCOL

CONSULT WITH OLMC PHYSICIAN WHEN NEEDED:
- HYPOGLYCEMIA
- SHOCK, HYPOXIA
- HEAD INJURY
- STROKE, SEIZURE
- SEPSIS, MENINGITIS
- DRUGS, ALCOHOL
- HEAT ILLNESS
- UNDERLYING MENTAL ILLNESS
**707.1.12.1 Chemical Restraint**
*(Violent/Aggressive Behavior Management)*

**Comments**

1. When chemical restraint is administered intramuscularly, allow 15+ minutes for measurable effects to occur. This is directly related to slower pharmacologic uptake into the vascular system.

2. Appropriate intramuscular injection sites are the deltoid, lateral thigh, and upper/outer gluteal muscles.

3. Haloperidol and diazepam may be mixed within a single syringe to minimize the intramuscular or intravenous injections required.

4. Due to safety concerns, and as a last resort, intramuscular injections may be administered through clothing. Attention should be given to ensuring the injection is not directed into objects within clothing pockets. Receiving nurses and physicians should be specifically advised of injection through clothing as prophylactic antibiotics may be necessary to prevent infection.

5. Chemical restraint of the violent/aggressive behavior patient is widely regarded as medical therapy minimizing the risk of catecholamine excess cardiac arrest and/or rhabdomyolysis (acute renal failure secondary to muscle breakdown).

6. At any time during the treatment of the violent/aggressive behavior patient, sudden quietness and compliance of the patient is an ominous sign. This marked change in behavior should not be interpreted as voluntary compliance. This marked change in behavior is often an indicator of imminent cardiac arrest due to catecholamine excess effect on the myocardium.

7. In the patient with prolonged violent/aggressive behavior not adequately responding to chemical and physical restraint alone, further treatments may be necessary to minimize the risk of catecholamine excess cardiac arrest. Contact the OLMCP for direction concerning the following options: 1) cooling of the patient with ice packs to the neck, axilla, and groin and 2) administration of sodium bicarbonate 50 mEq IVP

8. At Plano Police Department request, all individual tasered by the Plano Police Department (with the exception of during Plano Police Department training classes) will be transported by Plano Fire Department to an emergency department for physician evaluation for medical clearance.

9. Any individual being transported that has been tasered by the Plano Police Department shall be transported in physical restraints and the OLMCP shall be contacted for chemical restraint orders.
<table>
<thead>
<tr>
<th>Medication</th>
<th>Indication</th>
<th>Initial Dose*</th>
<th>Maximum Cumulative Dose</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenosine</td>
<td>Stable SVT</td>
<td>12 mg rapid IVP</td>
<td>30 mg</td>
<td>Slows conduction through the AV mode. Vasodilator</td>
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<tr>
<td>Albuterol</td>
<td>Asthma, COPD</td>
<td>2.5 mg/3cc NS NEB</td>
<td>No Max</td>
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<tr>
<td>Amiodarone</td>
<td>VF/Pulseless VT</td>
<td>300 mg IO / IVP</td>
<td>450 mg</td>
<td>Antiarrhythmic</td>
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<td></td>
<td>Stable SVT or VT, A Fibrillation with RVR</td>
<td>150 mg IVPB/10 mins</td>
<td>150 mg</td>
<td>Antiarrhythmic</td>
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<td></td>
<td>Post ROSC from VF/Pulseless VT</td>
<td>1mg/min IVPB</td>
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<td>Aspirin</td>
<td>Chest Pain</td>
<td>324 mg po</td>
<td>324 mg</td>
<td>Decreases platelet sticking</td>
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<td>Atropine</td>
<td>Asystole</td>
<td>1 mg IO / IVP</td>
<td>3 mg</td>
<td>Reverses vagal stimulus</td>
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<td></td>
<td>Bradycardia</td>
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<td>Reverses vagal stimulus</td>
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<td>Diphenhydramine</td>
<td>Allergic Reaction</td>
<td>25-50 mg IM/IVP</td>
<td>50 mg</td>
<td>Antihistamine</td>
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<td>Calcium Chloride</td>
<td>Hyperkalemic Cardiac Arrest</td>
<td>10 mg/kg slow IO / IVP</td>
<td>15 mg/kg</td>
<td>Drives potassium into cells</td>
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<tr>
<td>Dextrose (50%)</td>
<td>Hypoglycemia</td>
<td>25 g IO / IVP</td>
<td>50 g</td>
<td>Restores blood sugar levels</td>
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<td>Diazepam</td>
<td>Sedation</td>
<td>2.5-5 mg slow IO / IVP</td>
<td>10 mg</td>
<td>Anxiolytic, Muscle relaxer, Amnestic agent</td>
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<td></td>
<td>Seizures</td>
<td>5-10 mg IO / IVP</td>
<td>20 mg</td>
<td>Anti-convulsant</td>
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<td></td>
<td>Chemical Restraint OLMCP Order Only</td>
<td>5-10 mg IO / IVP</td>
<td>10 mg</td>
<td>Anxiolytic, Muscle relaxer</td>
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<td>Diltiazem</td>
<td>PSVT, A Fibrillation with RVR</td>
<td>20 mg slow I/O/IVP</td>
<td>20 mg</td>
<td>Slows conduction through the AV mode</td>
</tr>
<tr>
<td>Dopamine</td>
<td>Hypotension OLMCP Order Only</td>
<td>5 mcg/kg/min IVPB</td>
<td>20 mcg/kg/min</td>
<td>Vasoconstrictor</td>
</tr>
<tr>
<td>Epinephrine</td>
<td>1:1,000</td>
<td>0.3 mg SQ</td>
<td>0.3 mg</td>
<td>Bronchodilator, Vasoconstrictor</td>
</tr>
<tr>
<td></td>
<td>Anaphylaxis</td>
<td>1 mg IO / IVP</td>
<td>No Max</td>
<td>Vasoconstrictor</td>
</tr>
<tr>
<td></td>
<td>Cardiac Arrest</td>
<td>0.5-1 mg slow IO / IVP</td>
<td>1 mg</td>
<td>Bronchodilator, Vasoconstrictor</td>
</tr>
<tr>
<td></td>
<td>Anaphylaxis OLMCP Order Only</td>
<td>1 mg IO / IVP</td>
<td>No Max</td>
<td>Vasoconstrictor</td>
</tr>
<tr>
<td></td>
<td>Cardiac Arrest</td>
<td>0.3 mg /kg IO / IVP</td>
<td>0.03 mg /kg</td>
<td>Reduces myoclonus</td>
</tr>
<tr>
<td></td>
<td>Intubation - Pretreatment</td>
<td>0.3 mg /kg IO / IVP</td>
<td>0.3 mg /kg</td>
<td>Facilitates Intubation, sedative-hypnotic</td>
</tr>
<tr>
<td>Furosemide</td>
<td>CHF</td>
<td>40 mg IVP</td>
<td>Pt's usu. Dose</td>
<td>Diuretic</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>Chemical Restraint OLMCP Order Only</td>
<td>5-10 mg IO / IVP</td>
<td>20 mg</td>
<td>Antipsychotic</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>VF/VT</td>
<td>1.5 mg/kg IO / IVP</td>
<td>3 mg/kg</td>
<td>Antiarrhythmic</td>
</tr>
<tr>
<td>Morphine Sulfate</td>
<td>See protocol OLMCP Order Only</td>
<td>2-5 mg IVP</td>
<td>10 mg</td>
<td>Narcotic analgesic</td>
</tr>
<tr>
<td>Naloxone</td>
<td>Altered LOC</td>
<td>0.5 - 2 mg IVP</td>
<td>10 mg</td>
<td>Narcotic antagonist</td>
</tr>
<tr>
<td>Neostigmine</td>
<td>Nasal Intubation</td>
<td>2 sprays/nostril</td>
<td>2 sprays/nostril</td>
<td>Nasal Vasoconstrictor</td>
</tr>
<tr>
<td>Nerve Agent Kit</td>
<td>Nerve Agent Exposure with Symptoms</td>
<td>Per Protocol</td>
<td>Per Protocol</td>
<td>Dries Secretions, Inactivates Nerve Agent, Anticoagulant</td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td>Chest Pain, CHF</td>
<td>0.4 mg SL</td>
<td>3 doses</td>
<td>Coronary and peripheral vasodilator</td>
</tr>
<tr>
<td>Sodium Bicarb</td>
<td>Hyperkalemic Cardiac Arrest</td>
<td>1 mEq/kg IO / IVP</td>
<td>2 mEq/kg</td>
<td>Buffers acid-base balance, Drives potassium into cells</td>
</tr>
<tr>
<td></td>
<td>TCA Overdose</td>
<td>1 mEq/kg IO / IVP</td>
<td>2 mEq/kg</td>
<td>Antiarrhythmic</td>
</tr>
<tr>
<td></td>
<td>Asystole with 20+ mins Cardiac Arrest</td>
<td>1 mEq/kg IO / IVP</td>
<td>2 mEq/kg</td>
<td>Buffers acid-base balance</td>
</tr>
<tr>
<td>Terbutaline Sulfate</td>
<td>Asthma, COPD</td>
<td>0.25mg SQ</td>
<td>0.25mg</td>
<td>Bronchodilator</td>
</tr>
<tr>
<td>Tetracaine</td>
<td>Eye Pain</td>
<td>2 drops / eye</td>
<td>2 drops /eye</td>
<td>Topical anesthetic</td>
</tr>
<tr>
<td>Vasopressin</td>
<td>VF/Pulseless VT, Asystole</td>
<td>40 I.U. IO / IVP</td>
<td>40 I.U.</td>
<td>Vasoconstrictor</td>
</tr>
</tbody>
</table>

* Usual adult doses (may be modified by OLMCP)
<table>
<thead>
<tr>
<th>Medication</th>
<th>Indication</th>
<th>Initial Dose*</th>
<th>Total Dose*</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adenosine</td>
<td>Stable SVT</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Slows conduction through the AV mode. Vasodilator</td>
</tr>
<tr>
<td>Albuterol</td>
<td>Asthma</td>
<td>2.5 mg/3cc NS NEB</td>
<td>No Max</td>
<td>Bronchodilator</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>VF/Pulseless VT</td>
<td>5 mg/kg IO / IVP</td>
<td>10 mg/kg</td>
<td>Antiarrhythmic</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Chest Pain</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Decreases platelet sticking</td>
</tr>
<tr>
<td>Atropine</td>
<td>Asystole</td>
<td>0.02 mg/kg IO / IVP</td>
<td>Contact OLMCP</td>
<td>Reverses vagal stimulus</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td>Allergic Reaction</td>
<td>1 mg/kg IM/IVP</td>
<td>50 mg</td>
<td>Antihistamine</td>
</tr>
<tr>
<td>Calcium Chloride</td>
<td>Hyperkalemic Cardiac Arrest</td>
<td>10 mg/kg slow IO / IVP</td>
<td>15 mg/kg</td>
<td>Drives potassium into cells</td>
</tr>
<tr>
<td>Dextrose (25%)</td>
<td>Hypoglycemia</td>
<td>2cc/kg D25 IO / IVP</td>
<td>50 cc</td>
<td>Restores blood sugar levels</td>
</tr>
<tr>
<td>Diazepam</td>
<td>Sedation</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Anxiolytic, Muscle relaxer, Amnestic agent</td>
</tr>
<tr>
<td>Epinephrine</td>
<td>Chemical Restraint OLMCP Order Only</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Anxiolytic, Muscle relaxer</td>
</tr>
<tr>
<td>Diltiazem</td>
<td>PSVT, A fib/Flutter with RVR</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Slows conduction through the AV node</td>
</tr>
<tr>
<td>Dopamine</td>
<td>Hypotension OLMCP Order Only</td>
<td>5 mcg/kg/min IVPB</td>
<td>20 mcg/kg/min</td>
<td>Vasocostric</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:1,000</td>
<td>Anaphylaxis</td>
<td>0.01 mg/kg SQ</td>
<td>0.3 mg</td>
<td>Bronchodilator, Vasoconstrictor</td>
</tr>
<tr>
<td>1:10,000</td>
<td>Anaphylaxis OLMCP Order Only</td>
<td>0.01 mg/kg slow IO / IVP</td>
<td>1 mg</td>
<td>Bronchodilator, Vasoconstrictor</td>
</tr>
<tr>
<td>Etomidate</td>
<td>Intubation</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Facilitates Intubation</td>
</tr>
<tr>
<td>Furosemide</td>
<td>CHF</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Vasoconstrictor, Diuretic</td>
</tr>
<tr>
<td>Haloperidol</td>
<td>Chemical Restraint OLMCP Order Only</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Antipsychotic</td>
</tr>
<tr>
<td>Lidocaine</td>
<td>VF/VT</td>
<td>1.5 mg/kg IO / IVP</td>
<td>3 mg/kg</td>
<td>Antiarrhythmic</td>
</tr>
<tr>
<td>Morphine Sulfate</td>
<td>See protocol OLMCP Order Only</td>
<td>0.1 mg/kg IVP</td>
<td>10 mg</td>
<td>Narcotic analgesic</td>
</tr>
<tr>
<td>Naloxone</td>
<td>Altered LOC</td>
<td>0.5 - 2 mg IVP</td>
<td>10 mg</td>
<td>Narcotic antagonist</td>
</tr>
<tr>
<td>Nerve Agent Kit</td>
<td>Nerve Agent Exposure with Symptoms</td>
<td>1 Mark 1 Kit</td>
<td>Contact OLMCP</td>
<td>Dries Secretions, Inactivates Nerve Agent, Anticonvulsant</td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td>Chest Pain, CHF</td>
<td>Contact OLMCP</td>
<td>Contact OLMCP</td>
<td>Coronary and peripheral vasodilator</td>
</tr>
<tr>
<td>Sodium Bicarb</td>
<td>Hyperkalemic Cardiac Arrest</td>
<td>1 mEq/kg IO / IVP</td>
<td>2 mEq/kg</td>
<td>Buffers acid-base balance, Drives potassium into cells</td>
</tr>
<tr>
<td>Terbutaline Sulfate</td>
<td>Asthma (12 yrs age or older only)</td>
<td>0.25 mg SQ</td>
<td>0.25 mg</td>
<td>Bronchodilator</td>
</tr>
<tr>
<td>Tetracaine</td>
<td>Eye Pain</td>
<td>2 drops / eye</td>
<td>2 drops/eye</td>
<td>Topical anesthetic</td>
</tr>
</tbody>
</table>

*Usual doses (may be modified by OLMCP)
### 707.2.2.1 Dopamine Hydrochloride (INTROPIN) Dosage Chart

<table>
<thead>
<tr>
<th>µg/kg/min</th>
<th>5</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 µg</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>10 µg</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>11</td>
<td>15</td>
<td>19</td>
<td>23</td>
<td>26</td>
<td>30</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>15 µg</td>
<td>3</td>
<td>6</td>
<td>11</td>
<td>17</td>
<td>23</td>
<td>28</td>
<td>34</td>
<td>39</td>
<td>45</td>
<td>51</td>
<td>56</td>
</tr>
<tr>
<td>20 µg</td>
<td>4</td>
<td>8</td>
<td>15</td>
<td>23</td>
<td>30</td>
<td>38</td>
<td>45</td>
<td>53</td>
<td>60</td>
<td>68</td>
<td>75</td>
</tr>
</tbody>
</table>

**Microdrops per Minute**
707.2.3 ENDOTRACHEAL MEDICATIONS

1. The following medications may be given endotracheally and may be remembered using the mnemonic “NAVEL”:

   - Naloxone
   - Atropine, Albuterol
   - Vasopressin
   - Epinephrine
   - Lidocaine

2. Except albuterol, all endotracheal medications must be given at least 2 times the standard intravenous dose, but no more than 3 times the standard intravenous dose. This acceptable range allows the paramedic to utilize the easiest dose per indicated medication accounting for the patient weight. Albuterol is given endotracheally at the same dose it is given via hand-held nebulizer.

3. Except albuterol, all endotracheal medications must be given in a volume of 10cc. Therefore if the indicated dose of epinephrine accounts for 2cc of volume, an additional 8 cc of normal saline should be added to the medication bolus given down the endotracheal tube.

4. There is no maximum amount of medication volume that may be given down the endotracheal tube. However, in cases of initial or developing pulmonary edema, consult with the OLMC physician to determine the best volume of medication to deliver and/or alternate means of medication delivery.

5. With the utilization of adult intraosseous access, medication (other than albuterol) shall only be administered endotracheally in patients that intraosseous and intravenous access are contraindicated or unsuccessful. In short, the Endotracheal route of medication (other than albuterol) administration should be considered the route of last resort.
**707.2.5: ETOMI DATE (AMI DATE)**

**Class:** Imidazole-derived sedative-hypnotic. (Non-narcotic, non-barbiturate, non-benzodiazepine).

**Pharmacodynamics:** Etomidate is an intravenous hypnotic drug without analgesia. It has a rapid onset of action, seen as desired sedation within as little as 10-15 seconds, but nearly always within less than one minute. Duration of action, based on a standard dose of 0.3 mg/kg (70 kg adult dose of 20 mg) is 5-15 minutes. Etomidate is safe to use in patients with cardiac illness and patients with traumatic injuries. Etomidate has little to no effect upon myocardial metabolism, cardiac output, or peripheral circulation. Etomidate has been shown to reduce cerebral blood flow, cerebral oxygen consumption, and intracranial pressure.

**Indication:** Intubation unable to be accomplished without sedation -hypnosis.

**Contraindication:** Known allergy to Etomidate.

**Side effects:** 1) Transient skeletal muscle movement, including myoclonus, have been reported in 10-80% of patients. Most studies report these movements in less than 50% of patients. Most skeletal muscle movements have been judged mild to moderate, with a small percentage judged severe. Most movements are bilateral and can involve any part of the body. EEGs did not show seizure activity during Etomidate studies, therefore the movements seen are not seizures. A minority of patients may have unilateral movement, typically the arm in which the intravenous injection was given. In a smaller minority of patients with a history of focal seizures, Etomidate may lower the threshold for a recurrent focal seizure. A pretreatment (preintubation) dose of 0.03 mg/kg IO / IVP, given 60 seconds prior to the intubation dose of 0.3 mg/kg IO / IVP, has been shown in anesthesiology studies to decrease myoclonus, expediting successful intubation. 2) Transient venous pain may be noted immediately after injection. This is usually due to irritation from propylene glycol, which is used as a solvent in Etomidate preparations. 3) Nausea and vomiting. 4) Rarely, hypoventilation and even apnea of short duration may be noted. 5) Rarely, hypotension may be noted after too rapid administration.

**Dosage:** Pretreatment (Preintubation): 0.03 mg/kg IO / IVP, given 60 seconds prior to the intubation dose. Intubation: 0.3 mg/kg IO / IVP over 30-60 seconds given just prior to the intubation attempt. On-line medical control physicians should be contacted prior to using Etomidate in pediatric patients.

**How supplied:** 20 ml pre-filled syringe with 2 mg Etomidate/ml.

**Special Comments:**
For transient myoclonus persisting longer than one minute, contact the on-line medical control physician and request Valium 5 mg intravenous push.

For patients successfully intubated and exhibiting movement that may lead to extubation, give a dose of Etomidate 0.3 mg/kg intravenous or intraosseous push over 30-60 seconds. For patients that received Etomidate to achieve intubation and are now exhibiting movement that may lead to extubation, contact the on-line medical control physician and request Valium 5-10 mg intravenous push.(or intraosseous if IO access previously established for other indication)
707.2.6: MORPHINE SULFATE

**Class:** Narcotic Analgesic

**Pharmacodynamics:** Morphine sulfate is an intravenous analgesic. It has a rapid onset of analgesia that is sustained for 2-4 hours. It is metabolized primarily by the liver.

**Indications:**
1) Isolated extremity trauma (including burns) without neurovascular compromise
2) Acute Myocardial Infarctions (diagnosed by the on-line medical control physician reading fax-transmitted 12 lead ECG) with pain unrelieved by nitroglycerin

**Contraindications:**
Extremity trauma with neurovascular compromise
Head, chest, or abdominal trauma
Altered mental status
Respiratory depression defined as poor effort or <10 bpm
Hypotension defined as systolic BP < 90 mmHg

**Side effects:**
1) Respiratory depression. 2) Hypotension. Rapid administration of morphine sulfate causes a histamine release. Histamine causes vasodilation. Morphine also directly causes vasodilation. 3) Nausea, vomiting, abdominal cramps. GI upset is partially caused by histamine release from rapid administration. 4) Altered mental status. CNS depression is potentiated if the patient is taking benzodiazepines, antihistamines, or alcohol.

**Dosage:** THE ON-LINE MEDICAL CONTROL PHYSICIAN MUST BE CONTACTED PRIOR TO USING MORPHINE SULFATE. In isolated extremity trauma without neurovascular compromise, the adult dose is 5 mg slow intravenous push over 30-60 seconds. The dose may be repeated once after 5 minutes. In Acute Myocardial Infarctions, the adult dose is 2mg slow intravenous push over 30-60 seconds and repeated every 5 minutes up to a total of 10 mg. Pediatric dosage of morphine sulfate will be determined by the on-line medical control physician based on weight.

**How supplied:** 10 ml pre-filled syringe with 1 mg morphine sulfate/ml.

**Special Comments:** Morphine sulfate is a Schedule II drug. It must be double locked and strict inventory control will be maintained. Any morphine remaining after patient use must be discarded in the presence of another fire department personnel or nurse, with documentation showing who witnessed the discarding and how much was discarded.
**707.2.7: AMIODARONE (CORDARONE)**

**Class:** Class III Antiarrhythmic (Vaughan Williams Classification)

**Pharmacodynamics:** Prolongs the cardiac action potential's refractory period, slowing conduction through the heart. Amiodarone also has secondary actions in the other three classifications of antiarrhythmics. Amiodarone blocks sodium channels (class I) which can prevent cardiac action potentials; it is a non-competitive antisympathetic (class II) which slows cardiac action potentials; and it also slows conduction through the AV node (class IV). In sum, all of these actions lead to slowing of conduction and prolongation of refactoriness in the cardiac conduction system. Intravenous amiodarone has a rapid onset of action and lasts approximately 20-25 minutes. Of interest, amiodarone is available in oral form and you may encounter patients taking amiodarone on a daily basis due to a history of recurrent ventricular tachydyssrhythmias.

**Indications:**
- Ventricular Fibrillation (refractory to initial defibrillation attempts)
- Pulseless Ventricular Tachycardia (refractory to initial defibrillation attempts)
- Post Return of Spontaneous Circulation after Ventricular Fibrillation/Pulseless V Tach
- Ventricular Tachycardia
- Atrial Fibrillation/Atrial Flutter with Sustained Rapid Ventricular Response > 150 beats per Minute (OLMCP order – 2nd line treatment after Diltiazem failure)
- Unknown Wide Complex Tachycardia
- Supraventricular Tachycardia (OLMCP order – 2nd line treatment after Diltiazem failure)

**Contraindications:** Known allergy to amiodarone

**Side effects:**
1) Hypotension is the most common side effect seen in all antiarrhythmics. In trials with amiodarone, treatment of hypotension was required in up to 16% of patients. Recall that antiarrhythmics function to slow the cardiac conduction system. As a result, despite conversion of ventricular fibrillation or ventricular tachycardia, cardiac output may still be diminished respective to that patient's usual cardiac output. Blood pressure is related to heart rate and cardiac output; thus, diminished cardiac output leads to hypotension. 2) Bradycardia and AV Block may also result from intravenous amiodarone administration. Treatment of bradycardia was required in 5% of patients in amiodarone trials. 3) Proarrhythmia effects are seen with all antiarrhythmics. In amiodarone trials, due to prolongation of the cardiac action potential, torsades de pointes (a variant of ventricular tachycardia) occurred in < 2% of patients.

**Dosage:**

**Adult Ventricular Fibrillation/ Pulseless Ventricular Tachycardia**
- 300mg intravenous push; may repeat one time per protocol at 150mg.

**Post Return of Spontaneous Circulation after VF/ Pulseless VT**
- Infusion of 150mg mixed in 100cc NS in Buretrol chamber IVPB over 10 minutes. If the patient is still being transported after the infusion is completed, a Drip of 150mg mixed in 150cc NS in Buretrol chamber at 1mg/min (60 microdrops/min) is to be given.

**Unknown Wide Complex Tachycardia/ Ventricular Tachycardia**
- 150 mg mixed into 100cc of normal saline in a Buretrol chamber IVPB over 10 minutes.

**Atrial Fibrillation/ Atrial Flutter with sustained Rapid Ventricular Response >150 bpm**
- **Supraventricular Tachycardia**
  - By OLMCP order (for 2nd line treatment after Diltiazem failure): 150 mg mixed into 100cc of normal saline in a Buretrol chamber IVPB over 10 minutes.

On-line medical control physicians should be contacted prior to using amiodarone in pediatric patients.

**Special comments:** Treat amiodarone side effects per protocols for hypotension, bradycardia, and ventricular tachydyssrhythmias. While amiodarone has been shown to cause adverse effects in pregnancy (category D), the benefits to the fetus with a mother in ventricular fibrillation or pulseless ventricular tachycardia far outweigh the possibilities of negative drug effects.
707.2.8: VASOPRESSIN

Class: Vasopressin receptor agonist vasopressor.

Pharmacodynamics: Vasopressin is an intravascular vasopressor. Intravascular vasopressin has a rapid onset of action and lasts approximately 20-25 minutes.

Indications: Ventricular Fibrillation (refractory to initial defibrillation attempts)
          Pulseless Ventricular Tachycardia (refractory to initial defibrillation attempts)
          Asystole

Contraindications: Known allergy to vasopressin

Side effects: In past trials (including patients without cardiac arrest), vasopressin has been associated with anaphylaxis, cardiac arrest, arrhythmias, angina, myocardial ischemia, vomiting, and bronchial constriction. Each of these occurred in a minority of patients and should not discourage use in the setting of cardiac arrest of ventricular fibrillation / pulseless ventricular tachycardia or asystole.

Dosage: 40 International Units (I.U.) intravenous or intraosseous push, one-time dosing, in adult patients.

How supplied: 1 cc vials with 20 I.U. vasopressin/cc. The adult dose is 2 cc (requires 2 vials)

Special comments: Intense vasoconstriction causing notable pallor or paleness has been observed in clinical trials.

Vials of vasopressin received by the Plano Fire Department may be denoted for IM or SC use only. Use of these vials for intravenous or intraosseous dosing of vasopressin is authorized for use in the Piano Fire Department.

Vasopressin use in any patient with spontaneous circulation is absolutely prohibited. Vasopressin use in these patients has been associated with induction of angina and myocardial infarction. In the setting of cardiogenic shock requiring treatment with vasopressors, an order for dopamine infusion should be requested from the on-line medical control physician.

Vasopressin use in pregnancy (category C) has been incompletely studied. It is not known whether vasopressin can cause fetal harm. However, the benefits to the fetus with a mother in ventricular fibrillation / pulseless ventricular tachycardia or asystole far outweigh the possibilities of negative drug effects. In sum, vasopressin for ventricular fibrillation / pulseless ventricular tachycardia or asystole in pregnancy is authorized for use in the Plano Fire Department.
**707.2.9: Terbutaline Sulfate (Brethine)**

**Class:** Beta Agonist

**Pharmacodynamics:** Terbutaline sulfate is a subcutaneous beta adrenergic agonist producing bronchodilation by bronchial smooth muscle relaxation through its preferential beta-2 effects. Terbutaline will also lessen the release of bronchoconstricting inflammatory mediators of asthma and COPD. These effects will produce clinical signs of improvement within 15 minutes and will last up to 4 hours.

**Indications:**
- Acute asthma exacerbation failing to improve with nebulized albuterol
- Acute COPD exacerbation failing to improve with nebulized albuterol

**Contraindications:**
- Less than 12 years of age
- Concurrent use of subcutaneous or intravenous epinephrine
- Known hypersensitivity to terbutaline sulfate

**Side effects:**
1) Cardiovascular effects: tachycardia, hypertension, arrhythmias
2) CNS effects: anxiety, drowsiness, tremor, headache, dizziness
3) GI effects: nausea, vomiting

**Dosage:** One-time 0.25 mg subcutaneous injection

**How supplied:** 1ml ampule with 1mg terbutaline sulfate. Ampules should be protected from light until used.

**Special Comments:** Terbutaline sulfate should be used with caution in patients with a history of ischemic heart disease, hypertension, or cardiac arrhythmias. Any questions that exist as to the appropriateness of terbutaline use in these patients should be directed to the on-line medical control physician. Side effects of tachycardia and hypertension may provoke exacerbations of myocardial ischemia and/or cardiac arrhythmias.

**Terbutaline sulfate should not be given to any patient that has also received epinephrine for the acute dyspnea episode.** The combination of these two beta adrenergic agents may produce synergistic responses of extreme tachycardia, hypertension, and myocardial stress.

Terbutaline should also be used with caution in patients taking monoamine oxidase inhibitors or tricyclic antidepressants due to the potential for increasing the side effects of terbutaline.

ECG monitoring should be employed in any patient receiving terbutaline sulfate due to the side effect profile.
707.2.10: Haloperidol (Haldol)

**Class:** Butyrophenone antipsychotic

**Pharmacodynamics:** Haloperidol is a butyrophenone producing antipsychosis by blockade of dopamine receptors within the central nervous system.

**Indications:** Chemical restraint of the violent/aggressive behavior patient

**Contraindications:** Marked CNS depression = unconscious, unresponsive mental status
Known allergy to haloperidol

**Side Effects:** While numerous side effects have been conclusively and inconclusively attributed to haloperidol, the majority of side effects occur in settings of repetitive acute haloperidol dosing and/or chronic haloperidol usage. In the setting of EMS chemical restraint, the following side effects should be considered, though the incidence of these side effects will prove quite rare:

1) Neuroleptic Malignant Syndrome (NMS) is a constellation of signs including fever, muscle rigidity, altered mental status, and autonomic instability evidenced by marked changes in blood pressure, heart rate and rhythm, and diaphoresis. These signs admittedly describe signs found in a number of individuals meeting criteria for chemical restraint. The prudent paramedic shall document the behavior and exam findings that the patient exhibited prior to being administered haloperidol in an effort to clearly communicate that these symptoms are the result of recent substance abuse, underlying mental illness, etc., thereby allowing other health care providers proper interpretation of the symptoms. In other words, good documentation of initial patient behavior and assessment prevents an improper conclusion that NMS-type symptoms were caused by haloperidol administration.

2) Hemodynamic Effects - tachycardia (often no further increase from the patient’s baseline tachycardia) and hypotension (usually mild in degree, but responsive to fluid boluses if sustained hypotension occurs). An extremely rare effect of polymorphic ventricular tachycardia (torsade de points) may occur. Such ventricular tachycardia shall be managed per tachycardia protocols.

3) CNS Effects – numerous possible changes in mental status. Haloperidol may increase the potential for seizure. Seizure occurrence is minimized with the co-administration of diazepam. Risk of haloperidol potentiating the effects of narcotics and/or alcohol is offset by the greater benefit of being able to safely treat and transport individuals meeting criteria for chemical restraint.

4) Extrapyramidal Symptoms (EPS) are categorized as Parkinson-like tremors or dystonic reactions. Haloperidol-induced EPS are typically mild in degree and are able to be treated effectively with diphenhydramine (Benadryl) 1mg/kg up to 50mg IM/IVP.

5) Gastrointestinal Effects – Nausea and vomiting.

**Dosage:** THE ON-LINE MEDICAL CONTROL PHYSICIAN MUST BE CONTACTED PRIOR TO USING HALOPERIDOL. The adult dosage is 5-10 mg by intramuscular or intravenous injection. Adult dosage will be determined by the on-line medical control physician based on the estimated patient weight and degree of violent/aggressive behavior warranting the application of chemical restraint. While repeat dosing will be uncommon, a total of 20mg may be utilized prior to hospital arrival when directed by the OLMCP. Pediatric dosage will be determined by the on-line medical control physician based on the estimated patient weight and degree of violent/aggressive behavior warranting the application of chemical restraint. Usage of chemical restraint in pediatrics will be rare.

**How supplied:** 1 ml vial with 5 mg haloperidol/ml.

**Special Comments:** Chemical restraint requires the co-administration of diazepam. Refer to 707.1.12 Chemical Restraint.
707.2.11: DILTIAZEM (CARDIIZEM)

**Class:** Calcium Channel Blocker (calcium ion influx inhibitor)

**Pharmacodynamics:** Calcium channel blockers are most commonly utilized in the treatment of hypertension. Calcium channel blockade provides vascular smooth muscle relaxation, decreasing the peripheral vascular resistance component of blood pressure. Calcium channel blockers are also utilized for heart rate control in acute and chronic atrial fibrillation/flutter and in acute supraventricular tachycardia (PSVT). Calcium channel blockers are chosen in this regard due to slowing the conduction at the AV node in the cardiac conduction system. A single dose of IV diltiazem has an active life of 1-3 hours.

**Indications:** Atrial fib/flutter with sustained Rapid Ventricular Response >150 beats/min  
Supraventricular Tachycardia (PSVT) resistant to adenosine

**Contraindications:** Known allergy to calcium channel blockers  
Hypotension  
Wide Complex Tachycardia (may lead to V Fib)  
Known Wolff-Parkinson-While (may increase heart rate)  
Intravenous beta blockers within past 4 hours  
2nd/3rd degree AV Blocks

**Side Effects:** 1) Hypotension is the most common side effect seen with IV calcium channel blockers. In trials, the incidence was less than 7%. Nearly all cases of diltiazem-related hypotension will respond well to IV fluid boluses. In the rare event that hypotension is persistent after 500-1000cc NS, treat with Calcium Chloride 500mg IO/IVP. A second 500mg dose of Calcium Chloride may be repeated IO/IVP within 5 minutes if needed. 2) Symptomatic bradycardia, including high-degree AV Blocks may rarely result from IV calcium channel blockers. In this rare instance, treat with Calcium Chloride 500mg IO/IVP. A second 500mg dose of Calcium Chloride may be repeated IO/IVP within 5 minutes if needed. Transcutaneous pacing is indicated for symptomatic bradycardia not resolved by Calcium Chloride.

**Dosage:** Atrial fibrillation/ flutter with sustained Rapid Ventricular Response >150 beats/minute/ Supraventricular Tachycardia (PSVT): 20 mg slow IO/IVP over 2+ minutes to avoid hypotension and bradycardia

**How Supplied:** Lyo-Ject syringe containing 25 mg of diltiazem powder that is to be reconstituted with sterile water using supplied directions with each dual-chamber syringe, yielding 5cc (5mg/cc) of solution. Thus, each dosing of diltiazem per protocol will be a volume of 4cc.

**Special Comments:** Diltiazem is safe in pregnancy (category C) for the benefit of acute heart rate control.