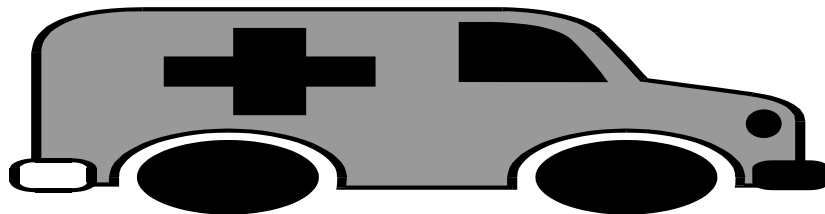


MERCY EMS
ALS
PROTOCOLS
2010



The following Fire and EMS agencies will utilize the Mercy EMS Protocols under the Medical Direction of:

Dr. David Miramontes M.D. FACEP as contracted thru Premier Health Care Services Inc.

Lifestar Ambulance Company
Lifestar Crawford County
Lifestar Wood County (Lake, Midcounty, Tontogany)
Lifestar Tiffin
Washington Township Fire Department
Richfield Township Fire Department
Spencer Township Fire Department
Springfield Township Fire Department

Grand Rapids Fire Department
Central Joint Fire Department
Northwood Fire Department
Rossford Fire Department
Lake Township Fire Department
Owens Community College-Dept Public Safety

Allen-Clay Joint Fire District
Kelly's Island EMS
Put In Bay EMS

Groton Township Fire Department
Kalahari Resort-Sandusky
PMP Joint Ambulance District
Crawford County Fire and First Responders
Bucyrus City Fire

The EMS agencies shall utilize their individual operational policies and procedures, and utilize this medical protocol for patient care. EMT personnel will utilize this protocol to the extent allowed by the State of Ohio Scope of practice for their level of certification.

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COMMUNICATIONS FAILURE

Pursuant to Ohio Revised Code 4765.40, if there is a communications failure that prevents contact with on-line **MEDICAL CONTROL**, the EMT may proceed with Medical Protocols past the point in the Standing Orders where contacting on-line **MEDICAL CONTROL** is indicated, if the life of the patient is in immediate danger. Such a communication failure should be documented and forwarded to the EMS coordinator through the EMT's chain of command.

TRANSPORT PROCEDURES

- A. The following cases must be transported via EMS Provider to the closest appropriate facility:
 - 1. Life or limb-threatening emergencies
 - 2. Whenever any medication or other invasive medical procedure is indicated, unless otherwise directed by on-line **Medical Control**.
- B. Patients not requiring treatment/transport may be transported by other means or left in care of self or family.
- C. Patients refusing treatment or transport should be made fully aware of the possible consequences of their decision. Be aware that it is a patient's right to refuse treatment and still consent to transport. In this case, the patient is to sign the AMA and the EMT should document the treatment refused. (A family member's signature is also highly desirable).
- D. Any ALS patient refusing transport to the closest appropriate facility should be transported to the facility of their choice, after they are made fully aware of the possible complication of a longer transport. An AMA should be obtained indicating the reason for by-passing the closest appropriate hospital. The patient and a witness (preferably a family member) should sign the AMA.

APPROPRIATE FACILITY

- A. The closest hospital based Emergency Center with an authorized EMS base station is appropriate for any life or limb-threatening emergency transported by an EMS Provider ambulance. However, if the EMT in the field believes the patient needs more definitive care at a facility better equipped to handle the situation and is stable enough to be transported to a different facility they may do so. Care should be used in making this decision, taking into account the longer transport time and the possibility of the patient condition becoming worse in transport. If there is any doubt of which facility to transport to on-line Medical Control should be contacted.

Examples: Following are some situations the EMT may encounter when deciding which the appropriate facility for transport is:

Lucas and Northern Wood County

- | | |
|--------------------------------------|---|
| (1) Severe burns | St. Vincents |
| (2) Potential hyperbaric treatment | Toledo Hospital |
| (3) Level 1 Trauma | UTMC, St. Vincent's or Toledo |
| (4) Interventional Cardiac Cath. Lab | UTMC, St. Vincent's, Toledo or
St. Lukes |
| (5) Critical Peds | St. Vincent's or Toledo |

Crawford County

- | | |
|--------------------------------------|---|
| (1) Severe burns | OSUMC, St Vincent's |
| (2) Potential hyperbaric treatment | OSUMC OSU East |
| (3) Level 1-2 Trauma | Med Central Mansfield OSUMC Grant,
ST V's UTMC |
| (4) Interventional Cardiac Cath. Lab | Marion General, Med Central Mansfield |
| (5) Critical Peds | Nationwide Children's Hospital |

Traumatic or Cardiac Arrests will be transported to the Closest Facility.

Any patients with an unstable airway or airway obstruction will be transported to the closest facility.

CONTROL OF EMS AT THE EMERGENCY SCENE

- A. The EMTs of the EMS Provider operate under Medical Director's supervision and obtains his/her immediate direction from assigned on-line **Medical Control**. A doctor/patient relationship has been established between the patient and on-line **Medical Control**.
- B. If the patient's private physician is present and willing to assume responsibility for the patient's care, the EMT should defer to the orders of the private physician. On-line **Medical Control** should be contacted for record keeping purposes. The EMT's responsibility reverts back to on-line **Medical Control** at any time when the private physician is no longer in attendance.
- C1. An "intervener physician" is a licensed physician (who has not established a prior physician/patient relationship) wishing to take control of an emergency scene, and who is willing to provide evidence of his/her license to others attempting to provide emergency medical care and will accompany the patient to the hospital should such control be granted by on-line **Medical Control**.
- C2. If an "intervener physician" (C1) is present and willing to assume responsibility for the patient's care and agree to sign the run report, he/she may request Medical Control of the emergency scene from on-line **Medical Control** through a recorded line i.e., EMS med radio or a taped phone line at the hospital. On-line **Medical Control** may transfer control to the "intervener physician" if on-line **Medical Control** so chooses. On-line **Medical Control** maintains right of managing the case entirely, working with the "intervener physician" or allowing him/her to assume responsibility. In the event that the "intervener physician" is granted responsibility, all orders to the EMT are documented on the run report. The "intervener physician" must sign the run sheet containing any orders he/she has given. The "intervener physician" must accompany the patient to the hospital in the emergency vehicle in cases of single patient encounters. However, in the case of a multiple casualty incident or a disaster, patient care may require that the "intervener physician" remain at the scene. On-line **Medical Control** is ultimately responsible if there is any disagreement between the "intervener physician" and on-line **Medical Control**, the EMT should take orders from the EMS on-line **Medical Control** physician.
- D. The Medical Director or approved Emergency Medical Residents may assume on scene medical control if they arrive on scene and request such. This physician will sign the run form, assume patient care responsibility and will accompany the patient to the hospital.

GUIDELINES FOR ACTIVATION OF AEROMEDICAL HELICOPTER OR GROUND MOBILE INTENSIVE CARE UNIT

Aero medical Helicopter should be placed on stand-by status or launched whenever the EMT believes, from the information available, that the potential to utilize the helicopter may exist. This should be done through the dispatch agency having jurisdiction for the incident. A Physician staffed Aero-medical Helicopter should be used if available. In inclement weather a response from a local Mobile Intensive Care unit may also bring additional resources and skill sets as needed to the emergency scene

Personnel should consider mobilization of Aero-medical Helicopter in the following circumstances:

- A. When the transport of critically ill and/or injured patients may take an extended period of time with the potential for deterioration of the patient's condition.
- B. Multiple critically ill and/or injured patients
- C. Transport from an area not readily accessible by conventional land transports.
- D. Prolonged extrication.
- E. Any patient meeting the State or Regional Trauma Triage Guidelines criteria when ground transport to an appropriate trauma center is more than 30 minutes.
- F. Geriatric patients (age 70 or greater) with multiple injuries

In most suburban or urban areas, transport to the closest Trauma Center by ground is often the best option as use of the Aero medical Helicopter resources may actually prolong the definitive transport of critically injured Trauma patients.

The following guidelines will be used for setting up a LZ (Landing Zone) for Aeromedical Helicopter.

- A. During daylight hours a LZ is required to be 100' x 100'; Double check for overhead wires or any other obstructions. The LZ should be somewhat removed from the scene as possible so loose items will not create a hazard.
- B. It is preferred that the landing surface be flat and hard such as a roadway. One person not involved with patient care should be in charge of the LZ as the landing zone officer and establish direct communication with the pilot on your local fire or police frequency.

REFUSAL OF TREATMENT OR TRANSPORTATION

Patients who are REFUSING TREATMENT or TRANSPORTATION should be made fully aware of the nature of the problem and the possible consequences of their specific condition. The patient must be considered alert and oriented and not under the influence of alcohol, drugs, or a medical condition that can impede his/her decision-making ability. When repeated efforts to reason with the patient fail, then a release for the refusal of treatment or transport shall be signed and witnessed. In the event of refusal to sign by the patient, a family member's signature is acceptable as long as the family member is aware of the consequences of the patient's action. In the event that a patient, who refuses to sign, refuses care and no relatives are present, witness of refusal by two (2) persons (preferably not EMS crew) and clear documentation of all information must be placed on the run report.

If the patient is under the influence of alcohol, drugs or a medical condition that can impede his/her decision-making ability, neither the patient nor a family member can refuse treatment. The victim must be treated and transported as medically appropriate unless on line *medical control* is contacted with an assessment and they say the patient is OK to sign the refusal form. Police assistance and/or transportation to the hospital are to be a consideration if needed.

The patient who has attempted suicide or who has suicidal ideation may not refuse treatment or transport. Police assistance and/or transportation to the hospital should be considered if needed.

Special Notes:

- A. Be certain that the mentally competent patient understands not only the nature of his/her illness or injury, but also understand the nature and consequences of the proposed treatment and of refusing this treatment before you obtain his/her signature refusing treatment or transport. The best way to assure understanding is to have the patient repeat back to you the nature and consequences of treatment and withholding treatment.
- B. It is also appropriate to let on-line *Medical Control* talk directly to the patient via the radio to reinforce the consequences of the patient's decision.
- C. You should also read out loud to the patient the refusal form and ask them if they understand what has been read to them.
- D. Remember to fill out both the medical refusal form and the patient care report. Include all information to adequately document the refusal of medical treatment and /or transport.
- E. Patients may refuse all or portions of treatment offered, c-spine precautions, or transportation to closest facility. Patients must be made aware of the risks and benefits of such refusal and sign refusal of these specific measures. You should document such refusals on the refusal form and in the narrative of the patient care report.

Insert the refusal form here !!!!!!!

LEGAL CONSIDERATIONS

Legal complications, which may occur during an emergency medical situation, are best managed by direct communication between the providers and on-line *Medical Control* or ideally between the patient and on-line *Medical Control*. The following is an outline of basic legal principles, which may be useful.

A. Consent

1. Consent is "informed" if the patient allows you to treat them.
2. Consent is "implied" when the patient is unable to consent to treatment do to:
 - a. Age
 - b. Mental status
 - c. Medical condition
3. Age of consent is 18 years of age or between 15 and 18 years in an emancipated adult (living apart from his/her parents). This requires a court order.
4. If the patient is a minor, consent should be from
 - a. Competent natural parent
 - b. Adopted parent
 - c. Legal guardian

B. Mental Competence

1. A patient is mentally competent if he/she:
 - a. Is able to understand the nature and consequences of his/her illness or injury.
 - b. Is able to understand the nature and consequences of the proposed treatment.
 - c. Has sufficient emotional control, judgement and discretion to manage his/her own affairs.
2. If the patient is not mentally competent under these guidelines, consent should be obtained from another responsible party who must also be mentally competent and legally "of age" such as a:
 - a. Spouse
 - b. Adult son or daughter
 - c. Parent
 - d. Adult brother or sister
 - e. Legal guardian
3. If the patient is not mentally competent and none of the above persons can be reached, the person should be treated and transported to the hospital. It may be preferable to enlist support in this course of action from the police department.

Legal considerations, continued

C. Duty to Act

1. The prehospital care provider has an obligation to treat the patient in accordance with the standard of care to be expected from other medical care providers of the same training and skill level. If the provider does not act in accordance with those accepted standards of care and the patient suffers injury because of this, the provider may be liable for negligence.
2. Once treatment has been rendered, the prehospital care provider has a duty to care for the patient until care can be transferred to a competent health care provider who accepts responsibility for the patient

D. Special Considerations

1. Failure to treat someone who needs care is a far "riskier" course than to treat in good faith with less than full legal permission. Do not let fear of legal consequences keep you from rendering such responsible and competent care as your patient has a right to expect from your medical training.
2. The best defense against any legal question of consent, competence and the need for care is a well-written medical record. Your written account of the patient and care rendered will be invaluable to you if legal questions are raised months later as this will convey your competence and adherence to standards of care.

COMMUNICATION PROCEDURE

It is beneficial when communicating with on-line medical control to use a recorded line.

Wood County Units should contact the Receiving Hospital that Patient is being transported to. Lucas County Emergency Medical Service (LCEMS) dispatch may be contacted via the med radio to request med channel with the appropriate facility in the Toledo area. The LCEMS dispatch will then assign a med channel; the EMT should then give the medical control hospital the assessment. The cellular phone can also be used to give an assessment to the hospital if a med channel is not available. If a phone is used the EMT should call on a recorded phone line, if possible

1. When transporting a patient from the pre-hospital environment into the emergency room, on-line Medical Control should be established at the **receiving** hospital.
2. If on-line Medical Control is needed when transporting a patient from one hospital to another hospital or from a one hospital to another type of facility, it should be established at the **transferring** hospital.
3. If Medical Control can not be established from the receiving or the transferring facility: Follow the Communications Failure Policy or Contact St. Vincent's Mercy Medical Center and ask to speak to an Attending Physician to establish on-line Medical Control. In Crawford County use Bucyrus Community Hospital. In Hancock County use Blanchard Valley.

Lucas and Northern Wood County

St. Charles	419-696-7779	St. Lukes	419-893-5920
St. Vincents	419-251-3581	Bay Park	419-690-7911
MCO	419-383-3888	St. Anne	419-407-1444
Flower	419-885-1444	Toledo	419-291-8820

Crawford County

Bucyrus	419-563-9338	Galion	419-468-4841
Med Central Mansfield	419-526-8599	Marion	740-383-8400
Shelby	419-342-5015		

NOTIFICATION OF SPECIAL PROCEDURES

Anytime one of the following procedures is performed, the details of the incident should be forwarded to the Medical Director or his designee IMMEDIATELY. Notify your Chief Officer and/or call the Medical Director or his designee directly . This should be done as soon as unit is put back in service (Medical director or designee is available 24 hrs a day 7days a week)

Procedures Needing Medical Director Notification:

1. Needle Decompression
2. Surgical Cricothyrotomy
3. Intraosseous or Alternative IV Use
4. Esophageal intubation that was not discovered in the field and corrected
5. Rapid Sequence Induction for intubation
6. Use of Chemical Restraint
7. Anytime another Health Care provider has a concern about the healthcare provided.
8. Any attempted or successful LMA, King Airway or Endotracheal Intubation
(This due to an airway quality assurance program TBA)

Contact Information:

David Miramontes MD FACEP EMT-B

Cell	419-260-3121	4192603121@vtext.com
Pager	419-743-3604	4197433604@usamobility.net
Secure Fax	937-312-3401	
Email	Dmiraems@gmail.com	

LCEMS HOSPITAL BYPASS

The following is the procedure that LCEMS has adopted for hospital By-pass.

OPEN TO EMS

ER will accept any patient.

EMS BYPASS

ER is closed to all patients brought in by EMS.

BLS BYPASS

ER will not accept BLS patients. (Accepts ALS Patients)

CLOSED

ER is on bypass to all patients.
This includes ambulance and walk-in patients

TRAUMA BYPASS

Designated Trauma Centers will accept all patients except trauma center protocol patients.

TRAUMA RED ALERT

If all three Level One Trauma Centers are on by-pass a Trauma Red Alert will be enacted. This means that all three Trauma Centers will accept trauma patients until one of the hospitals becomes "Open to EMS" or "BLS Bypass".

PEDS BYPASS

ER is on bypass for Pediatric EMS Patients. This affects the Toledo Children's Hospital and St Vincent Mercy Children's Hospital. They will still accept adult patients.

STEMI BYPASS

Designated STEMI Centers will accept all patients except STEMI, ICE protocol or post arrest patients with a pulse. Patients should be diverted to next closest STEMI center

CARDIAC PROTOCOLS



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CARDIAC ARREST PROTOCOL (A)

Specific Information Needed:

A. Arrest History

- Preceding symptoms, Time of onset, Time lapse until CPR by Bystander or 1st Responder

B. Medical History

- Diseases, Medications, medical adjuncts, i.e. AID, Pacemaker, Establish known allergies

C. Environment

- Evidence of drug ingestion, trauma, hypothermia

Objective Findings

- A. Patient totally unresponsive
- B. Agonal respirations or apnea
- C. Absence of pulse
- D. Skin temperature vs. environment
- E. Evidence of dependent lividity (refer to DOA Protocol)

Treatment

- A. Scene safe, universal precautions, take efforts to preserve evidence if crime scene
- B. Call for back up
- C. Check rhythm with fast-patch.
- D. Treat according to appropriate protocol.

Specific Directives

- A. Cardiac arrest in a trauma situation is not treated according to this protocol. In a trauma situation, following C-spine & airway control, transport should be rapid with all stabilization done enroute to the closest hospital. Refer to Trauma Arrest Protocol
- B. Hypothermic cardiac arrest is not treated according to this protocol. Refer to Hypothermic Arrest Protocol.
- C. Survival from cardiac arrest is related to both BLS and ALS treatment. With multiple responders, several treatments may be administered simultaneously. The highest trained EMT should make assignments so all resources are utilized to their fullest. **Effective CPR should be the paramount activity** with appropriate rate, depth and EMTs must **minimize interruptions or pauses in compressions** as such causes a drastic fall in coronary perfusion. No interruptions should be allowed except to defibrillate or move patient.
- D. Large peripheral veins (antecubital or external jugular) are preferred IV sites in an arrest. Use of IO is appropriate if IV access is unattainable. (See IO Protocol)
Medications that may be given via the endotracheal tube if no IV/IO access Are:
 - 1. Narcan 4mg ET
 - 2. Atropine 8mg/20ml concentration 0.4mg/ml
 - 3. Valium (non oil based) 10 mg
 - 4. Epinephrine - 1:1000 concentrations only 2mg (IV/IO preferred route)
 - 5. Lidocaine 200mg ET
 - 6. Versed 10 mg ET

The dosage of these medications, when administered into the tracheal bronchial tree, should be 2 to 2.5 times the dose otherwise given IV. Medications given via the endotracheal tube require a 10 ml of saline flush. Amiodarone and Vasopressin cannot be given via the ET tube as such Lidocaine and Epinephrine should be used instead. **THE ADMINISTRATION OF MEDICATIONS VIA ET IS A LAST RESORT!!!!!!**

E. The sequence of Care of Arrest management is crucial so as to enhance CPR

1. Assess for absence of pulse and apnea
2. Start CPR Rate over 100 (HARDER DEEPER FASTER)
3. Insert simple airway (or insert King or LMA) and ventilate at 10 times a minute with ResQpod device in line
4. Attach AED or Monitor Defibrillation pads and defibrillate as indicated after 2 minutes CPR
5. **DO NOT STOP CPR TO INTUBATE EARLY IN THE ARREST** IF Ventilation IS ADEQUATE
6. Establish IV or IO access and begin medication therapy as indicated
7. If prolonged arrest; after starting medication therapy, consider intubation if ventilation effectiveness is in question or if pulse returns when adequate resources are present.
8. Initiate ICE protocol if return of pulse and has no purposeful movement

Remember **Mc Maid** acronym for Cardiac Arrest Priorities

- **M** **Metronome** Rate above 100 beats per minute
- **C** **Compressions** harder deeper faster
- **M** **Monitor** defibrillate after 2 minutes of CPR if down greater than 4 minutes
- **A** **Airway** Insert simple airway, KING, LMA
- **I** **IV** access or **IO** if no success 2 sticks
- **D** **Drugs** ACLS guidelines
-

- F. In dialysis patients in arrest, consider administration of 1 amp of Sodium Bicarbonate and 1 gram of Calcium Chloride. This is for suspected hyperkalemia and metabolic acidosis especially if slow wide complex rhythm is noted.
- G. The Drug or Shock shall be given and CPR continued for 1-2 minutes after such intervention and then rhythm check and pulse check should be done. The interruption of CPR shall be avoided at all costs even if a rhythm changes. A change from VT to an organized rhythm does not mean mechanical function of the heart has returned. The myocardium may be temporarily “stunned” thus needing manual CPR during this transition period.
- H. Defibrillation AND Cardioversion should be done according to Manufacturer’s Specifications or as follows.
- Phillips Biphasic-defibrillate at set energy of 150 Joules for each subsequent shock
 - Monophasic units-defibrillate at 360 joules for each shock
 - Physio-control Biphasic defibrillate at 200 J, 300J 360 J
 - Zoll Biphasic sequence shocks 120J, 150J, 200J

POST CARDIAC ARREST PROTOCOL
I.C.E. (Induced Cooling for EMS)

EMS units located in areas in which receiving hospitals support Therapeutic Hypothermia may initiate such protocol. Lucas/Wood County transport units shall divert to approved Cardiac Receiving centers.

- Mercy St Vincent Medical Center (St V's)
- St. Luke's Hospital
- The Toledo Hospital
- University Toledo Medical Center (UTMC)

Criteria for Induced Hypothermia:

1. Return of Spontaneous Circulation (ROSC) after cardiac arrest
2. Age \geq 18
3. Initial Temperature $>$ 34° C
4. Advanced airway in place such as ET, King, LMA with capnometry in place
5. Not obviously pregnant
6. Remains comatose (no purposeful response to pain)

Protocol:

1. With Return of Spontaneous Circulation (ROSC) after cardiac arrest do neuro exam for lack of purposeful response to pain.
2. Check initial temperature (if less than 34° C then cooling not necessary)
3. Expose/undress patient and apply ice pack to groin, axilla, neck, Maintain modesty with sheet.
4. Consider second large bore IV
5. If BP $>$ 90mmHg **Fentanyl 100mcg IV**
6. **Cold Saline Bolus 30ml/kg (2 liters Max)**
7. **Dopamine drip 10-20 mcg/kg/min** to keep MAP 90-100 mmHg.
8. If Shivering or problematic spontaneous movements:
 - a. **Etomidate (amidate) 20 mg IV/IO**
 - b. **Vecuronium 0.1 mg/kg IV/IO (10 mg)**
9. If temperature drops below 33° C then discontinue active cooling.
10. Recheck Temperature on arrival to hospital

=

VENTRICULAR FIBRILLATION PULSELESS VENTRICULAR TACHYCARDIA

1. Safe Scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness initiate basic airway (May use King LT or LMA) with Bag Valve mask ventilations and apply ResQPOD device in line or with constant mask seal. Attach BVM to oxygen source flow at 15 lpm. Utilize capnography device.
3. Apply Quick Combo Patches If Patient has been down over 4 minutes; administer 2 minutes of CPR before first defibrillation attempt.
4. Defibrillate per device recommendations (see Cardiac Arrest A-2)
5. Hard wire (monitor lead II)
6. IV/IO Normal Saline 1000ml bag, large bore (establish second line when practical)
7. Vasopressin, 40 units IV one dose only
8. Defibrillate per device recommendations (see Cardiac Arrest A-2)
9. Amiodarone 300mg IVP
10. Defibrillate per device recommendations (see Cardiac Arrest A-2)
11. Epinephrine 1:10,000 1mg IVP, repeat every 3-5 minutes
12. Defibrillate per device recommendations (see Cardiac Arrest A-2)
13. Amiodarone 150mg IV
14. Defibrillate per device recommendations (see Cardiac Arrest A-2)
15. Intubate if ventilation effectiveness is in question or continue to use alternative airway and confirm placement (do not disrupt compressions)
16. Consider: Magnesium Sulfate 2g in 100cc D5W, IV drip over 5 minutes for Torsades
17. Consider Sodium Bicarbonate 1 mEq/kg IV for prolonged arrest or Dialysis Or TCA OD
18. Contact on-line *Medical Control*

**VENTRICULAR FIBRILLATION
PULSELESS VENTRICULAR TACHYCARDIA (Continued)**

Note: If IV/IO cannot be obtained, after steps 1-9do the following:

10. Epi **1:1000** 0.03mg/kg via ET tube (2 –3 mg for an adult) repeat every 3-5 minutes
11. Defibrillate
12. Lidocaine 2 mg/kg via ET tube (repeat is 1mg/kg every 3-5minute)
13. Defibrillate
14. Contact on line *Medical Control* and/or transport

Continue to use Lidocaine if IV/IO is established do not use Amiodarone.

If perfusing rhythm is obtained administer Lidocaine IV Bolus 0.75 mg/kg every 10 minutes

If IV is established you may add Vasopressin to therapy as in #10 above.

PEA (PULSELESS ELECTRICAL ACTIVITY) ASYSTOLE PROTOCOL

This protocol applies to the following rhythms:

1. EMD (Electrical Mechanical Dissociation)
2. Pseudo EMD
3. Idioventricular Rhythms
4. Ventricular Escape Rhythms
5. Bradycardic Rhythms
6. Post Defibrillation Idioventricular Rhythms
7. Asystole

PEA can be caused by many underlying factors. The following possible causes should be considered and if verified, the appropriate treatment administered.

Hypovolemia	Treat with volume infusion.
Hypoxia	Treat with increase ventilation and oxygenation.
Hypothermia	See Hypothermia Protocol.
Hyperkalemia	Suspect in Dialysis pts. with brady, wide QRS, Consider sodium bicarbonate and calcium chloride 1 gram IVP.
Hydrogen Ion	Treat acidosis with hyperventilation and Sodium Bicarb 1 mEq/kg IV.
Tablets	Treat 1mEq/kg Sodium Bicarb for wide complex tachyarrhythmia for Tricyclic Antidepressant overdose. Glucagon 2mg IV for Beta Blocker OD
Tamponade, Cardiac	No field treatment available (proceed with PEA protocol).
Tension Pneumothorax	Needle Thoracentesis Protocol.
Thrombosis	Cannot treat Coronary or Pulmonary Embolus in the field (proceed with PEA protocol).

1. Safe Scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness initiate basic airway (May use King LT or LMA) with Bag Valve mask ventilations and apply ResQPOD device in line or with constant mask seal. Attach BVM to oxygen source flow at 15 lpm. Utilize capnography device.
3. Apply combo Patches, Identify rhythm and continue CPR
4. Hard wire (monitor lead II)
5. IV Normal Saline 1000ml bag, large bore, administer 1 liter of fluid
6. Vasopressin 40 mg IV/ IO
7. Atropine 1mg IV/IO push every 3-5 minutes up to 3 mg
(In absolute or relative Bradycardia)

Pulseless Electrical Activity, continued

8. Epinephrine 1mg 1:10,000 IV/IO push; repeat every 3-5 minutes.
9. Intubate if ventilation effectiveness is in question or continue to use alternative airway and confirm placement (do not disrupt compressions)
10. Sodium Bicarb 1mg/kg IV push for prolonged down time, Drug overdose, or suspected Hyperkalemia .
11. Contact on-line *Medical Control*, move patient

If IV or I/O cannot be established, use medications below via endotracheal route.

1. Atropine 8mg/20ml concentration 0.4mg/ml 3mg
2. Epi **1:1000** 0.03mg/kg via ET tube (2 –3 mg for an adult) repeat every 3-5 minutes

ASYSTOLE PROTOCOL

Asystole may be caused by many underlying factors. The following possible causes should be considered, and if verified, the appropriate treatment administered.

Hypovolemia	Treat with volume infusion.
Hypoxia	Treat with increase ventilation and oxygenation.
Hypothermia	see Hypothermia Protocol
Hyperkalemia	Suspect in Dialysis pts. Consider sodium bicarbonate and calcium.
Hydrogen Ion	Treat acidosis with hyperventilation and Sodium Bicarb 1 mEq/kg IV.
Tablets	Treat 1mEq/kg Sodium Bicarb for tachyarrhythmia or Tricyclic Antidepressant overdose
Tamponade, Cardiac	No prehospital field treatment available (proceed with PEA protocol).
Tension Pneumothorax	Needle Thoracentesis Protocol.
Thrombosis	Cannot treat Coronary or Pulmonary Embolus in the field

Note: Pacing Asystole is no longer recommended.

TREATMENT

1. Safe Scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness initiate basic airway (May use King LT or LMA) with Bag Valve mask ventilations and apply ResQPOD device in line or with constant mask seal. Attach BVM to oxygen source flow at 15 lpm. Utilize capnography device.
3. Apply combo Patches, Identify rhythm and continue CPR
4. IV Normal Saline 1000ml bag, large bore, administer 1 liter of fluid
5. Vasopressin 40 mg IV/ IO
6. Atropine 1mg IV push every 3-5 minutes up to 3 mg
(In absolute or relative Bradycardia)
7. Epinephrine 1mg 1:10,000 IV/IO push; repeat every five minutes.
8. Intubate if ventilation effectiveness is in question or continue to use alternative airway and confirm placement (do not disrupt compressions)
9. Sodium Bicarb 1mg/kg IV push for prolonged down time, Drug overdose, or suspected Hyperkalemia .
10. Contact on-line *Medical Control*, move patient

If IV or I/O cannot be established, use medications below via endotracheal route.

1. Atropine 8mg/20ml concentration 0.4mg/ml 3mg
2. Epinephrine **1:1000** 0.03mg/kg via ET tube (2 –3 mg for an adult) repeat every 3-5 minutes (IV/IO preferred route)

TRAUMATIC CARDIAC ARREST

This protocol applies to the patient who has sustained a cardiac arrest from significant trauma. The emphasis in this protocol will be to load and go. Trauma arrest patients are difficult to handle in the pre-hospital setting. Trauma cardiac arrest should be transported A.S.A.P. to the closest hospital. Patients with long extrications, a helicopter should be considered so a physician will be on the scene. The patient should have no delay in transport after extrication, except as needed for C-spine and airway control. It should also be considered to contact on-line *Medical Control* early and notify of treatments done thus far so they can be ready to accept patient. The receiving hospital should be given four (5) specific pieces of information:

TAG EM

Traumatic arrest

Age

Gender

ETA (estimated time of arrival).

Mechanism and Major Injuries

1. Safe scene, universal precautions
2. C-spine control
3. Establish unresponsiveness, apnea, and pulselessness initiate basic airway (May use King LT or LMA) with Bag Valve mask ventilations and apply ResQPOD device in line or with constant mask seal. Attach BVM to oxygen source flow at 15 lpm. Utilize capnography device.
4. CPR with ResQpod device
5. Package and initiate rapid transport
6. Consider Intubation if ventilation effectiveness is in question and have adequate resources.
7. Bilateral needle decompression 4th intercostal space anterior axillary line if tension pneumothorax suspected.
8. Two large bore IVs Normal Saline 1000ml bag
7. Treat rhythm per appropriate protocol

HYPOTHERMIC CARDIAC ARREST PROTOCOL

This protocol applies to patients with suspected hypothermia (less than 32 degrees C . These patients are load and go situations. It should be noted that cardiac medications should not be administered to hypothermic patients unless directed by on-line *Medical Control*.

1. Safe scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness initiate basic airway (May use King LT or LMA) with Bag Valve mask ventilations and apply ResQPOD device in line or with constant mask seal. Attach BVM to oxygen source flow at 15 lpm. Utilize capnography device.
3. CPR
4. Remove patient's wet garments and apply Monitor and Defibrillation pads
5. Defibrillate V-fib/V-tach per device recommendations (see cardiac arrest A-2)
6. Move carefully, Avoid further heat loss
7. Initiate transport
8. IV Normal Saline 1000ml bag, large bore
9. Epinephrine 1mg 1:10,000 IV/IO push; repeat every **TEN** minutes.
10. Consider Intubation if ventilation effectiveness is in question,
11. Contact on-line *Medical Control*

BRADYCARDIA PROTOCOL

(Patient is not in cardiac arrest)

This protocol applies to the following rhythms:

1. Sinus Bradycardia
2. First Degree AV Block
3. Relative Bradycardia
4. Absolute Bradycardia
5. Second Degree Mobitz I (Wenckebach)

Treatment may not be required if patient is not symptomatic. It should also be noted that if IV access is delayed, go immediately to TCP (Transcutaneous Pacing). Denervated transplanted hearts (patients who have had a heart transplant) will not respond to Atropine. TCP and epinephrine drips are indicated as initial response to Bradycardia.

1. Safe scene, universal precautions
2. Reassure patient
3. Oxygen high flow by mask
4. Attach cardiac monitor (monitor lead II) Identify rhythm
5. Vitals, Pulse Oximeter
6. IV Normal Saline 1000ml bag with fluid bolus 500 ml.
7. Atropine 0.5 mg IV push every 3-5 minutes up to 3 mg.
8. Vitals
9. TCP (Transcutaneous Pacing) set rate at 80 and 20 milliamps, increase at 5 milliamps until capture. Consider Versed 2-4 mg IV every 5 minutes for sedation
10. Vitals
11. Epinephrine 2micrograms /min IV drip, titrate up to 10ug/min for effect (start at 15 drops a minute = 2 micrograms /min) Second IV line suggested. (Mix 2mg Epi 1:1000 in 250cc Normal Saline)
12. Vitals
13. Contact on-line *Medical Control*, move patient

Epinephrine Drip

Mix 2mg Epi 1:1000 in 250cc Normal Saline and start 2micrograms /min IV drip, titrate for effect (start at 15 gtts per minute=2ug/min) up to 10ug/min, a second IV line is suggested. Use 60 gtts per ml IV tubing or IV Infusion pump.

2 mcg/min = 15 gtts per minute or ml/hr

4 mcg/min = 30 gtts per minute or ml/hr

6 mcg/min = 38 gtts per minute or ml/hr

8 mcg/min = 60 gtts per minute or ml/hr

10 mcg/min = 75gtts per minute or ml/hr

**THIRD DEGREE HEART BLOCK
TYPE II SECOND-DEGREE AV BLOCK**

(Patient is not in cardiac arrest)

Treatment may not be required if the patient is not symptomatic. If patient displays any of the following symptoms, treatment should be initiated.

- A. Chest pain
- B. Shortness of breath
- C. Decreased level of consciousness
- D. Hypotension
- E. PVC's

Treatment

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen
5. Attach cardiac monitor (monitor lead II) and identify rhythm
6. IV Normal Saline 1000ml bag
7. Pulse Oximeter
8. Vitals
9. TCP (Transcutaneous Pacing) set rate at 80 and 20 milliamps, increase until capture
Consider Versed 2-4 mg IV every 5 minutes for sedation
10. Vitals
11. Epinephrine 2ug/min IV drip, titrate for effect (start at 15 gtts per minute=2ug/min) up to 10ug/min, a second line is required. (Mix 2mg Epi 1:1000 in 250cc Normal Saline)
12. Vitals
13. Contact on-line *Medical Control*, move patient

Epinephrine Drip

Mix 2mg Epi 1:1000 in 250cc Normal Saline and start 2micrograms /min IV drip, titrate for effect (start at 15 gtts per minute=2ug/min) up to 10ug/min, a second IV line is suggested. Use 60 gtts per ml IV tubing or IV Infusion pump.

2 mcg/min = 15 gtts per minute or ml/hr

4 mcg/min = 30 gtts per minute or ml/hr

6 mcg/min = 38 gtts per minute or ml/hr

8 mcg/min = 60 gtts per minute or ml/hr

10 mcg/min = 75gtts per minute or ml/hr

UNSTABLE TACHYCARDIA

(Not in cardiac arrest)

This protocol applies to the following rhythms with rates >150:

1. Atrial Fibrillation/Flutter
2. Wide complex tachycardia of uncertain type
3. PSVT (Paroxysmal Supraventricular Tachycardia)
4. VT (Ventricular Tachycardia)
5. Polymorphic Ventricular Tachycardia

Signs and symptoms of the unstable patient are as follows:

- A. Chest pain
- B. Shortness of breath
- C. Decreased level of consciousness
- D. Hypotension (systolic BP <100mmhg with other indicators of inadequate perfusion)
- E. Pulmonary edema from heart failure
- F. Evidence of Acute Myocardial Infarction

Treatment

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen
5. Attach cardiac monitor (monitor lead II)
6. Identify rhythm
7. IV Normal Saline 1000ml bag
8. Pulse Oximeter
9. Vitals
10. If patient has a BP >110mmhg, administer Versed 2-4 mg IVP or Fentanyl 25-75 mcg IVP (titrate to effect start will lower dose and repeat as needed).
11. Synchronized Cardioversion (use manufacturer recommendations for defib or below)
(Phillips 150 J with repeated shocks as needed)
 - A. VT: 200J, 300J, 360J treat borderline V-tach: Protocol K
 - B. Wide complex VT: 200J, 300J, 360J treat per Wide Complex: Protocol L
 - C. Polymorphic VT: Defib 200J, 200-300J, 360J: Protocol L)
 - D. PSVT: 200J, 300J,360J treat Borderline per PSVT: Protocol J
 - E. Atrial Fib/Flutter: 200J, 300J, 360J treat per Borderline Atrial Fib: Protocol Q
12. Vitals
13. Treat with medication post cardioversion per protocol for rate control.
14. Contact on-line **Medical Control**, move patient

ATRIAL FIBRILLATION /ATRRIAL FLUTTER WITH RAPID VENTRICULAR RESPONSE

This protocol applies to patients with narrow QRS complex tachycardia suggestive of A-Fib/A-flutter with irregularly irregular rhythm. A-flutter commonly has a 2:1 AV block resulting in heart rate in the 150 BPM range. This protocol is to be used with patients that are not unstable.

Signs and symptoms of the unstable patient are as follows:

- Significant Chest pain
- Shortness of breath
- Decreased level of consciousness
- Hypotension (systolic BP <100mmhg with other indicators of inadequate perfusion)
- Pulmonary edema from heart failure
- Evidence of Acute Myocardial Infarction

Treatment

1. Safe scene, Universal precautions.
2. Reassure patient
3. Vitals
4. Oxygen, Monitor, Pulse Oximeter
5. Establish IV or heplock
6. Administer Cardiazem 0.25 mg/kg (20mg IVP for 80kg)
7. Vitals -If significant hypotension fluid bolus 500 ml and consider calcium chloride 1 gram IVP
8. May administer second dose if not responsive in 5-10 minutes 0.35mg/kg (30 mg for 80 kg patient)
9. Vitals
10. If patient has a BP >110mmhg, administer Versed 2-4 mg IVP or Fentanyl 25-75 mcg IVP (titrate to effect start with lower dose and repeat as needed).
11. Synchronized Cardioversion (use manufacturer recommendations for defib or below)
(Phillips 150 J with repeated shocks as needed)
Atrial Fib/Flutter: 200J, 300J, 360J treat per Borderline Atrial Fib: Protocol Q

PAROXYSMAL SUPERVENTRICULAR TACHYCARDIA (PSVT)
(Narrow Complex Tachycardia)

This protocol applies to the patient who is slightly symptomatic or whose condition has deteriorated since initial assessment.

Treatment

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen
5. Attach cardiac monitor (monitor in lead II)
6. Identify rhythm
7. IV Normal Saline 1000ml bag
8. Pulse Oximeter
9. Vitals
10. Vagal Maneuvers
 - A. Bearing down
 - B. Coughing
 - C. Breath holding (if possible)
11. Vitals
12. Adenocard 6mg rapid IV push, rapid saline flush
13. Vitals
14. Adenocard 12mg rapid IV push, rapid saline flush
15. Vitals
16. If narrow complex QRS, administer Cardizem IV push 0.25mg/kg (25 mg)
If significant hypotension occurs, Give 1 gram Calcium Chloride IV

If wide complex QRS, or if hypotensive <100 systolic or history or severe CHF then give Amiodarone 150 mg in 100 D5W over 10 minutes; May repeat once.

17. Vitals
18. If patient has a BP >110mmhg, administer Versed 2-4 mg IVP or Fentanyl 25-75 mcg IVP (titrate to effect start will lower dose and repeat as needed)
19. Synchronized Cardioversion at manufacture's guidelines or 200J, 300J, 360J
20. Contact on-line Medical Control

If patient becomes unstable, immediately cardiovert patient.

Signs and symptoms of the unstable patient are as follows:

- Chest pain
- Shortness of breath
- Decreased level of consciousness
- Hypotension (systolic BP <100mmhg with other indicators of inadequate perfusion)
- Pulmonary edema from heart failure
- Evidence of Acute Myocardial Infarction

VENTRICULAR TACHYCARDIA

(Stable or Borderline)

This protocol applies to the patient who is slightly symptomatic if shortness of breath, chest pain or signs of shock are seen immediately cardiovert per protocol.

Treatment

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen
5. Attach cardiac monitor (monitor in lead II)
6. Identify rhythm
7. IV Normal Saline 1000ml bag
8. Pulse oximeter
9. Vitals
10. Amiodarone 150mg in 100cc D5W, over 10 minutes
11. Vitals
12. May repeat Amiodarone 150mg in 100cc D5W, over 10 minutes
13. Vitals
14. If patient has a BP >110mmhg, administer Versed 2-4 mg IVP or Fentanyl 25-75 mcg IVP (titrate to effect start with lower dose and repeat as needed)
15. Synchronized Cardioversion 200J, 300J, 360J
16. Contact on-line **Medical Control**

If patient becomes unstable, immediately cardiovert patient.

Signs and symptoms of the unstable patient are as follows:

- Chest pain
- Shortness of breath
- Decreased level of consciousness
- Hypotension (systolic BP <100mmhg with other indicators of inadequate perfusion)
- Pulmonary edema from heart failure
- Evidence of Acute Myocardial Infarction

WIDE COMPLEX TACHYCARDIA OF UNCERTAIN TYPE

(Stable or borderline)

This protocol applies to the patient who is slightly symptomatic or whose condition has deteriorated since initial assessment.

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen
5. Attach cardiac monitor (monitor lead II)
6. Identify rhythm
7. IV Normal Saline 1000ml bag
8. Pulse oximeter
9. Vitals
10. Amiodrone 150mg in 100cc D5W, over 10 minutes, may repeat once
11. Vitals
12. Consider Versed 2-4 mg IV every 5 minutes for sedation.
13. Synchronized Cardioversion 200J, 300J, 360J
14. Contact on-line *Medical Control*

If patient becomes unstable, immediately cardiovert patient.

Signs and symptoms of the unstable patient are as follows:

- Chest pain
- Shortness of breath
- Decreased level of consciousness
- Hypotension (systolic BP <100mmhg with other indicators of inadequate perfusion)
- Pulmonary edema from heart failure
- Evidence of Acute Myocardial Infarction

CARDIOGENIC SHOCK

Hypotension and shock may be caused by volume, pump or rate problems. Rate problems should be treated according to appropriate protocol, i.e. Bradycardia

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen (may have to assist ventilations)
5. IV Normal Saline 1000ml bag, large bore
6. Attach cardiac monitor (monitor lead II)
7. Identify rhythm and treat per protocol
8. Pulse oximeter
9. Vitals
10. Administer a fluid bolus 250-500ml IV Saline if patient is hypovolemic. (Monitor closely for signs of Pulmonary Edema).
11. Vitals
12. If the systolic BP is still <90 mmhg. Administer a Dopamine drip starting at 10 ug/kg/min and titrate up to 20 ug/kg/min or until a target systolic BP of 90-100 mmhg is achieved. (Mix 400mg in 250cc Normal Saline)
13. Vitals
14. Contact on-line *Medical Control*, move patient

ACUTE CORONARY SYNDROME

This protocol applies to patients with a suspected Acute Coronary Syndrome from any cause. A patient with a cardiac problem may not be having chest pain. The EMT or paramedic should be aware of the other signs and symptoms associated with an Acute Coronary Syndrome. With the current progress being made in thrombolytic therapy and angioplasty it should be emphasized that the Acute Myocardial Infarction patient requires early recognition and rapid transport. Scene times with patients suspected of an acute MI should be less than 10 minutes if possible. Care should be taken to limit the number of IV attempts.

1. Safe scene, universal precautions
2. Reassure patient.
3. ABC (airway, breathing, circulation)
4. Oxygen by cannula or NRB Mask to keep pulse ox greater than 96%.
5. Vitals have patient give pain score.
6. Attach cardiac monitor; IF available get 12-lead EKG***
7. Attach Pulse Oximeter
8. Administer four (4) Aspirin 81mg chewable (324 MG)
(If allergies, GI Bleed or bleeding disorders HOLD aspirin)
9. IV Normal Saline 1000 ml (Consider second IV enroute to hospital)
10. Administer one (1) Nitroglycerin, 0.4 mg sublingual. Repeat every 5 minutes (If systolic BP <100 go to 13) (If on Viagra, Levitra, or Cialis within the last 48 hours, go to 11 do not give NTG)
After two Nitro sublingual may start Nitro drip at 10 mcg/min on IV Infusion pump and titrate to pain and BP with increases by 10 mcg/min every 5 minutes to maintain BP 120-160 systolic and titrated to pain.
****Nitroglycerine Sublingual may be given by approved EMT-Intermediates ****
11. Vitals (If systolic BP <100 go to 12). Administer Fentanyl 25-50 micrograms IV may repeat every 3-5 minutes)
****above may be given by approved EMT-Intermediates ****
12. If EKG shows injury or infarction pattern give Lopressor 5mg IV over 5 minutes (if pulse > 60 and blood pressure > 110mmhg systolic). Repeat in 10 minutes (if pulse > 60 and blood pressure > 110mmhg systolic)
13. For Nausea, Zofran 4mg IVP may repeat time one.
14. Contact on-line Medical Control (Consider diversion to Cath Lab Facility if STEMI)

** If after 12-lead acquisition, the patient has ST elevation in two or more of the following leads II, III or AVF (inferior MI). The paramedic should acquire another 12-lead EKG utilizing lead V4R or move V5 and V6 to left mid back and look for ST Elevation. If these leads shows elevation, this is indicative of a right ventricular infarct (RVI). The paramedic should withhold administration of Nitro and Lopressor. Instead give a one-liter bolus of Normal Saline IV. Use care to continue to reassess the patient's lung sounds. Contact medical control for possible diversion to a cardiac cath. lab.

ACUTE PULMONARY EDEMA/CHF

This protocol applies to the patient who is symptomatic and it is suspected that they are in Pulmonary Edema/CHF. Acute Pulmonary Edema can become life threatening very quickly and the need for intervention must be recognized early. Signs and symptoms of Pulmonary Edema may include the following:

- A. Air Hunger
- B. Orthopnea
- C. Dyspnea
- D. Cyanosis
- E. Diaphoresis
- F. Rales/Wheezes

The Goal of therapy is to reduce afterload and preload with Nitrates and Angiotensin Converting Enzyme (ACE) Inhibitors and diuresis only if confirmed volume overload. Versed is used for mild sedation and to blunt effects of sympathetic nervous system activation. Morphine and Lasix has not been proven as effective as previously thought for this purpose and as such will not be used.

1. Safe scene, universal precautions
2. ABC (airway, breathing, circulation)
3. Pulse Oximetry Vitals, Reassure patient
 - Vitals, if patient has a BP > 110 mm Hg. Administer one Nitroglycerine 0.4 mg SL repeat in 5 minutes (hold if BP <110 mm Hg.)
 - (If patient taken Viagra, Cialis, Levitra within 48 hours hold NTG)
 - ~***Nitroglycerine Sublingual may be given by approved EMT-Intermediates ****~
4. Oxygen, Utilize CPAP Protocol if available.
5. Establish IV Normal Saline 250ml bag (slow TKO rate)
6. Attach cardiac monitor (monitor lead II) get 12 Lead EKG when able
7. Vitals, Captopril 25 Mg SL if no IV or Vasotec 1.25mg IVP (ACE inhibitor) if BP greater than 120 mmHg.
8. Vitals, if patient has a BP > 110 mm Hg. Administer one Nitroglycerine 0.4 mg SL may repeat in 5 minutes
 - ****Nitroglycerine SL may be given by approved EMT-Intermediates ****
 - **After 2nd nitro sublingual may start Nitro drip at 10 micrograms per minute if at authorized location and increase 10 mcg/min every 5 minutes until BP stabilized 120-150 mmHg systolic or drops by 25% pre dose systolic BP.
9. Vitals, if patient still has a BP > 110 mm Hg. Administer Versed 2-4 mg slowly ,may repeat every 5-10 minutes for anxiety and sedation.
10. If BP <110mmHg Follow Cardiogenic shock Protocol
11. Contact on-line **Medical Control**
12. If above treatment no successful consider Lasix 40mg IVP (With Medical Control authorization)

PREMATURE VENTRICULAR CONTRACTIONS

This protocol applies to the symptomatic patient with the presence of PVC's. Treatment may not be required if the patient is not symptomatic. If the patient displays any of the following symptoms, treatment should be initiated.

- A. Suspected Myocardial Ischemic Attack
- B. Decreased level of consciousness (LOC)
- C. Runs, couplets, or salvo
- D. More than 6 PVCs/minute, if the patient is symptomatic.

Treatment

1. Safe scene, universal precautions
2. Reassure patient
3. ABC (airway, breathing, circulation)
4. Oxygen
5. IV Normal Saline 1000ml bag
6. Attach cardiac monitor (monitor lead II)
7. Identify rhythm
8. Pulse oximeter
9. Vitals
10. Lidocaine 1.5 mg/kg IV
11. Vitals
12. Contact on-line *Medical Control*, move patient
13. Lidocaine 0.75mg/kg IV every 5 minutes or to a total of 3mg/kg

**If the PVC's resolve with Lidocaine Therapy, administer a Lidocaine drip as shown below.

Lidocaine Bolus@ 1mg/kg Lidocaine drip at 2mg/minute
Lidocaine Bolus @ 1-2 mg/kg. Lidocaine drip at 3mg/minute
Lidocaine Bolus @ 2-3 mg/kgLidocaine drip at 4mg/minute

AUTOMATIC IMPLANTABLE CARDIOVERTER DEFIBRILLATOR (AICD)

There are a growing number of patients in the area who have had an AICD implanted. The AICD device continuously monitors the patient's cardiac electrical activity. IF the AICD detects V-fib or V-tach above its pre set rate (ie 190), the device will charge and deliver a shock to the heart.

- A. If the AICD patient becomes pulseless, it is safe and appropriate to start CPR. While doing CPR if the AICD fires a slight tingling may be felt by the responder doing compressions.
- B. Treat all rhythms per protocols; however, if the patient requires defibrillation, **maximum joules** should be used at all times. Avoid paddle placement over the AICD. If external defibrillation is unsuccessful, change paddle position to either an anterior/posterior placement or reversing paddle placement on the anterior chest.
- C. Many of these patients take Amiodarone orally and may need additional dose 150 mg IVPB over 10 minutes to terminate recurrent arrhythmias. Call Medical control for guidance.

EMS PROVIDER

PRE-HOSPITAL THROMBOLYTIC CHECK LIST

PATIENT NAME _____ AGE _____ SQUAD _____

DATE _____ PARAMEDIC NAME _____

- | | | | |
|-----|---|-----|----|
| 1. | Oriented..... | Yes | No |
| 2. | Chest pain < 6 hours..... | Yes | No |
| 3. | Active internal bleeding or known blood disorder | Yes | No |
| 4. | History of CVA, intracranial bleed or aneurysm..... | Yes | No |
| 5. | Neurosurgery, head or spine trauma..... | Yes | No |
| 6. | Major surgery or biopsy within 6 weeks..... | Yes | No |
| 7. | Chest or abdominal trauma within 6 weeks..... | Yes | No |
| 8. | CPR within the past 10 days..... | Yes | No |
| 9. | GI or GU bleeds within 3 months..... | Yes | No |
| 10. | Acute pericarditis, acute aortic dissection,
Esophageal varices..... | Yes | No |
| 11. | Pregnant..... | Yes | No |
| 12. | Severe renal or hepatic disease..... | Yes | No |
| 13. | Diabetic..... | Yes | No |
| 14. | Retinopathy (eye disorders)..... | Yes | No |
| 15. | BP (> 180 systolic, > 120 diastolic)..... | Yes | No |
| 16. | Taking anticoagulants..... | Yes | No |

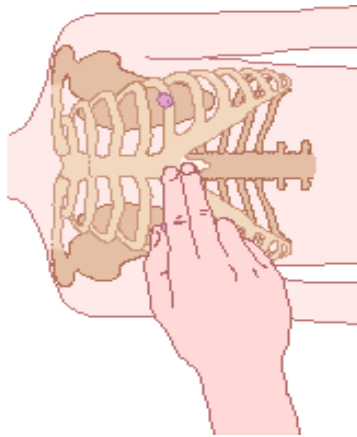
CPR

PROTOCOLS



CPR PROTOCOLS
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CPR Protocol

Specific Information Needed:

- A. Arrest History
 - 1. Time of onset
 - 2. Bystander CPR
 - 3. Time lapse until CPR
 - 4. Preceding symptoms
- B. Medical History
 - 1. Diseases
 - 2. Medications
 - 3. Medical adjuncts, i.e., AICD, Pacemaker
 - 4. Establish known allergies
- C. Environment
 - 1. Evidence of drug ingestion
 - 2. Evidence of trauma
 - 3. Note unusual presentations

Objective Findings

- A. Patient totally unresponsive
- B. Agonal Respirations or Apnea
- C. Absence of pulse
- D. Skin temperature vs. environment
- E. Evidence of dependent lividity (refer to DOA Protocol)
- F. Discontinuing CPR (refer to Cessation of CPR Protocol)
 - 1. Withholding Resuscitation (refer to DNR protocol)

Treatment

- A. Universal precautions
- B. Call for back-up if needed
- C. Treat according to appropriate protocol.

Specific Considerations

- A. The first EMT on scene should check effectiveness of CPR while in progress. Pulselessness should also be checked since cardiac function could have returned after an arrhythmia or vasovagal episode.
- B. Survival from cardiac arrest is related to both BLS and ALS treatment. With multiple responders, several treatments may be administered simultaneously. The highest trained responder on scene should make assignments so all resources are utilized to their fullest. EMS Agency will follow ALL guidelines and procedures currently utilized by the American Heart Association. This applies to:

1. Adult
 - a. One Person CPR
 - b. Two Person CPR
 - c. Adult Foreign Body Obstruction

2. Child
 - a. One person CPR
 - b. Child Foreign Body Obstruction

3. Infant
 - a. One person CPR
 - b. Infant Foreign Body Obstruction

Based on 2005 AHA Guidelines the following changes should be stressed.

Remember **Mc Maid** acronym for Cardiac Arrest Priorities

- **M** **Metronome** Rate above 100 beats per minute
- **C** **Compressions** harder deeper faster limit interruptions
- **M** **Monitor** defibrillate after 2 minutes of CPR if down greater than 4 minutes
- **A** **Airway** Insert simple airway, KING, LMA
- **I** **IV** access or **IO** if no success 2 sticks
- **D** **Drugs** ACLS guidelines

“Push Hard and Push Fast” at rate of 100 per minute

Allow Chest to recoil from compressions.

Limit interruptions to chest compressions

All victims 30 to 2 ratio for single rescuer CPR

IF LMA KING or ET in place use continuous CPR without interruption.

15: 2 ratios for children with 2 healthcare workers.

Rescue breaths over 1 sec.

Limit ventilations one every 6 seconds or 10 per minute.

Limit tidal volumes to 500 ml for adults if using oxygen.

Use of the Impedance Threshold Device (resQPOD) is suggested for all arrests. (Class IIA)

AED should be used on all children over the age of 1 year.

AED should deliver one shock and then immediate CPR should begin.

AEDs should be reprogrammed to analyze, shock once and prompt immediate CPR

DO NOT STOP CPR TO INTUBATE EARLY IN THE ARREST IF VENTILATION IS ADEQUATE

If patient down for more than 4 minutes do two minutes of CPR then analyze and shock as indicated

Cessation of CPR

Specific Considerations

For patients who have had CPR initiated prior to Squad arrival, and the EMT determines the patient meets the criteria set forth by the EMS Agency DOA Policy, CPR may be stopped. If, while obtaining a reliable history, the patient indeed does meet the criteria for DOA, all life support may be stopped with permission from on-line *Medical Control*.

If the EMT is unsure if the patient meets the exact criteria set forth by the DOA policy, on line *Medical Control* should be contacted and the case discussed. CPR should be continued during this time.

For patients who have had CPR initiated prior to the squad arrival and it is determined that the patient has a DNR Comfort Care or DNR Comfort Care-Arrest order in place, CPR will be discontinued.

D.O.A. POLICY

- A. When a DOA is encountered, the squad members should avoid disturbing the scene or the body as much as possible, unless it is necessary to do so in order to care for and assist other victims.
- B. Once determined that the victim is, in fact dead, the EMT should move as rapidly as possible to transfer responsibility or management of the scene to the police department and/or the coroner's office. It is the EMT's responsibility to notify the coroner's office directly or to ensure that someone else such as another rescuer, the dispatcher, or a police officer on the scene has notified the coroner's office.
- C. The squad should not leave the scene until responsibility for management of the scene has been transferred to an appropriate agency.
- D. A determination that the victim is dead rests with the EMT. The following may be used as guidelines to support the determination that a victim is DOA:
 - 1. There is an injury that is incompatible with life, e.g., decapitated, or burned beyond recognition.
 - 2. The victim shows signs of decomposition, rigor mortis or extreme dependent lividity (purple discoloration of the dependent parts of the body caused by pooling of blood due to gravity).
 - 3. If a reliable history indicates that the patient has been without vital signs for longer than 20 minutes without any resuscitative measures being instituted and the victim is cold. Caution: This does not include circumstances in which environmental cold would be responsible for the victim being cold. Any victim, who appears dead but is hypothermic from environmental cold, should be given benefit of the doubt and be provided with resuscitative measures immediately).
 - 4. The reasons to withhold CPR should be sufficiently firm so that, should it later be subject to question, a decision can be effectively supported.
 - 5. If EKG is indicated, Asystole should be verified in two leads. A copy of the EKG strip should be attached to the run report.

CAUTION:

IF ANY DOUBT EXISTS THAT THE VICTIM IS DEAD AT THE TIME OF ARRIVAL OF THE SQUAD, RESUSCITATIVE MEASURES SHOULD BE INSTITUTED IMMEDIATELY. WHENEVER RESUSCITATIVE MEASURES ARE INSTITUTED, THEY MUST BE CONTINUED UNTIL AN APPROPRIATE DNR IS VERIFIED OR ARRIVAL AT A HOSPITAL, OR ON-LINE MEDICAL CONTROL OR A PHYSICIAN HAS PRONOUNCED THE VICTIM DEAD.

Precautions:

- A. Death cannot be judged in the hypothermic patient, who may be asystolic, apneic and stiff and still survive intact. Transport for rewarming in all instances.

DOA policy, continued

- B. Do not attempt to guess future outcomes based on appearance of patient (e.g., shotgun blast to face of suicide victim). Failure to act because of mistaken notions of outcome will be self-fulfilling prophecy.
- C. Do not allow suicide to prejudice the decision to resuscitate. No matter how serious a suicidal patient may be after therapy they may resume the desire to live. It is inappropriate to agree with the patient that death would be preferable and therefore, fail to act.
- D. If a DNR is made known to you, you must make a reasonable effort to:
 - a. Determine, which level DNR, is in place.
 - b. Identify that the person you are treating is the same person with the DNR.
 - c. Refer to DNR Comfort Care Policy

Special Notes

- A. Be careful to avoid discussion of the mechanism of death in the presence of relatives. In early grief, it is easy to misinterpret even well meaning expressions of concern. Moreover, because a patient is doing well in the field does not mean that survival is assured. Misguided optimism in the field will make grieving more difficult.

DNR Comfort Care Protocol

The State of Ohio has enacted legislation that provides guidelines to manage the class of patients designated as Do Not Resuscitate or DNR. There are two official types of DNR orders:

- A. DNR Comfort Care (activated immediately when DNR order is issued).
- B. DNR Comfort Care – Arrest (activated only when a patient experiences a cardiac or respiratory arrest).

The following explanations contain descriptions of the two types, variances allowed by law and a description of the acceptable methods to identify patients to whom the DNR law applies.

A. DNR COMFORT CARE

1. Terminally ill patients have the right to die with dignity, in comfort and with their wishes respected.
2. Comfort Care means a dying person receives care that eases pain and suffering during the final days or hours of life, but no resuscitative measures to sustain life will be implemented.
3. DNR Comfort Care does **not** mean, “Do not treat”.
4. DNR Comfort Care protocols are activated when an order is issued or when an appropriate living will specifies no CPR.
5. For patients that have a valid DNR Comfort Care order:
 - a. **YOU WILL:**
 - Suction the airway
 - Administer oxygen
 - Place in position of comfort
 - Splint or immobilize
 - Control bleeding
 - Provide pain medication
 - Provide emotional support
 - Contact other appropriate health care providers such as Hospice, Home health care, attending physician/Certified Nurse Practitioner (CNP)/ Certified Nurse Specialist (CNS)
 - b. **YOU WILL NOT:**
 - Administer chest compressions
 - Insert an artificial airway
 - Administer resuscitative drugs
 - Defibrillate or cardiovert
 - Provide respiratory assistance (other than that listed above)
 - Initiate resuscitative IV (this does not include an IV for providing pain medications)
 - Initiate cardiac monitoring

- c. For those patients where any of the **will not** measures have been initiated prior to confirmation of the DNR Comfort Care status, discontinue those actions upon DNR Comfort Care confirmation.

B. DNR COMFORT CARE – ARREST

1. Unlike DNR Comfort Care, which is effective at the time the order is written, DNR Comfort Care – Arrest applies when cardiac or respiratory arrest occurs.
2. “Cardiac Arrest”: means the absence of a palpable pulse and/or absence of spontaneous respirations and/or presence of agonal breathing.
3. DNR Comfort Care – Arrest allows for interventions to forestall cardiac and/or respiratory arrest. Interventions to forestall cardiac arrest include:
 - a. Insert oral/nasal airway
 - b. Administer resuscitative drugs
 - c. Initiate resuscitative IV
 - d. Initiate cardiac monitoring

C. IDENTIFICATION OF STATUS

1. The following page shows the types of identification being used in Ohio for the DNR Comfort Care Policy.

- D. EMS workers are not required to search a person to see if they have DNR identification. If an EMS or other health care worker discovers one of these items in the possession of the patient, the worker must make reasonable effort to establish identity of the patient, in appropriate circumstances. Examples of ways to verify identity are:**

1. The patient, family member, caregiver or friend gives the patients name.
2. The health care worker knows the patient personally.
3. Institution identification band.
4. Drivers license, passport or other picture ID.

E. INTERACTION WITH PATIENT, FAMILY AND BYSTANDERS

1. The patient always may request resuscitation even if he or she is a DNR Comfort Care patient and this protocol has been activated. The request for resuscitation amounts to a revocation of the DNR Comfort Care status.
2. If family or bystanders request or demand resuscitation for a person for whom the DNR Comfort Care protocol has been activated, **DO NOT** proceed with resuscitation. Provide comfort measures as outlined above and try to help the family understand the dying process and the patient’s choice not to be resuscitated.

DNR Comfort Care, continued

F. DOCUMENTATION

1. If the EMS provider implements the DNR Comfort Care the following shall be documented.
 - a. The item that identified the patient as DNR Comfort Care.
 - b. The method of verifying the patient's identity, if any was found through reasonable efforts.
 - c. Whether the patient was a DNR Comfort Care or DNR Comfort Care - Arrest patient.
 - d. The actions taken to implement the DNR protocol.

G. CPR is defined as cardiopulmonary resuscitation or a component of cardiopulmonary resuscitation, but it does not include clearing a person's airway for a purpose other than as a component of CPR. "Component of CPR" means any of the following:

1. Administration of chest compressions
2. Insertion of an artificial airway
3. Administration of resuscitative drugs
4. Defibrillation or cardioversion
5. Providing respiratory assistance
6. Initiation of a resuscitative IV line
7. Initiation of cardiac monitoring

H. The DNR law does not govern all DNR orders; it applies only to DNR orders, which specify the Comfort Care protocol. Physicians, CNS or CNP may write DNR orders which use a different protocol and which may better meet the patient's needs.

I. Paramedics and EMTs are protected under Ohio law from the following, resulting from withholding or withdrawal of CPR after a DNR is discovered, and after reasonable efforts have been made to determine that the DNR applies to their patient.

1. Criminal prosecution.
2. Professional disciplinary action.
3. Liability damages in a tort or other civil action.

**MEDICAL
EMERGENCIES
PROTOCOL**

MEDICAL EMERGENCIES PROTOCOLS

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ALTERED MENTAL STATES

Specific Information Needed:

A. History

1. Recent Crisis or Emotional Trauma
2. Changes in Behavior Patterns
3. Suicidal Tendencies
4. Drug or Alcohol Abuse
5. Toxic Exposures
6. Exposure to Environment; i.e. heat exposure

B. Medical History

1. Previous Psychiatric Disorders
2. Diseases
3. Medications; i.e. depressants
4. Establish known allergies
5. Medical Alert Tags

C. Environment

1. Evidence of trauma
2. Evidence of drug or alcohol ingestion
3. Note unusual presentations

Specific Considerations

- A. Remember the organic causes for altered mental states. Psychiatric disorders must be at the bottom of your list, or you may forget important treatable conditions.
 1. Hypoxia
 2. Hypoglycemia
 3. Head injury
 4. Hyperthermia
 5. Postictal States
 6. Drug Overdose
 7. Toxic Exposure
 8. Hypothermia

Altered mental status, continued

- B. An odor of alcohol is very common in emergency patients. Patient s need to have medical conditions ruled out with carefull history taking and physical assessment.
- C. Psychiatric patients can be difficult to manage with concern, especially repeat callers. Don't succumb to the temptation to ignore new complaints. You may miss any acute change.

Treatment

- 1) Safe scene, universal precautions
- 2) Establish responsiveness
- 3) Vitals, Pulse oximeter, cardiac monitor
- 4) High flow oxygen by non rebreather mask.
- 5) IV Normal Saline 1000 ml Bag
- 6) Test Blood sugar
 - i) Blood sugar < 60 mg/dl, or if blood sugar < 80 mg/dl and the patient has signs and symptoms of hypoglycemia, administer 25 Grams or 50ml 50% Dextrose IV/IO.
****May be given by Authorized EMT-Intermediates****
 - ii) If unable to establish IV, administer 1 unit Glucagon IM.
****May be given by Authorized EMT-Intermediates****
 - iii) Thiamine 100mg IV (if alcoholism or malnutrition is suspected, administer before dextrose)
- 7) Narcan 2-4mg IV, if respiratory depression, pinpoint pupils, mental status change GCS less than 14 and/or pulmonary edema and/or narcotic overdose suspected.
If no IV access use 2mg Narcan. 1 ml each nostril Intra-Nasal or 4mg Narcan IM
****May be given by Authorized EMT-Intermediates****
- 8) Vitals
- 9) For severely combative patients needing chemical restraint for the safety of crew and patient see chemical restraint protocol.
- 10) For extra pyramidal symptoms (jaw and/or neck stiffness, agitation, or speech changes) from Inapsine, Droperidol, Compazine, Thorazine or Prolixin.
 - i) Administer 25-50mg Benadryl IV/IM.
****May be given by Authorized EMT-Intermediates****
- 11) Contact on-line *Medical Control*

POISONS AND OVERDOSES

Specific Information Needed:

- A. History
 - 1. Type of ingestion
 - 2. Symptoms
 - 3. Alcohol abuse
 - 4. Drug abuse
- B. Medical History
 - 1. Previous psychiatric problems
 - 2. Diseases
 - 3. Medications
 - 4. Establish known allergies
- C. Environment
 - 1. Evidence of trauma
 - 2. Evidence of drug ingestion
 - 3. Evidence of alcohol ingestion
 - 4. Note unusual presentations

Specific Considerations:

- A. All empty containers of ingested material should accompany patient to hospital.
- B. Do not induce vomiting in patients who have ingested:
 - 1. Strong acids
 - 2. Strong base iodides
 - 3. Silver nitrate
 - 4. Strychnine
 - 5. Who are not alert
 - 6. Hydrocarbons
- C. Ipecac – Consider with medical control order for the following ingestions.
 - 1. Iron – Especially in children overdose of vitamins
 - 2. Lithium
 - 3. Beta Blockers / Calcium Channel Blockers

Treatment

EXTERNAL CONTAMINATION

- 1. Safe scene, infection control, appropriate clothing for task
- 2. Remove contamination agents
- 3. Decontaminate patient
- 4. Assess and treat using appropriate protocol
- 5. Contact on-line Medical Control

INTERNAL CONTAMINATION

1. Safe scene, infection control
2. Establish responsiveness
3. Reassure patient
4. ABC's (Airway, Breathing, Circulation)
5. Vitals, Pulse oximeter, Cardiac monitor
6. High Flow Oxygen by Non-rebreather mask
7. IV Normal Saline 1000 ml bag
8. Test blood sugar
 - a. Blood sugar < 60 mg/dl or if blood sugar < 80 mg/dl and patient has signs and symptoms of hypoglycemia, administer one amp 50 ml of 50% Dextrose IV push
 - b. If no IV can be established administer 1 unit Glucagon IM.****Above May be given by Authorized EMT-Intermediates****
9. Thiamine 100 mg slow IV push (If alcoholism malnutrition is suspected, administer before 8)
10. Naloxone (Narcan) 4 mg IV push if pinpoint pupils, altered mental status, or respiratory depression and/or narcotic overdose is suspected. If no IV access, use 2mg Narcan. 1 ml each nostril Intra-Nasal or 4mg Narcan IM
****Above May be given by Authorized EMT-Intermediates****
11. Activated Charcoal 50 gram orally for oral ingestions if not caustic ingestion.
***** Above may be used by EMT Basics and EMT Intermediates *****
12. Contact online Medical Control

SEIZURES

Specific Information Needed:

- A. History
 - 1. Onset
 - 2. Time Interval
 - 3. Previous seizure
 - 4. Type of seizure
- B. Medical History
 - 1. Head trauma
 - 2. Diabetes
 - 3. Headaches
 - 4. Drugs
 - 5. Alcohol
 - 6. Medications
 - 7. Pregnancy

Specific Considerations

- A. Restrain only to protect patient. Protect patient's head. Remember always immediately check pulse after seizure stops.
- B. Trauma to the tongue is unlikely to cause serious problems. Trauma to the teeth may. Attempts to force anything into patient's airway may cause a complete obstruction.
- C. Seizures can be caused by;
 - 1. Hypoxia
 - 2. Low glucose levels
 - 3. Irritable cerebral focus //
 - 4. Alcohol
 - 5. Drugs
 - 6. Eclampsia in pregnancy
- D. EMT's are often called to assist epileptics who seize in public. If the patient meets the following criteria and signs AMA, they need not be transported. However, on-line Medical Control must be consulted.
 - 1. Asymptomatic
 - 2. Is taking their medication
 - 3. Has their own physician
 - 4. Is experiencing their usual frequency of seizures
 - 5. Has sustained no trauma

Seizures, continued

Treatment

1. Safe scene, universal precautions
2. Establish responsiveness
3. ABC (airway, breathing, circulation)
4. Vitals, Pulse oximeter, Oxygen
5. Attach Cardiac Monitor
6. IV 1000 ml Normal Saline
7. Test blood sugar
 - a. Blood sugar < 60 mg/dl or if blood sugar < 80 mg/dl and patient has signs and symptoms of hypoglycemia, administer one amp 50 ml of 50% Dextrose IV push
 - b. If no IV can be established administer 1 unit Glucagon IM.****Above May be given by Authorized EMT-Intermediates****
8. Thiamine 100 mg slow IV push (If alcoholism is suspected, administer before 7)

If BP > 100 mmHg, administer 2 mg of Versed slow IV push every 2-3 minutes until patient is sedated or seizure stops. Maximum dosage of Versed is 10 mg without med control order. If no IV access, use 10mg Versed 5mg/1ml 1 ml each nostril Intra-Nasal or 5 mg Versed IM.

****Above May be given by Authorized EMT-Intermediates****
9. Vitals
10. If suspected Eclampsia, Magnesium Sulfate 2g in 100cc D5W IV Piggyback over 10 minutes in addition to initial Versed. May repeat Magnesium Sulfate 2grams IV times one. Contact medical control for blood pressure management and consider Lopressor 5mg IV.
11. Contact on-line Medical Control

Exited Delirium

Excited Delirium is an extreme disturbance of consciousness and mental status that occurs in individuals especially when under the influence of stimulants or anti-psychotic medications and it represents an acute LIFE THREATENING MEDICAL EMERGENCY.

Their bizarre agitated; aggressive, distracted behaviors often prompt the response of Police and first responders. They cannot be talked down, have a blunted sense of pain and will instinctively resist all efforts to restrain them with sometimes seemingly super human strength. Traditional holds and pain mediated restraint method often fail and even the Taser may not produce the desired muscle paralyzing effects.

These patients are in a state of an acute Medical Emergency and need rapid take down, sedation, cooling measures and IV fluid replacement. These patients often suffer respiratory or cardiac arrest once subdued and should always be closely monitored and transported by Advanced Life Support Units (Lifesquads) to closest appropriate facility.

They should never be left prone or face down in handcuffs and should never be “hog- tied”.

Common Causes or Triggers for Excited Delirium include:

- 1) Cocaine, Methamphetamine, Ritalin or other stimulants
- 2) Anticholinergic agents such as jimson weed or antihistamines
- 3) Alcohol or drug withdrawal
- 4) Psychosis, Manic episodes, PTSD
- 5) Serotonin syndrome from use antidepressants and antipsychotic medications.

Signs/Symptoms:

- Large pupils and light sensitivity
- Fast Heart rate and high blood pressure
- Skin hot moist and clammy
- Agitated behavior with blunted pain responses
- Poor concentration, easily distracted, Psychosis
- Paranoid behavior and hallucinations can also occur.

Pathophysiology:

- Sympathetic Nervous system overdrive
- Metabolic Acidosis
- Rhabdomyolysis- muscle breakdown with release of intracellular toxins such as potassium, myoglobin, and inflammatory mediators.
- Positional Asphyxia- Very large ventilation volumes are needed to oxygenate and blow off carbon dioxide overload.

Exited Delirium cont'd

Treatment

1. Rapid Take down using force necessary for safety of crew and patient.
Avoid prone position or any chest compression
2. Rapid assessment of ABC's, mental status and check for injuries.
3. **High flow oxygen, cardiac monitoring, check glucose.**
4. **Haldol 5 mg IM ONLY** may repeat dose in 10 min... max 10mg total without voice order
(2 mg to start in elderly)
5. **Versed (Midazolam) 4mg IV/IM/IN with 2-4 mg IV/IM/IN** every 5 minutes up to 10 mg
IV without voice order
****Above May be given by Authorized EMT-Intermediates****
6. **Bolus** with 500 ml boluses of **IV Fluids**
7. Rapid Cooling measures if needed for temp over 102 degrees F.
8. Rapid Transport to hospital

SYNCOPE

Specific Information Needed:

A. History

1. Onset (events leading to)
2. Duration
3. Seizure activity
4. Precipitating factors

B. Medical History

1. Medications
2. Diseases
3. Trauma
4. Pregnancy
5. Alcohol or drug use
6. Headaches

C. Environment

1. Evidence of trauma
2. Evidence of drug ingestion
3. Evidence of alcohol ingestion
4. Note unusual presentations

Specific Considerations

- A. Syncope is by definition a transient state of unconsciousness from which the patient has recovered. If the patient is still unconscious, treat per coma protocol. If the patient is confused, treat according to altered mental state protocol. //
- B. Most syncope is vasovagal, with dizziness progressing to fainting over several minutes. Recumbent position should be sufficient to restore vital signs and level of consciousness to within normal limits.
- C. Syncope, which occurs without warning or while in the recumbent position is potentially serious, and often is caused by cardiac arrhythmias
- D. **Patients over the age of 40 with syncope even though apparently normal, should be transported.** In middle-aged or elderly patients, syncope can be due to a number of potentially serious conditions. The most important things to recognize are:
 1. Arrhythmias
 2. Occult GI bleeding
 3. Seizures
 4. Ruptured abdominal aortic aneurysm
 5. Cerebral bleed

Syncope, continued

Treatment

1. Safe scene, universal precautions
2. Establish responsiveness
3. ABC (airway, breathing, circulation)
4. Detailed Neurological exam and Cincinnati Stroke Score
 - a. Facial droop, Arm Drift, Abnormal Speech
5. Vitals, Pulse oximeter, Cardiac monitor – 12 lead if available
6. Oxygen
7. IV 1000 ml Normal Saline tko
8. Test blood sugar
 - a. Blood sugar < 60 mg/dl or if blood sugar < 80 mg/dl and patient has signs and symptoms of hypoglycemia, administer one amp 50 ml of 50% Dextrose IV push
 - b. If no IV can be established administer 1 unit Glucagon IM.

****Above May be given by Authorized EMT-Intermediates****
9. 100 mg Thiamine IV (If alcoholism or Malnutrition is suspected)
10. Vitals, 12 lead EKG
11. Contact on-line *Medical Control*

ASTHMA

Specific Information Needed:

- A. History
 - 1. Sudden onset
 - 2. Gradual onset
 - 3. Duration
- B. Medical History
 - 1. Cough
 - 2. Current Medications
 - 4. Allergies
 - 5. Medic Alert Tag

Specific Considerations

- A. If there is no history of Asthma, consider other processes that produce wheezing, such as bronchiolitis, foreign body aspiration, pneumonia, pulmonary edema and some insecticide poisonings. A known Asthmatic with severe bronchospasm may have little wheezing because of poor air movement through the small airways.

Treatment

- 1. Safe scene, universal precautions
- 2. Position of comfort
- 3. ABC (airway, breathing, circulation)
- 4. Oxygen (intubate if indicated)
- 5. Vitals, Pulse oximeter
- 6. 1 unit dose (2.5 mg) Albuterol Aerosol treatment.
- 7. Second Albuterol aerosol Unit dose 2.5mg with unit dose 0.5 mg Atrovent (Ipratropium bromide)
****Above May be given by Authorized EMT-Intermediates****
- 8. IV 1000 ml Normal Saline
- 9. Prednisone 60mg PO or if in severe distress Solu-Medrol 125 mg IVP.
- 10. Third Aerosol start Albuterol Unit dose 2.5mg with unit dose Atrovent (Ipratropium bromide)
- 11. Magnesium Sulfate 2g in 50cc D5W IV drip over 10 minutes if continued severe respiratory distress.
- 12. 0.3 mg 1:1000 Epinephrine IM in lateral thigh if in severe distress.
- 13. Contact on-line *Medical Control*

ALLERGY/ANAPHYLAXIS

Specific Information Needed

- A. History
 1. Exposure to allergens
 2. Prior reactions
 3. Onset and progression of present state
 4. Exposure to environment
 5. Toxic exposure

- B. Medical History
 1. Medications
 2. Diseases
 3. Allergies
 4. Medic alert tag
 5. Itching
 6. Wheezing
 7. Respiratory distress
 8. Nausea
 9. Weakness
 10. Abdominal cramps
 11. Chest tightness
 12. Swelling
 13. Hives

Specific Considerations

- A. Patients with allergic reactions can deteriorate quickly. Airway is a prime concern,

- B. Lethal edema may be localized to the tongue, uvula or other upper airway structures. Examine closely and be prepared to intubate early before swelling occurs. Nasal tracheal intubation may be preferred.

Allergy/Anaphylaxis, continued

Treatment

1. Safe scene, infection control
2. Position of comfort
3. ABC (Airway, Breathing, Circulation)
4. Oxygen, Intubate if needed
5. Vitals, Pulse oximeter, Cardiac Monitor
6. If severe reaction with Signs of shock and/or airway involvement and ALS not available administer EPIPEN Autoinjector for age greater than 8yrs or 55 lbs otherwise use Epipen Jr

7. IV 1000ml Normal Saline

8. **Moderate Reaction**

Itching/hives
Mild wheezing

Benadryl 25-50mg IV/IM

Albuterol 2.5 unit dose nebulizer
with Atrovent 0.5 mg unit dose
(may repeat times one)

500 ml IV Fluid Bolus Normal Saline

*****Above May be given by Authorized EMT-Intermediates*****

Predinsone 60 mg by mouth

Severe Reaction

Itching/hives
Respiratory distress
Signs of shock (delayed cap. refill, Low BP)

Benadryl 25-50mg IV/IM

Albuterol unit dose nebulizer 2.5 mg
with Atrovent 0.5 mg unit dose
(may repeat times one)

Epinephrine 1:1000 0.3mg IM lat. Thigh

500 ml IV Fluid Bolus Normal Saline

Solu-Medrol 125mg IV

9. Vitals

10. For Shock, fluid bolus 500ml Normal Saline IV

11. Epinephrine 0.1 mg in 100cc NS over 5-10 minutes for refractory hypotension.

12. Contact on-line ***Medical Control***

CVA

Specific Information Needed

- A. History
 - 1. When was the last time the patient was well?
 - 2. Onset and progression of state
 - 3. Associated symptoms
 - a. Headaches
 - b. Seizures
 - c. Confusion
 - 4. Where patient was found
 - 5. New deficits

- B. Medical History
 - 1. Cardiovascular diseases
 - 2. Diabetes
 - 3. Medications
 - 4. Establish known allergies
 - 5. Medic alert tag
 - 6. Hypertension
 - 7. Previous CVA

- C. Environment
 - 1. Evidence of trauma
 - 2. Evidence of alcohol or drug ingestion
 - 3. Note unusual presentations

Specific Considerations

- A. Not all neurologic deficits are caused by a stroke. Look for other treatable medical conditions, such as:
 - 1. Hypoglycemia
 - 2. Hypothermia
 - 3. Hypoxia
 - 4. Hyperthermia
 - 5. Hypotension

- B. A patient with a stroke can present with aphasia and still is completely alert. Talk to the patient, explain everything that you are doing and avoid comments that you would not want to hear yourself. This patient needs a tremendous amount of reassurance.

CVA, continued

C. *CINCINNATI PREHOSPITAL STROKE SCALE (CPSS)

Apply CPSS if you suspect that the sudden neurological impairment is due to stroke. If patient scores "abnormal" in any of the following 3 tests, there is a 72% likelihood of stroke.

1. **Facial droop** (have patient show teeth or smile):

Normal: both sides of face move equally

Abnormal: one side of face does not move as well as the other side

2. **Pronator drift** (patient closes eyes and holds both arms straight out for 10 seconds):

Normal: both arms move the same or both arms do not move at all

Abnormal: one arm does not move or one arm drifts down compared with the other

3. **Abnormal speech** (have pt. repeat a statement such as: "you can't teach an old dog new tricks"):

Normal: patient uses correct words with no slurring

Abnormal: patient slurs words, uses the wrong words, or is unable to speak

Treatment

1. Safe scene, infection control
2. Establish level of consciousness and CINCINNATI PREHOSPITAL STROKE SCALE
3. ABC (Airway, Breathing, Circulation)
4. Vitals
5. Oxygen, support airway as needed
6. Attach Cardiac monitor
7. Pulse oximeter
8. IV Normal Saline 1000ml, 10 gtt tubing
9. Test blood sugar
Blood sugar <60mg/dl or if blood sugar < 80 mg/dl and patient has signs and symptoms of hypoglycemia,
 - a. Administer one amp 25 grams 50 ml of 50% Dextrose IV push.
 - b. If no IV, administer 1 unit Glucagon IM.*****Above may be given by Authorized EMT-Intermediates*****
10. Repeat Vitals and Contact on-line **Medical Control**

ABDOMINAL PAIN

Specific Information Needed:

- A. Pain: nature (crampy or constant), duration, location; radiating to back, groin, chest, and shoulder.
- B. Associated symptoms: nausea, vomiting (bloody or coffee-ground), diarrhea, constipation, black or tarry stools, urinary difficulties; menstrual history, fever.
- C. Past history: previous trauma, abnormal ingestion, medications, known diseases, surgery.

Specific Objective Finding:

- A. Vital signs.
- B. General appearance: restless, quiet, sweaty, pale.
- C. Abdomen: tenderness, guarding, distention, pulsatile mass, rigidity, rebound.
- D. Emesis: describe, amount

Treatment:

- A. Safe Scene, universal precautions
- B. Position of comfort
- C. NPO
- D. Vital Signs
If BP < 90 systolic and signs of hypovolemic shock:
 - 1. O₂, 15 lpm non-rebreather mask
 - 2. IV: volume expander 1000 normal saline 20ml/kg)
- E. Serial vital signs during transport If age >30 cardiac monitor/ 12 lead EKG if available
- F. For nausea and vomiting. Administer Zofran 4-8mg or Compazine 5-10 mg IV
Administer Benedryl 25-50 mg IV/IM atkithesia or Dystonic reaction occurs with Compazine .
- G. Contact on-line **Medical Control**.
- H. Consider with Medical Control order Fentanyl 25-50 mcg IV

Specific Precautions:

- A. Causes of abdominal pain can rarely be determined in the field. Pain medication is seldom indicated and may change details of the physical exam necessary to diagnose the patient in the Emergency Department.
- B. The most important diagnoses to consider are those associated with catastrophic internal bleeding: ruptured aneurysm, liver, spleen, ectopic pregnancy, etc. Since the bleeding is not apparent, you must think of the volume depletion and monitor patient closely to recognize shock.
- C. Elderly patients may have significant hypovolemic shock with systolic blood pressures above 90 mmhg.

CYANIDE POISONING

Specific Information Needed

- A. Known exposure to Cyanide
- B. Present history: when last well, progression of present state, prior symptoms such as increase in respirations, convulsions, coma, etc.
- C. Surroundings: check for bottles and read ingredient label. If patient is in an industrial setting, ask if they use Cyanide. Many local industries use Cyanide.
- D. Any patient or firefighter that goes into cardiac arrest after exposure to smoke from a fire.

Specific Objective Findings:

- A. Principal manifestations of poisoning with these compounds are rapid respiration, blood pressure fall, convulsions and coma.
- B. Acute poisoning: Cyanide, other cyanide-releasing substances. Ingestion or inhalation of large amounts of these compounds (10 times the Minimum Lethal Dose) causes immediate unconsciousness, convulsions and death within 1-15 minutes. Ingestion, inhalation or absorption through the skin of an amount near the maximum lethal dose causes dizziness, rapid respiration, vomiting, flushing, headache, drowsiness, hypotension, rapid pulse and unconsciousness.
- C. Check for odor of "bitter almonds."

Treatment:

Note this is only for known or highly suspected Cyanide poisoning. For example: Comatose patient not responding to other treatments and is in an environment where Cyanide was found in close proximity to patient and/or there is the smell of bitter almonds. Cyanide is a hazardous material and should be treated as such. Any smoke inhalation victim with mental status changes should also be treated for Cyanide Poisoning with Cyano-kit if available.

- A. Safe scene, universal precautions
- B. Remove to uncontaminated atmosphere, remove clothing and decontaminate patient.
- C. Give 100% oxygen, intubate if appropriate.
- D. Monitor cardiac rhythm.
- E. If available, give 2.5 Grams Hydroxycobalamin (Cyanokit) IVPB over 10 minutes.
May repeat if second dose available

Or if above not available

If BP greater than 90 systolic break 1 ampule Amyl Nitrate, 0.3 ml in a 4 X 4 and hold in front of patient's mouth and nose for 30 seconds out of every minute until arrival at receiving hospital. Or put into BVM mask if ventilating. If hypotension is present or occurs during administration of amyl nitrite, begin treatment for shock and contact Medical Control as soon as possible for further instructions. DO NOT GIVE IF CARBON MONOXIDE POISONING IS POSSIBLE.

- F. Rapid transport to the closest hospital is critical.
- G. IV: NS 500 ml bolus then 200 cc/hr While enroute to hospital

Specific Precautions

- A. PROTECT YOURSELF! Cyanide is very potent and very rapid acting.
- B. Be particularly attentive to airway.
- C. Amyl nitrite can cause hypotension, i.e. vasodilatation.

HYPERTENSIVE CRISIS

This protocol applies to patients who are hypertensive AND symptomatic of their hypertension. In general, patients should exhibit a sustained diastolic blood pressure above 130 and be symptomatic before protocol applies.

A. Signs and symptoms of Hypertensive Crisis

1. A rapid rise in diastolic blood pressure to over 130mm Hg.
2. New symptoms accompanying the diastolic increase consistent with encephalopathy, i.e.: agitation, severe headache, dizziness, nausea, confusion or visual impairment (may include transient blindness) or difficulty breathing.
3. Other symptoms include: Seizures, stupor, and coma
4. Associated symptoms may include pulmonary edema, neck stiffness, unequal peripheral pulses, CVA like symptoms, chest or back pain.

B. Specific information needed from history includes:

1. Recent head trauma
2. Substance abuse, i.e. amphetamines, cocaine
3. Is the patient pregnant
4. History of hypertension
5. Current medication and any recent discontinuation of medications

C. Special Considerations

1. Secondary hypertension in response to stress or pain is a common field finding. It does not require field treatment.
2. Hypertensive Encephalopathy is rare but can be treated with Lasix.
3. Hypertension is commonly associated with other problems like Pulmonary Edema, Seizures, Chest Pain and Coma or Altered Mental Status. Treatment of the underlying problem generally is the best approach.
4. Improper BP cuff size can produce falsely high blood pressure measurements
5. Hypertension can also be from a severe head injury and intracranial bleeding. Treatment should be for the actual intracranial problem and not the blood pressure problem.
6. Remember to include 50% Dextrose, Thiamine, and Naloxone in the treatment of patients who are unconscious from unknown cause.

Hypertensive Crisis, continued

Treatment

1. Safe scene, universal precautions
2. Reassure the patient
3. Oxygen
4. Monitor cardiac rhythm (treat per protocol)
5. Pulse Oximeter
6. Vital signs
7. IV, Normal Saline TKO
8. Vital signs
9. Lopressor 5mg IV for sustained BP > 240 mmHg systolic or >130 mmHg diastolic if heart rate greater than 60. May repeat in 10 minutes.
10. Contact on-line *Medical Control*

MEDICAL SHOCK

This protocol addresses those patients where there is no apparent trauma and the patient presents with signs and symptoms of shock:

Specific Information Needed:

- A. Onset: gradual or sudden; precipitating cause or event.
- B. Associated symptoms: itching, peripheral or facial edema, thirst, weakness, respiratory distress, abdominal or chest pain, dizziness on standing.
- C. History: allergies, medications, bloody vomitus or stools, significant medical diseases, history of recent trauma, last menstrual period, vaginal bleeding, fever.

Treatment:

- A. Safe scene, universal precautions
- B. Reassure patient
- C. Pulse oximeter
- D. O₂, high flow, 100% non-rebreather mask.
- E. Cardiac Monitor
- F. Vital signs.
- G. Assess for Cardiogenic cause (see Table 1):
 - 1. If Pulse > 150, treat according to protocol (Cardiac I-1).
 - 2. If Pulse < 60, treat according to protocol. (Cardiac G-1)
 - 3. If distended neck veins, chest pain, or other evidence of cardiac cause:
 - a. Position of comfort.
 - b. Be prepared to assist ventilations or initiate CPR.
 - c. IV: normal saline TKO
 - d. Monitor cardiac rhythm.
 - e. Evaluate for possible tension pneumothorax. Treat per protocol.
 - f. Consider fluid challenge and/or Dopamine drip.
 - g. Transport rapidly for definitive diagnosis and treatment.
- H. If no evidence of Cardiogenic cause, institute general treatment measures:
 - 1. Place patient supine; elevate legs 10-12 inches. (If respiratory distress results, place patient in position of comfort).
 - 2. IV: Normal Saline, large bore, and appropriate fluid challenge (20ml/kg)
- I. Assess and treat for specific cause if this can be determined. See Table.
- J. Monitor Vitals, cardiac rhythm, and level of consciousness during transport.

VAGINAL BLEEDING

Specific Information Needed:

- A. Symptoms: cramping, passage of clots or tissue, dizziness, weakness, thirst.
- B. Present history: duration, amount, last menstrual period (normal?) and birth control method. If pregnant: due date. If postpartum: time and place of delivery, current medications.
- C. Past history: bleeding problems, pregnancies, medications, and allergies.
- D. Evidence of blood loss, clots, or tissue fragments. (Bring tissue to ED.)

Treatment:

- A. Safe scene, universal precautions
- B. Oxygen as needed
- C. Vital signs
If BP less than 90 mm systolic and signs of hypovolemic shock:
 - 1. a. Elevate legs 10 inches and keep patient warm.
 - b. IV: Normal Saline, 1000 ml (20 ml/kg)
 - 2. If patient postpartum (within 24 hours):
 - a. Massage uterus and have mother nurse infant to aid in uterine contraction.

Specific Precautions:

- A. The amount of vaginal bleeding is difficult to estimate. Visual estimates from sheets and towels can be misleading. Try to get an estimate of number of saturated pads in previous 6 hours. Discreet inspection of the perineum may be useful to determine if clots or tissue are being passed. VAGINAL EXAM IN THE FIELD IS NOT INDICATED.
- B. A patient in shock from vaginal bleeding should be treated like any patient with hypovolemic shock.
- C. If patient is pregnant, bring in any tissue that was passed. Laboratory analysis may be important in determining status of the pregnancy.
- D. Always consider pregnancy as a cause of vaginal bleeding.

VOMITING AND DIARRHEA

Specific Information Needed:

- A. Frequency, duration of vomiting, diarrhea
- B. Presence of blood in vomitus or stool
- C. Associated symptoms: abdominal pain, weakness, and confusion.
- D. Medication ingestion.
- E. Past medical history: diabetes, cardiac disease, abdominal problems, and alcoholism.
- F. Color of vomitus, diarrhea: presence of blood.
- G. Abdomen: tenderness, guarding, rigidity, and distension.
- H. Signs of dehydration: poor skin turgor, tearless eyes, dry mucous membranes, and confusion.

Treatment:

- A. Safe scene, universal precautions
- B. Position patient: left lateral recumbent if vomiting; otherwise supine.
- C. Oxygen as needed
- D. For severe nausea and vomiting. Administer Zofran 4-8 mg IV/IM or Compazine 5-10 mg IV/IM
- E. Administer Benadryl 25-IV/IM if Compazine utilized
- F. Nothing by mouth
- G. Vital signs: If BP is less than 90 systolic and signs of hypovolemic shock:
 - 1. Elevate legs 10-12 inches.
 - 2. IV Volume expander; normal saline 1000ml or 10 ml/kg

Specific Precautions:

- A. Vomiting and diarrhea may be symptoms of a more serious problem, but all represent some degree of hypovolemia. The most serious causes are GI bleed or other intra-abdominal catastrophe. A rare cardiac patient may also present with vomiting or diarrhea as the predominant symptom so 12 lead EKG should be done if cardiac risk factors are present.
- B. Support the patient's head when he is vomiting. Avoid contaminating the squad, as some infectious diseases may be transmitted by this means.
- C. Check at the house for evidence of overdose; a patient who doesn't call the squad for medication ingestion may call later when GI symptoms become severe.
- D. The majority of persons with vomiting and diarrhea have become sick over several days
- D. Dehydration may be particularly severe in children with simple vomiting and diarrhea. IVs may be very difficult to start, particularly with infants. Transport for definitive treatment is usually best.
- F. Blood in the GI tract is an irritant: it causes vomiting and diarrhea. Only if upper tract bleeding is extremely brisk will the blood reach the rectum undigested (i.e. still bright red). GI bleeders may be very sick and hypovolemic without showing an obvious source of their problem.

COPD

Specific Information Needed

History

1. Sudden onset of respiratory distress
2. Gradual onset of respiratory distress
3. Duration

Medical History

1. Cough
2. Respiratory Sounds
3. Current Medications (including home oxygen)
4. Allergies
5. Medic Alert tags
6. Diseases - Emphysema, COPD, Asthma, CHF
7. Smoker

Treatment

1. Safe scene, universal precautions
2. Put patient in position of comfort (usually slightly leaning forward).
3. Assess ABC's
4. Start oxygen therapy as indicated (intubate as last resort)
5. Take vitals, pulse, blood pressure, respirations, EKG
6. Attach Pulse Oximeter
7. Unit dose (2.5 mg) Albuterol aerosol treatment
8. Second Aerosol Albuterol Unit Dose 2.5 mg with unit dose 0.5 mg Atrovent (Ipratropium bromide)
****Above May be given by Authorized EMT-Intermediates****
9. For third aerosol may be given, mix 1unit dose of Albuterol and 1 unit dose of 0.5 mg Atrovent (Ipratropium Bromide)
10. Establish IV 250ml Normal Saline, using regular drip 10gtt tubing.
11. Predinsone 60 mg by mouth or
Solu-Medrol 125mg IV/IM if in severe distress
12. Contact on-line **Medical Control**

Influenza Like Illness (ILI) Pandemic Flu

Influenza or "flu" is caused by a number of unique influenza viruses. These viruses are easily transferred by aerosols (cough or sneeze) or contact with viable virus droplets and subsequent placement of the virus to a mucous membrane of eyes, nose, and mouth. The patient is contagious for 48 hr prior to onset of symptoms and as long as febrile or coughing which may be over 1 week after onset symptoms.

Symptoms of Flu are as noted below:

Seasonal Flu

H1N1 (Swine) Flu

All types of flu can cause:

Same as seasonal flu, but symptoms may be more severe.

- | | |
|---|---|
| <ul style="list-style-type: none">• Fever• Coughing and/or sore throat• Runny or stuffy nose• Headaches and/or body aches• Chills• Fatigue | <ul style="list-style-type: none">• Fever• Coughing and/or sore throat• Runny or stuffy nose• Headaches and/or body aches• Chills• Fatigue <p>There may be additional symptoms. A number of H1N1 (swine) flu cases reported:</p> <ul style="list-style-type: none">• Vomiting• Diarrhea |
|---|---|

Required personal protective equipment (PPE) requirements:

1. Gloves
2. Goggles or eye shields
3. Fit tested N-95 Respirator or Air Purifying Respirator (APR) or Powered APR (PAPR)
4. Gown if gross contamination possible
5. Place plain surgical mask on patient and apply oxygen on top (**patients NEVER use N-95 Respirators**)

PPE will be worn by all crewmembers within 6 feet of ILI patient.

PPE will be worn during disinfection of equipment and vehicles.

Avoid aerosol producing procedures such as intubation, nebulized aerosol treatments, NG tube placement.

Disinfection:

1. Vehicle will be left open for 5-10 minutes with ventilation running and doors and windows open
2. Gross contamination will be removed and washed with soap/water.
3. All exposed surfaces will be cleaned with approved hospital grade disinfectant and allowed to air dry to include benches, cots, and counters, exposed walls.
4. PPE will be removed with no cross contamination (remove one glove, remove mask by straps)
5. Strict hand washing elbows down with soap and water or if unavailable waterless hand cleaner will be used.

Dispatch:

1. Dispatch shall determine if patient is ILI patient by using Medical Priority Dispatch Pandemic Sick Card #36 or equivalent
2. Patients with Fever, Chest pain and/or cough should trigger an alert to responding crews by text or radio notification "Possible ILI patient".
3. If resources are limited and patient has minor symptoms- call taker may refer to local care or transfer caller to medical advice line as dictated by protocol.
4. Local Health Department and EMS Dispatch Medical Director shall determine resources to be sent for each level when EMS-Fire resources become scarce.
5. Patients shall be advised to Call 911 or seek medical care immediately if:
 - Has difficult breathing or severe chest pain
 - Has purple or blue discoloration of the lips
 - Is vomiting and unable to keep liquids down
 - Shows signs of dehydration, such as feeling dizzy when standing, being unable to urinate, or (in infants) crying without shedding tears
 - Has seizures (for example, uncontrolled convulsions)
 - Is less responsive than normal or becomes confused.

Treatment:

- 1) Safe Scene, Universal precautions with appropriate PPE
- 2) Address airway-breathing needs. Apply surgical mask and oxygen over such.
- 3) Vitals, Pulse oximetry, Assessment
- 4) If dehydrated, tachycardia, or hypotensive IV Normal Saline with 500 ml fluid Bolus.
- 5) For wheezing consider using Albuterol MDI with spacer 4 puffs with spacer.
(Albuterol Unit dose aerosol may cause increased risk aerosol exposure to staff)
*****Above May be given by Authorized EMT-Intermediates*****
- 6) For Nausea Vomiting Zofran (ondansetron) 4-8 mg IVP
- 7) Transport to appropriate facility.



PEDIATRIC PROTOCOLS

**PEDIATRIC PROTOCOLS
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PEDIATRIC RESPIRATORY DISTRESS

Specific Information Needed

- A. History
 - 1. Sudden or gradual onset
 - 2. Duration

- B. Medical History
 - 1. Cough
 - 2. Fever
 - 3. Upper respiratory
 - 4. Sore throat
 - 5. Hoarseness
 - 6. Current medications

Specific Considerations

- A. If children with croup, epiglottitis or laryngeal edema have respiratory arrest, it is usually due to exhaustion or airway obstruction. Epiglottitis/Croup can become total airway obstructions quickly. Constantly monitor the airway.

- B. Using a BVM in small children carries the risk of excessive pressures and possible Pneumothorax. It is possible to get overly excited and manually over ventilate. Be cautious.

- C. In respiratory distress of sudden onset, think of foreign body aspiration, the mouth is a major sensory organ for children. The paramedic must anticipate infants and children placing a multitude of obstructive hazards in their airways.

- D. You may be called to attend a child who has allegedly aspirated something that was in his or her mouth, but is now asymptomatic. This child may not need emergency intervention, but should be seen by a physician.

- E. Total obstructions that cannot be cleared by conventional Basic Life Support methods may require the use of the surgical cricothyroidotomy (child age over age 8) in emergency situations.

Pediatric respiratory distress, continued

1. Safe scene, universal precautions
2. Position of comfort
3. ABC (Airway, Breathing, Circulation)
4. Oxygen, assist ventilations as needed
5. Vitals, Attach pulse oximeter
6. Attach cardiac monitor
7. If wheezing or stridor is present, initiate nebulizer aerosol 1 unit dose (2.5 mg) Albuterol Aerosol treatment.
8. Second Aerosol Albuterol Unit dose 2.5mg with unit dose 0.5 mg Atrovent (Ipratropium bromide)
****Above May be given by Authorized EMT-Intermediates****
9. IV 250 ml Normal Saline (IO if patient becomes unconscious)
10. Nebulized Epinephrine 1:1000 0.25 ml/kg (max 5ml) in 2 ml normal saline.
May also use Unit Dose Racemic Epinephrine 11.25mg in 3cc Saline
11. Contact on-line *Medical Control*

PEDIATRIC ASTHMA

Specific information needed

A. History

1. Sudden or gradual onset
2. Duration

B. Medical History

1. Cough
2. Lower respiratory sounds
3. Current medications
4. Allergies
5. Medic alert tag
6. Diseases

Treatment

1. Safe scene, universal precautions
2. Position of comfort
3. ABC (Airway, Breathing, Circulation)
4. Oxygen (intubate if indicated)
5. Vitals, Pulse Oximeter
6. 1 unit dose (2.5 mg) Albuterol Aerosol treatment.
7. Second Aerosol Albuterol Unit dose 2.5mg with unit dose 0.5 mg Atrovent (Ipratropium bromide)

****Above May be given by Authorized EMT-Intermediates****

8. IV 250 ml Normal Saline
9. Vitals
10. Solu-Medrol, 1mg/kg IV or IM for moderate or severe distress.

11. Contact on-line Medical Control

PEDIATRIC ALLERGY/ANAPHYLAXIS

Specific Information Needed

- A. History
 - 1. Exposure to allergens
 - 2. Prior reactions
 - 3. Onset and progression of present state
 - 4. Exposure to environment
 - 5. Toxic exposure

- B. Medical History
 - 1. Medications
 - 2. Diseases
 - 3. Allergies
 - 4. Medic alert tag

Objective Findings

- A. Mental status: alert, agitated, confused, and somnolent
- B. Respiratory effort: lower airway sounds, chest wall movement, use of accessory muscles, retractions (depressions between ribs on inspiration), nasal flaring, and substernal retractions.
- C. Audible breathing noise: wheezes or cough
- D. Lungs by auscultation: wheezes, rales, crackle (wet sounds)
- E. Other findings: drooling
- F. Skin color: cyanosis, pallor, and capillary refill

Pediatric allergy – anaphylaxis, continued
Treatment

1. Safe scene, universal precautions.
2. Position of comfort
3. ABC (Airway, Breathing, Circulation)
4. Oxygen
5. Vitals
6. Pulse oximeter

7. **MODERATE REACTION**

Hives
Itch
Wheezes

Albuterol unit dose 2.5 mg Aerosol

Benadryl 1 mg/kg IM/IV/IO

SEVERE REACTION

Hives
Itch
Wheezes
Shock (delayed cap refill, poor pulses, low B/P)

Albuterol unit dose 2.5 mg Aerosol

Benadryl 1 mg/kg IM/IV/IO

Epinephrine 1:1000, 0.1 cc/kg IM lateral thigh (max dose 0.3mg)

****Above May be given by Authorized EMT-Intermediates****

Solu-Medrol 1 mg/kg IV/IM/IO

Solu-Medrol 1mg/kg IV/IM/IO

8. IV 250 ml Normal Saline, fluid bolus 20cc/kg
9. Vitals
10. Contact on-line *Medical Control*

PEDIATRIC CARDIAC ARREST PROTOCOL

Specific Information Needed

- A. Arrest History
 - 1. Time of onset
 - 2. Bystander CPR
 - 3. Time lapse until CPR
 - 4. Preceding symptoms

- B. Medical History
 - 1. Diseases
 - 2. Medications
 - 3. Medical adjuncts
 - 4. Establish known allergies

Treatment

- A. Safe scene, universal precautions
- B. Call for back-up if needed
- C. Treat according to appropriate protocol.

Specific Considerations

- A. Pediatric patients are not just "small people". They have unique needs and different problems that will affect pre-hospital as well as hospital care. These differences are all the more important to remember because infants and children make up a small part of our patient population and opportunities to practice assessment and management skills are infrequent. In addition, the pediatric emergency is rarely preceded by chronic disease. The most common cause of pediatric cardiac arrest is *Hypoxia* for this reason our primary responsibilities differ somewhat from that of an adult. If intervention is swift and effective, the child can often be restored to full health. This makes the psychological burden and reward for you as providers all the greater.

- B. Hypothermic cardiac arrest is not treated according to this protocol. Refer to Hypothermic Arrest Protocol I.

- C. For children under 8 years of age, Intraosseous or peripheral cannulation is acceptable, whichever procedure is felt to be accomplished the quickest. It should be noted; however, that if an IV is not accomplished within 90 seconds or two attempts, IO should be accomplished. IO is a very painful procedure, thus the patient should be unconscious and have a decreased sensation to pain. This should be a life-threatening situation.

Pediatric cardiac arrest, continued

- D. The first EMT on scene should check effectiveness of CPR while in progress. Pay close attention to ventilatory support.
- E. Medications that may be given via the endotracheal tube if no IV or IO access are:
1. **Narcan**
IV/IO/IN dose:
 1. Birth to 5 years of age (up to 20 kg) 0.1mg/kg
 2. >5 years of age (or >20 kg) 2.0mgET/ dose:
 1. Birth to 5 years of age (up to 20 kg) 0.2mg/kg
 2. >5 years of age (or >20kg) 4.0mg

 2. **Atropine concentration 0.8 mg/20ml**
IV/IO dose:
0.02 mg/kg (minimum single dose 0.1 mg – maximum total dose 1 mg)
ET/ dose:
0.04mg/kg (minimum single dose 0.2- max total dose 2 mg)

 3. **Epinephrine -**
IV/IO: 0.01mg/kg (0.1 ml/kg 1:10,000)
ET dose: 0.1mg/kg (**0.1ml/kg 1:1000**)

 4. **Lidocaine**
IV/IO: 1mg/kg
ET dose: 2mg/kg

 5. **Versed**
IV/IO: 0.1 mg/kg
ET/IN dose: 0.2 mg/kg (max 10 mg)
- F. The dosage of Epinephrine when administered into the tracheal bronchial tree should be ten (10) times the dose, otherwise given IV or IO (example, 0.1mg/kg ET = 0.01 mg/kg IV/IO). Lidocaine, Atropine, Narcan and Versed dosages should be doubled. (Example 2 mg/kg ET = 1mg/kg IV/IO). Medications given via the endotracheal tube require a 1-2ml saline flush. This can be accomplished by drawing up 1-2ml of saline from the IV bag before drawing up the medication and then injecting it into the ET tube.

Pediatric cardiac arrest, cont.

- G. SIDS (Sudden Infant Death Syndrome) will be one of the most frequent causes of cardiopulmonary arrest in infants between the ages of 1 month to 1 year. The parents or caretakers will have a great deal of guilt feelings. If you recognize and address these feelings, you can help prevent some of the long-term effects of this devastating occurrence. Unfortunately SIDS can be very hard to distinguish from child abuse and vice versa. Therefore, it is most important not to be judgmental or suggest a diagnosis when you do not have enough information to be accurate.

**PEDIATRIC VENTRICULAR FIBRILLATION
PULSELESS VENTRICULAR TACHYCARDIA**

1. Safe scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness
3. CPR, move patient to vehicle
4. Use simple airway or King LTD with BVM
5. Use ResQpod for age greater than 1 year.
6. Apply fast patches
7. Identify rhythm
8. Defib 2J/kg (or use defibrillator/AED specific energy protocols)
9. IV/IO 250 ml Normal Saline
10. Epinephrine repeat every 3-5 minutes
11. A) **IV/IO** .01 mg/kg (0.1 ml/kg 1:10,000)
12. B) **ET** 0.1 mg/kg (0.1 ml/kg) **1:1,000**
13. Defib 4 J/Kg
14. Amiodarone 5mg/kg IV /IO
15. **OR** Lidocaine 2 mg/kg ET
16. Defib 4 J/kg
17. Repeat Epinephrine dose every 3-5 minutes
18. Defib 4 J/kg
19. Contact on-line Medical Control

PEDIATRIC PEA (PULSELESS ELECTRICAL ACTIVITY) PROTOCOL

This protocol applies to the following rhythms:

1. EMD (Electrical Mechanical Dissociation)
2. Pseudo EMD
3. Idioventricular Rhythms
4. Ventricular Escape Rhythms
5. Bradycardic Rhythms
6. Post Defibrillation Idioventricular Rhythms
7. Asystole

PEA/Asystole can be caused by many underlying factors. The following possible causes should be considered and if verified, the appropriate treatment administered prior to Epinephrine therapy.

- A. Hypoxia
Treat with increase ventilation and oxygenation.
- B. Hypovolemia
Treat with volume infusion. (20 ml per kilogram)
- C. Cardiac Tamponade
No pre-hospital field treatment available (proceed with PEA protocol).
- D. Tension Pneumothorax
See Needle Thoracentesis
- E. Hypothermia
See Hypothermia Protocol
- F. Acidosis (during long arrest interval)
Treat with increased ventilatory support.

Treatment

1. Safe scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness.
3. Start CPR and use ResQpod age over 1 year age
4. Apply fast patches, hardwire
5. IV/IO 250 ml Normal Saline
6. Intubate or use Alternative airway and confirm with Capnography or Color-metric device.
7. Epinephrine
 - a. 0.01 mg/kg (0.1 ml/kg) 1:10,000 IV/IO
 - b. 0.1 mg/kg (0.1 ml/kg) **1:1000** ET
8. Move to vehicle if not done previously, Contact on-line Medical Control
9. Repeat Epinephrine dose; repeat every 3–5 minutes

PEDIATRIC ASYSTOLE PROTOCOL

Asystole may be caused by many underlying factors. The following possible causes should be considered and if verified, the appropriate treatment administered.

- A. Hypoxia
Treat with increased ventilation and oxygenation.
- B. Hypovolemia
Treat with volume infusion (20ml per kilogram)
- C. Cardiac Tamponade
No pre-hospital treatment available (proceed with Asystole Protocol)
- D. Tension Pneumothorax
See Needle Thoracentesis Protocol
- E. Hypothermia
See Hypothermia Protocol
- F. Acidosis (during long arrest interval)
Treat with increased ventilatory support

Treatment

1. Safe scene, universal precautions
2. Establish unresponsiveness, apnea, and pulselessness.
3. Start CPR and use ResQpod age over 1 year.
4. Apply fast patches, hardwire
5. IV/IO 250 ml Normal Saline
6. Intubate or use Alternative airway and confirm Capnography or Color-metric device.
7. Epinephrine
 - a. 0.01 mg/kg (0.1 ml/kg) 1:10,000 IV/IO
 - b. 0.1 mg/kg (0.1 ml/kg) **1:1000** ET
8. Move to vehicle if not done previously, Contact on-line Medical Control
9. Repeat Epinephrine dose; repeat every 3–5 minutes

PEDIATRIC TRAUMA CARDIAC ARREST

This protocol applies to the patient who has sustained a cardiac arrest from significant trauma. The emphasis in this protocol will be to load and go. Trauma arrest patients are difficult to handle in the pre-hospital setting. Traumatic cardiac arrest should be transported A.S.A.P. to the closest hospital. Patients with long extrications, a helicopter should be considered so a physician will be on the scene. The patient should have no delay in transport after extrication, except as needed for c-spine and airway control. It should also be considered to contact on-line *Medical Control* early and notify of treatments done thus far so they can be ready to accept patient. The receiving hospital should be given four (4) specific pieces of information:

- (1) Age/sex
- (2) Penetrating or blunt trauma location
- (3) Full arrest
- (4) ETA (estimated time of arrival)

Treatment

1. Safe scene, universal precautions
2. C-spine control
3. Establish unresponsiveness, apnea, and pulselessness
4. CPR with ResQpod device age greater than 1 years
5. Use simple airway or King LTD device
6. Apply fast patches
7. V-fib/V-tach: (with no pulse) Defib 2-J/kg (or device specific Protocol)
8. IV/IO 1000 ml Normal Saline volume replacement of a bolus of 20 mg/kg (may repeat times 2)
9. Epinephrine
 - a. 0.01 mg/kg (0.1 ml/kg) 1:10,000 IV/IO
 - b. 0.1 mg/kg (0.1 ml/kg) **1:1000** ET
10. Contact on-line *Medical Control*

PEDIATRIC HYPOTHERMIC CARDIAC ARREST PROTOCOL

This protocol applies to patients with suspected hypothermia. These patients are load and go situations. Withhold administration of cardiac medications.

1. Safe scene, universal precautions
2. Move patient carefully
3. Remove patient's garments
4. Protect from heat loss
5. Establish unresponsiveness, apnea, and pulselessness
6. CPR
7. Intubate and confirm placement
8. Attach fast patches
9. If V-fib/V-tach. Defib 2J/kg (or use Device specific protocol)
10. IV/IO 1000 ml Normal Saline
11. Continue warming
12. Contact on-line *Medical Control*

PEDIATRIC BRADYCARDIA PROTOCOL

(Patient is not in cardiac arrest with pulse)

All pediatric bradyarrhythmias are to be treated with this protocol. These may include:

1. Sinus Bradycardia
2. First Degree AV Block
3. Relative Bradycardia
4. Absolute Bradycardia
5. Second Degree Mobitz 1 (Wenckebach)
6. Second Degree AV Block
7. Third Degree Heart Block

Treatment may not be required if patient is not symptomatic. Remember that the normal heart rates for pediatric patients are higher than that of adults. If an infant's (1 year or less) heart rate is <80/min, this infant needs not only ALS intervention, but chest compressions. The same holds true of a child with a rate of <60/min. If the patient displays any of the following symptoms, treatment should be initiated.

- A. Shortness of Breath
- B. Decreased Level of Consciousness
- C. Hypotension
- D. PVC's

Treatment

1. Safe scene, universal precautions
2. ABC (airway, breathing, circulation)
3. Oxygen by Mask
4. Attach cardiac monitor (monitor lead II)
5. Identify rhythm
6. Vitals
7. Pulse oximeter
8. IV (or IO if in extremis) 250 ml Normal Saline, 20cc/kg fluid bolus
9. Epinephrine (repeat every 3-5 minutes)
 - A. 0.01 mg/kg (0.1 ml/kg) 1:10,000 IV/IO
 - B. 0.1 mg/kg (0.1 ml/kg) 1:1000 ET
10. Administer Atropine 0.02 mg/kg, (minimum dose for Atropine 0.1 mg) may repeat in 5 minutes (1mg maximum total dose in child).
11. Contact on-line Medical Control

PEDIATRIC SYMPTOMATIC TACHYCARDIA PROTOCOL

(Not in cardiac arrest)

All pediatric symptomatic tachycardias are to be treated with this protocol. These may include:

1. Atrial Fibrillation/flutter
2. Wide complex tachycardia of uncertain type
3. PSVT (Paroxysmal Supraventricular Tachycardia)
4. VT (Ventricular Tachycardia)
5. Polymorphic Ventricular Tachycardia

Defined will be symptomatic or unstable patients. Signs and symptoms are as follows:

- A. Shortness of breath
- B. Decreased level of consciousness
- C. Hypotension
- D. Shock
- E. Pulmonary congestion
- F. Congestive heart failure
- G. Delayed capillary refill >2 seconds

Treatment

1. Safe scene, universal precautions
2. ABC (airway, breathing, circulation)
3. Oxygen
4. IV (or IO if in extremis) 250 ml Normal Saline
5. Attach Cardiac monitor (monitor lead II) and identify rhythm
6. Vitals
7. Pulse oximeter
8. QRS
 - A) QRS <0.08 with P waves, treat underlying cause.
 - B). QRS <0.08 with NO P waves, if infant heart rate is >220 or child heart rate is >180 Administer 0.1 mg/kg Adenocard IV/IO (may be repeated once at the dose of 0.2mg/kg) .
If NO vascular access and/or patient unstable, go to 9.
 - C) QRS >0.08, administer Amiodarone 5mg./ kg IV/IO .
If NO vascular access and/or patient unstable, go to 9.
9. Synchronized Cardioversion at 1 Joule/kg may repeat at 2 joule/kg
10. Contact on-line Medical Control

DELIVERIES AND NEONATAL RESUSCITATION

Specific Information Needed

- A. History of Mother
 - 1. Due date
 - 2. Prenatal care
 - 3. Previous pregnancies and problems
 - 4. Medications
 - 5. Duration of labor
 - 6. Foul smelling or stained amniotic fluid
 - 7. History of multiple births
- B. History of Infant
 - 1. If already delivered
 - 2. When was delivery?
 - 3. How has infant behaved since delivery?
 - 4. What has been done for infant?

Objective findings

- A. Vital signs, APGAR score at 1 and 5 minutes. (See table)
- B. Temperature or warmth of skin VS environment
- C. Color capillary refill
- D. Spontaneous movement
- E. Meconium (brown/green/black stool fragments) in amniotic fluid
- F. Note time of delivery

Normal Delivery

- 1. Safe scene, universal precautions
- 2. Establish responsiveness
- 3. Assess ABC's
- 4. Administer oxygen as needed
- 5. Vitals
- 6. Pulse oximeter
- 7. Establish IV Normal Saline
- 8. Cardiac Monitor
- 9. Position the mother and prepare OB kit

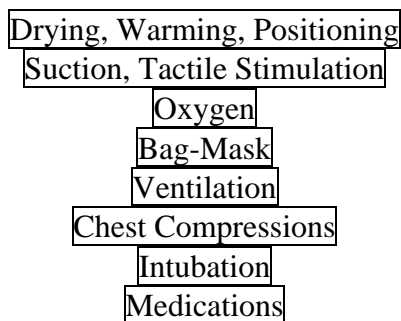
Delivery and resuscitation, continued

10. Coach the mother if needed
11. As the head appears support it with gentle pressure
12. Support the head during its delivery and examine for the presence of a nuchel cord. If the cord is wrapped around the neck slip it over the infants head. If the cord will not go over the head, clamp the cord in two places and cut the cord between the clamps
13. Suction the mouth and then the nose as soon as possible
14. Support the head as it delivers for a shoulder presentation
15. Guide the infants head downward to deliver the anterior shoulder and then upward to deliver the posterior shoulder.
16. Support the infant during the remainder of the delivery.
17. Suction and clear the infant's airway as needed.
18. Clamp the cord approximately ten inches from the baby and again seven inches from the baby and then cut between the two. Examine the cord for bleeding, if present apply another clamp.
19. Dry the infant and wrap in warm towels or blankets
20. If resuscitation is not necessary, record the APGAR score at one and five minutes.
21. Deliver the placenta, but do not delay transport for this
22. Encourage the mother to push with contractions
23. Place the placenta in a suitable container for transport
24. NEVER pull on the umbilical cord to aid in the placenta delivery.
25. Apply dressings to control bleeding from tears in the perineum
26. Contact on-line *Medical Control*

APGAR SCORE

OBSERVATION	2	1	0
Color	Pink	Pink body Blue extremities	Blue
Respirations	Good, crying	Slow, irregular	None
Heart Rate	>100	<100	None
Muscle Tone	Active	Flexion of extremities	Limp
Reflex irritability	Cough, sneeze	Grimace	Non-responsive

INVERTED PYRAMID FOR NEWBORNS



PEDIATRIC TABLES
NORMAL VITAL SIGNS IN THE PEDIATRIC AGE GROUP

AGE	PULSE beats/min	RESPIRATIONS	BLOOD PRESSURE systolic +/-20
Premature	144	20 - 38	N/A
Newborn	140	20 - 38	N/A
6 months	130	20 - 30	80 palp
1 year	130	20 - 24	90 palp
3 years	100	20 - 24	95 palp
5 years	100	20 - 24	95 palp
8 years	90	12 - 20	100 palp

PEDIATRIC AIRWAY SIZES

AGE	ORAL AIRWAY	ENDOTRACHEAL TUBE (uncuffed)	SUCTION CATHETER
Preemie	00	2.5 - 3.0	5 French
Newborn	0	3.0 - 3.5	6 Fr
6 Months	0-1	3.5	8 Fr
18 Months	1	4.0	8 Fr
3 Years	2	4.5	8 Fr
5 Years	2-3	5.0	10 Fr
8 Years	3	6.0 cuffed	10 Fr
Older	4	6.5 -7.0 cuffed	12 Fr

PEDIATRIC SEIZURES

Specific Information Needed

- A. History
 - 1. Time of onset
 - 2. Duration of seizure
 - 3. Description of seizure
 - 4. Activity
 - 5. Recent illness
 - 6. Recent fever

- B. Medical History
 - 1. Previous seizures
 - 2. Medications
 - 3. Disease

Treatment

- 1. Safe scene, infection control
- 2. ABC (airway, breathing, circulation)
- 3. Oxygen
- 4. Vitals
- 5. IV 250 ml Normal Saline
- 6. Check blood sugar <60 mg/dl or blood sugar <80 and patient with signs and symptoms of hypoglycemia, administer 2ml/kg 25% Dextrose IV/IO

If no IV, administer 1/2 unit Glucagon IM.

*****Above may be given by Authorized EMT-Intermediates*****

- 7. Versed
 - IV/IO: 0.1 mg/kg
 - ET/IN/IM dose: 0.2 mg/kg (max 10 mg)Repeat every 5 minutes until seizure has stopped max 10 mg without med control order.
****May be given by Authorized EMT-Intermediates****

- 8. Vitals
- 9. Contact on-line *Medical Control*

POISONS AND OVERDOSES
(UNCONSCIOUS UNKNOWN)

Specific Information Needed

- A. History of Ingestion
 - 1. What
 - 2. When
 - 3. How much
 - 4. Reason
 - 5. Actions of bystanders; i.e. induced vomiting

- B. Medical History
 - 1. Diseases
 - 2. Medications
 - 3. Establish known allergies

Treatment

- A. Safe scene, universal precautions
- B. Treat according to appropriate protocol

Specific Considerations

- A. All empty containers of ingested material should accompany patient to hospital. All emesis should be saved. Any questionable material should be taken to emergency department; i.e. empty vials.
- B. Pay particular attention to:
 - 1. Increased salivation
 - 2. Soot or burns in mouth
 - 3. Irritation of the eyes
 - 4. Sweating and skin burns
 - 5. Lung findings; i.e. edema
 - 6. Arrhythmias
 - 7. Capillary refill
- C. Antidotes
 - 1. Product labels and home kits may be misleading and dangerous. Watch the ABCs.
 - 2. Do not neutralize acids with alkali.
 - 3. Do not neutralize alkali with acid.
 - 4. With hydrocarbon ingestion, do not induce vomiting.
 - 5. Gasoline should be flushed from trauma victims and is often overlooked.
 - 6. Protect yourself in inhalation poisoning incidents.
 - 7. Decontamination as indicated.

Treatment

EXTERNAL CONTAMINATION

- 1. Safe scene, infection control, appropriate clothing for task
- 2. Remove contamination agents
- 3. Decontaminate patient
- 4. Assess and treat using appropriate protocols
- 5. Contact on-line Medical Control

Poisons and overdoses cont:

INTERNAL CONTAMINATION

1. Safe scene, infection control
2. Establish responsiveness
3. Reassure patient
4. ABC's (Airway, Breathing, Circulation)
5. Vitals
6. Pulse oximeter
7. Attach cardiac monitor
8. Oxygen
9. IV Normal Saline 1000 ml bag
10. Test blood sugar
11. Blood sugar < 60 mg/dl or if blood sugar < 80 mg/dl and patient has signs and symptoms of hypoglycemia, administer one amp of 25% Dextrose IV push. If no IV, administer 1/2 unit Glucagon IM. Blood sugar > 60 mg/dl, go to 12.
12. Administer Narcan if pinpoint pupils, altered mental status, or respiratory depression.
 - A) Birth to 5 years (up to 20 kg) 0.1 mg/kg IV/IN
 - B) > 5 years of age (or > 20 kg) 2.0 mg IV/IN*****Above may be given by Authorized EMT-Intermediates*****
13. Contact on-line *Medical Control*
14. **Per med control orders only**, and if appropriate for ingestion, and if the patient is alert, Activated Charcoal 1gram per kg orally.

Croup/Bronchiolitis

Croup is a viral infection of the upper airway (larynx, trachea, proximal bronchioles) which can cause respiratory distress, barking “seal barking” type cough, or stridor (inspiratory sounds). It is usually preceded by symptoms of upper respiratory tract infection and occurs usually in patients less than 2 years of age. Symptoms usually are worse during night time hours. Utilize the following protocol.

1. Safe scene, universal precautions.
2. Position of comfort
3. Pulse oximeter, Vitals, Assessment
4. 3cc Saline Aerosol with oxygen powered nebulizer
5. If not improved, Nebulized Epinephrine 1:1000 0.25 ml/kg (max 5ml) in 2 ml normal saline.
May also use Unit Dose Racemic Epinephrine
6. Contact Medical Control

Bronchiolitis is a lower airway obstruction from viral illness can present with wheezing in the toddler or infant under the age of 2 years. Asthma or foreign body inhalation can also cause similar symptoms. Bronchiolitis may not respond to Albuterol due to lower airway swelling from the infection.

1. Safe scene, universal precautions.
2. Position of comfort
3. Pulse oximeter, Vitals, Assessment
4. Nebulized Epinephrine 1:1000 0.25 ml/kg (max 5ml) in 2 ml normal saline.
May also use Unit Dose Racemic Epinephrine 11.25mg in 3cc Saline
5. Contact Medical Control

Pediatric Pain control Protocol

Pain in the pediatric population has been previously underutilized due to concerns for potential side effects. Fentanyl can be given IV, IM and by intranasal Device (MAD). This protocol will be utilized without medical control orders for pediatric patients under the age of 16 years for treatment of pain from isolated extremity fractures, dislocations, burns and treatment of cancer related pain. Pain scores can be quantified with the pain scale below.

Designed for children aged 3 years and older, the Wong-Baker Faces Pain Rating Scale is also helpful for elderly patients who may be cognitively impaired. It offers a visual description for those who don't have the verbal skills to explain how their symptoms make them feel.



1. Safe scene, universal precautions.
2. Position of comfort, distraction techniques.
3. Ice packs for acute injuries and elevate affected area.
4. Pulse oximeter, Vitals, Assessment
5. Fentanyl 1 mcg/kg IV/IM (Max 50 mcg on first dose) may repeat 0.5 mcg/kg IV times one additional dose after 10 mins. If vitals stable.
Or Fentanyl 2 mcg/kg Intranasal with dose split between two nares.
6. Contact Medical Control for further doses.

TRAUMA PROTOCOLS

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TRAUMA
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A General Trauma Protocol

DEFINITION OF “TRAUMA PROTOCOL” PATIENT:

“An injured patient who you think is at significant risk for loss of life or limb, or significant, permanent disfigurement or disability; and the injury is caused by blunt or penetrating injury, exposure to electromagnetic, chemical, or radioactive energy, drowning, suffocation, or strangulation, or a deficit or excess of heat.”

Paramedics and EMTs should use the following criteria to help identify patients that fit the above description of a “trauma protocol” patient. Patients so identified shall be taken to the closest appropriate Level 1 or 2 Trauma Center Hospital or if appropriate Level 3 Trauma Center Hospital for intermediate trauma patient classifications. “Serious burns” as defined below shall be transported to St. Vincent Mercy Level 1 Trauma Center/Burn Center, or closest burn center.

- A. Pregnant Trauma Patients
 - a. Trauma in the first trimester will be considered a Trauma Protocol patient.
 - b. Trauma in the second and third trimester, (greater than 20 weeks), are not to be taken to M.C.O. because of a lack of neonatal and obstetrical services. Third trimester trauma patients in a cardiac arrest are to be taken to the closest hospital, including M.C.O
 - c. All pregnant trauma patients in the second and third trimester that do not meet Adult Trauma Protocol criteria, but have suspected abdominal injuries, pain or vaginal bleeding or discharge, should be taken to the closest acute care facility which provides fetal monitoring. (All hospitals except UTMC provide fetal monitoring).
- B. At no time will interventions be accomplished that would delay transport after the patient has been placed in the life squad and prior to departing for the receiving hospital except for airway compromise.
- C. Early radio contact is mandatory with **On-Line Medical Control**
- D. Minimal Radio Report
 - a. Contact with **On-Line Medical Control** is required.
 - b. Five elements are required when reporting a “Trauma Protocol patient” Patient. The acronym **TAGEM** should be used.
 - T.** Trauma Protocol: Patient is a major or intermediate trauma protocol patient.
 - A.** Age: Age of patient. (estimated)
 - G.** Gender
 - E.** ETA: Provide an ETA to the closest facility and identify that facility
 - M.** Mechanism of Injury: Briefly describe the mechanism of injury and basis for declaring a trauma

Sample Radio Report: We have 4 minute eta with a Pediatric Major Trauma patient. The patient is a 4 y/o male from a pedestrian struck accident that is unconscious with significant head trauma.

TRAUMA TRIAGE PROTOCOLS

ADULT MAJOR TRAUMA

- Level 1 or 2 Trauma Center(>=16 YEARS)
- GCS \leq 12
 - Deterioration in LOC at scene or in transport
 - Failure to localize pain
 - Requires intubation
 - Requires relief of tension pneumothorax
 - HR >120 with evidence of hemorrhagic shock
 - Systolic BP <90 absent radial pulse with Carotoid
 - Penetrating trauma to the head, neck or torso to knee or elbow with neurovascular compromise
 - Injuries to head, neck or torso with:
 - visible crush injury, pelvic fx, flail chest
 - Amputations proximal to wrist or ankle
 - Visible crush injuries
 - Fractures of 2 or more proximal long bones
 - Evidence of neurovascular compromise
 - S & S of spinal cord injury
 - 2nd or 3rd degree burns >10% of body surface
 - Significant burns of face, feet, hands, genitalia, or airway

PEDIATRIC MAJOR TRAUMA

- (<16 YEARS OLD)
- GCS \leq 12
 - Failure to localize pain
 - Deterioration in LOC at scene or in transport
 - Evidence of poor perfusion or respiratory distress
 - Penetrating trauma to head, neck, or torso
 - Significant penetrating trauma to extremities proximal to knee or elbow with neurovascular compromise
 - Injuries to head, neck, or torso with:
 - visible crush injury, pelvic fx, flail chest
 - Amputations proximal to wrist or ankle
 - Extremity visible crush injuries
 - Fractures of 2 or more proximal long bones
 - Evidence of neurovascular compromise
 - S&S of spinal cord injury
 - 2nd or 3rd degree burns >10% of body surface
 - Significant burns of face, feet, hands, genitalia, or airway

listed below are Geriatric specific differences from adult trauma protocols

GERIATRIC MAJOR TRAUMA

- (>70 YEARS OLD)
- GCS<14 with suspected TBI
 - GCS \leq 13
 - Deterioration of LOC at scene, transport
 - Systolic BP <100, absent radial pulse
 - Fracture one long bone in MVA
 - Two Long bone fractures.
 - Injury to 2 or more Body regions

Mechanism

- Pedestrian Struck by motor vehicle
- Fall from any Height with evidence TBI

ADULT INTERMEDIATE TRAUMA

- Level 3 Trauma center (16 YEARS OR OLDER)
- GCS=13
 - LOC >5 mins or witnesses by EMS personnel
 - HR >120 without evidence of hemorrhagic shock
 - Respiratory rate <10 or >29
 - Injuries to head, neck, or torso w/ abdominal tenderness, distention, or seat belt sign

PEDIATRIC INTERMEDIATE TRAUMA

- (<16 YEARS OLD)
- GCS=13
 - LOC >5 mins witnesses by EMS personnel
 - Injuries to head, neck, torso w/ abdominal tenderness distention, or seat belt sign

GERIATRIC INTERMEDIATE TRAUMA

- (>70 YEARS OLD)
- GCS \geq 14 without suspected TBI
 - LOC >5 mins or witnessed by EMS
 - Injuries to head, neck, or torso w/ abdominal tenderness distention, or seat belt sign

State of Ohio Trauma Triage Rules 12/2008

4765-14-02 Determination Of A Trauma Victim.

Emergency medical service personnel shall use the criteria in this rule, consistent with their certification, to evaluate whether an injured person qualifies as an adult trauma victim, geriatric trauma victim, or pediatric trauma victim, in conjunction with the definition of trauma in section 4765.01 of the Revised Code and this chapter.

(A) An adult trauma victim is a person between the ages of sixteen and sixty-nine years of age inclusive exhibiting one or more of the following physiologic or anatomic conditions:

- (1) Physiologic conditions
 - (a) Glasgow coma scale less than or equal to thirteen;
 - (b) Loss of consciousness greater than five minutes;
 - (c) Deterioration in level of consciousness at the scene or during transport;
 - (d) Failure to localize to pain;
 - (e) Respiratory rate less than ten or greater than twenty-nine;
 - (f) Requires endotracheal intubation;
 - (g) Requires relief of tension pneumothorax;
 - (h) Pulse greater than one hundred twenty in combination with evidence of hemorrhagic shock;
 - (i) Systolic blood pressure less than ninety, or absent radial pulse with carotid pulse present;
- (2) Anatomic conditions
 - (a) Penetrating trauma to the head, neck, or torso;
 - (b) Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;
 - (c) Injuries to the head, neck, or torso where the following physical findings are present:
 - (i) Visible crush injury;
 - (ii) Abdominal tenderness, distention, or seatbelt sign;
 - (iii) Pelvic fracture;
 - (iv) Flail chest;
 - (d) Injuries to the extremities where the following physical findings are present:
 - (i) Amputations proximal to the wrist or ankle;
 - (ii) Visible crush injury;
 - (iii) Fractures of two or more proximal long bones;
 - (iv) Evidence of neurovascular compromise;
 - (e) Signs or symptoms of spinal cord injury;
 - (f) Second degree or third degree burns greater than ten per cent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway.

(B) A pediatric trauma victim is a person under sixteen years of age exhibiting one or more of the following physiologic or anatomic conditions:

- (1) Physiologic conditions
 - (a) Glasgow coma scale less than or equal to thirteen;
 - (b) Loss of consciousness greater than five minutes;
 - (c) Deterioration in level of consciousness at the scene or during transport;
 - (d) Failure to localize to pain;
 - (e) Evidence of poor perfusion, or evidence of respiratory distress or failure.
- (2) Anatomic conditions
 - (a) Penetrating trauma to the head, neck, or torso;
 - (b) Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;
 - (c) Injuries to the head, neck, or torso where the following physical findings are present:
 - (i) Visible crush injury;
 - (ii) Abdominal tenderness, distention, or seatbelt sign;
 - (iii) Pelvic fracture;
 - (iv) Flail chest;
 - (d) Injuries to the extremities where the following physical findings are present:
 - (i) Amputations proximal to the wrist or ankle;
 - (ii) Visible crush injury;
 - (iii) Fractures of two or more proximal long bones;

- (iv) Evidence of neurovascular compromise.
- (e) Signs or symptoms of spinal cord injury;
- (f) Second or third degree burns greater than ten per cent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway.

(C) A geriatric trauma victim is a person seventy years of age or older exhibiting one or more of the following causes of injury or physiologic or anatomic conditions:

- (1) Physiologic conditions
 - (a) **Glasgow coma scale less than or equal to fourteen in a trauma patient with a known or suspected traumatic brain injury**
 - (b) Glasgow coma score less than or equal to thirteen;
 - (c) Loss of consciousness greater than five minutes;
 - (d) Deterioration in level of consciousness at the scene or during transport;
 - (e) Failure to localize to pain;
 - (f) Respiratory rate less than ten or greater than twenty-nine;
 - (g) Requires endotracheal intubation;
 - (h) Requires relief of tension pneumothorax;
 - (i) Pulse greater than one hundred twenty in combination with evidence of hemorrhagic shock;
 - (j) **Systolic blood pressure less than one-hundred**, or absent radial pulse with carotid pulse present;
- (2) Anatomic conditions
 - (a) Penetrating trauma to the head, neck, or torso;
 - (b) Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise;
 - (c) Injuries to the head, neck, or torso where the following physical findings are present:
 - (i) Visible crush injury;
 - (ii) Abdominal tenderness, distention, or seatbelt sign;
 - (iii) Pelvic fracture;
 - (iv) Flail chest;
 - (d) Injuries to the extremities where the following physical findings are present:
 - (i) Amputations proximal to the wrist or ankle;
 - (ii) Visible crush injury;
 - (iii) **Fracture of one proximal long bone sustained as a result of a motor vehicle crash;**
 - (iv) Fractures of two or more proximal long bones;
 - (v) Evidence of neurovascular compromise.
 - (e) Signs or symptoms of spinal cord injury;
 - (f) Second degree or third degree burns greater than ten per cent total body surface area, or other significant burns involving the face, feet, hands, genitalia, or airway;
 - (g) **Injury sustained in two or more body regions.**
- (3) Cause of injury
 - (a) **Pedestrian struck by a motor vehicle**
 - (b) **Fall from any height, including standing falls, with evidence of a traumatic brain injury**

(D) Emergency medical service personnel shall also consider mechanism of injury and special considerations, as taught in the EMT-basic, EMT-intermediate, or EMT-paramedic curriculum, when evaluating whether an injured person qualifies as trauma victim.

4765-14-03 Enforcement Of State Or Regional Trauma Triage Protocols.

(A) EMS medical directors shall be responsible for enforcing state or regional trauma triage protocols for EMS personnel under their medical direction through a performance improvement or peer review process.

(B) EMS medical directors may request assistance from the RPABs to address issues related to quality improvement and peer review of state or regional trauma triage protocols.

(C) The board shall investigate all complaints regarding violations of state or regional trauma triage protocols consistent with its current procedures for investigations.

TRAUMATIC DEATH

A. Withholding Resuscitation:

1. All decisions to withhold CPR and resuscitation should be sufficiently documented so that, should it be questioned, it can be readily supported.
2. If whether to attempt resuscitation is in question avoid disturbing the scene and/or the body unless it is necessary to do so in order to make the resuscitation decision.
3. EKG confirmation is not necessary for the following two examples:
 - a. There is injury that is obviously incompatible with life.
 - b. The victim exhibits signs of decomposition, rigor mortis or extreme dependent lividity.
4. EKG confirmation and documentation of asystole in two (2) leads is required for all patients not included in item #3 above.
5. Any rhythm other than asystole will be resuscitated and transported with all appropriate resuscitation treatments available to the paramedics utilized.
6. If the patient is initially in asystole but does not exhibit the criteria established in item #3 above, full resuscitation measures will be initiated by the paramedics including intubation, IV access and ALS protocols followed.
 - a. If, after 20 minutes of continuous asystole, with no change in rhythm after treatment, the paramedic may contact **On-Line Medical Control** to request orders to terminate resuscitation. Efforts may be terminated only with **On-Line Medical Control** permission.
 - b. All patients who present with asystole and who are thought to be hypothermic will be treated and transported.
 - c. Transport is a treatment priority and squads are not to delay transport to specifically reach the 20-minute time frame.
7. In all cases where there is any doubt or clear documentation cannot be accomplished, the patient is to receive a full resuscitative effort and transport to the closest hospital

AMPUTATED PARTS

A. Specific information to be to be provided to the receiving hospital:

1. The location of the amputation(s)
2. What has been amputated?
3. Mechanism of the amputation.
4. Past medical history.
5. Is the amputated part(s) being transported with the patient?
6. Other injuries.
7. Vital signs.
8. Treatments that have been initiated.
9. ETA

B. Care of amputated parts.

1. Cooling and rapid transport are a priority.
2. Place the amputated part in a waterproof container, i.e., plastic bag, suction canister.
3. Use cold packs to cool the amputated part making sure the coolant does not come in direct contact with the amputated part.
4. Do not delay transport of the patient looking for body parts.
5. If located after the patient leaves the scene, care for the part as above and transport code 3 to the same hospital where the patient was transported.
6. Do not allow the part to become cold enough to freeze.

MULTI SYSTEM TRAUMA PATIENT

.Multiple System Trauma Patient Priorities

1. Transport to an appropriate facility, as directed by **On-Line Medical Control**, is the highest priority.
2. A history of the incident should be obtained if available. Includes at a minimum:
 1. Mechanism of injury
 2. Time of injury
 3. Bystander aid
 4. Evidence of substance abuse
 5. Extrication time if applicable.
3. Past medical history should be obtained by someone not assessing or treating airway or hemorrhage. Includes at a minimum:
 1. Medications
 2. Pregnancy (female patients)
 3. Medical conditions
 4. Allergies
 5. Have other responders use polaroid kit if time permits
 6. Stabilize spine as the situation dictates. (Is there spine and c-spine pain)
- 4.. A minimal assessment should include:

Level of consciousness

 - a. History of unconsciousness or
 - b. In the unconscious patient the level of response to:
 1. Verbal stimulation
 2. Tactile stimulation
 3. Painful stimulation

Respiratory effort including:

 - a. Rate
 - b. Rhythm
 - c. Quality

Circulatory status to include:

 - a. Pulse rate
 - b. Rhythm (regular or irregular)
 - c. Quality (strength to include the absence of radial femoral or pedal pulses)
 - d. Systolic blood pressure (done enroute to hospital if patient meets Trauma Protocol)
 - e. Skin:
 1. Color
 2. Temperature
 3. Moisture
 - f. Locate through exposure any life threatening injuries.
 - g. Estimate amount of external hemorrhage.

D. Treatment - **ALL TREATMENTS, EXCEPT C-SPINE, CPR, CONTROL OF LIFE THREATENING HEMORRHAGE AND AIRWAY CONTROL, ARE TO BE INITIATED AFTER TRANSPORT HAS BEEN INITIATED.**

Remember - Transport and early notification of **On-Line Medical Control** may be the most beneficial thing you accomplish.

1. C-spine - Initially manually then with an adjunct. (If indicated)
2. Control the airway/ventilation:
 - a. High flow (15 lpm) oxygen via non-rebreather mask.
 - b. Head injury patients ventilated at 12-20 breaths per minute and use capnography to keep CO₂ 30-35 mmHg.
 - a. If unconscious without a gag reflex. Intubate with RSI or use King LTD (Pre medicate with Lidocaine 1.5 mg/kg IV)
 - b. Avoid nasotracheal intubation if facial fractures are suspected.
 - c. If structural deformity prohibits tracheal intubation, or King Airway and is **OBSTRUCTING THE AIRWAY**, a surgical airway is indicated.
 - c. Thoracic chest decompression will only be accomplished for patients exhibiting signs and symptoms of a **TENSION PNEUMOTHORAX**. The preferred site for thoracic decompression is anterior axillary line 4th-5th intercostal space Decompression should be accomplished with a 2¼"14 gauge catheter. All decompression catheters are to be left in place once thoracic puncture has been accomplished and document on the run form, the signs and symptoms that caused you to make the decision to accomplish thoracic decompression. Closed systems are NOT to be used.
3. Circulatory Management
 - a. Apply direct pressure and or use tourniquet to control active bleeding
 - b. Patients who fall under the trauma protocol will be transported to an appropriate facility, as directed by **On-Line Medical Control**.
 - c. After transport has been initiated:
 - d. Establish a peripheral large bore (18 gauge or larger) IV with a 1000cc bag of 0.9% Sodium Chloride and a 10gtt/ml size tubing.
 - e. For patients exhibiting signs and symptoms of shock, a second IV is indicated (large bore, normal saline, 10gtt/ml tubing).
 - f. An intraosseous line may be initiated, **AFTER** peripheral attempts to initiate IV access have failed if the patient is unconscious, unresponsive and/or in a life threatening situation.
 - g. All fluid challenges shall be 10 mg/kg If multiple (x2) lines are running, the calculated fluid challenge will be the summary of all fluid administered.
 - h. You are **REQUIRED** to record, on the run form, the total amount of fluid administered in the pre-hospital setting.
 - i. Keep the patient warm especially if transport is delayed.
4. Apply a cardiac monitor:
5. Treat dysrhythmia per appropriated protocol.
6. Treat cardiac arrest per cardiac protocols with the addition of a 20ml per kilogram fluid challenge.
7. Reassess patient frequently paying particular attention to the airway and circulatory system.
8. All BLS procedures should be accomplished enroute to hospital, i.e. splinting.

9.

LOAD AND GO SITUATIONS

Specific Considerations

A. Load and go situations in trauma are life-threatening situations that exist when the patient must be packaged and transported immediately. Time is of the essence with few exceptions. Specific resuscitative efforts will need to be delegated. The EMS provider must continue with the primary survey as resuscitation continues. The following patients should not be on the scene longer than 8 minutes.

1. Head injury with decreased level of consciousness
2. Airway obstruction not corrected by mechanical intervention (i.e. suction)
3. Respiratory compromise and/or inadequate perfusion
4. Cardiac Arrest
5. Shock
6. Pediatric airway problem/arrest

There may be situations to delay transport they are:

1. Securing a safe scene
2. Extrication

Be cautious of the time spent on the scene for stabilization measures. Ask yourself will the procedure save the patient's life with immediate intervention or can the procedure be done enroute to the hospital.

B. On-line *Medical Control* should be notified as soon as possible.

C. The Glasgow Trauma Scale may be a useful tool in the evaluation of trauma victims and aid in critical care transport decisions; it may also give on-line *Medical Control* a better picture of the patient's condition.

EXTREMITY TRAUMA

This protocol is for an isolated fracture of the extremity. In providing pain management for extremity fractures care should be taken to ensure that the patient has no other injuries. If pain medication is given to a patient with other type injuries such as head, chest or abdominal injuries it could exacerbate those injuries.

1. Obtain distal pulses
2. Stabilize/Splint the fracture
 - a. This may be done utilizing any type of splint (i.e. Vacuum Splint, pillow, blanket and etc.).
3. Reassess distal pulses
4. If the paramedic anticipates the administration of pain medication establish IV of Normal Saline, run at TKO.
5. Provide pain medication
 - Fentanyl 25-50 mcg IV every 5 minutes
 - Or if no IV Fentanyl 100 mcg IN/IM every 10 minutes
 - (Max of 200 micrograms total without order.)****May be given by Authorized EMT-Intermediates****
6. Reassess the patient's pain level and respiratory status.
7. Contact on-line *Medical Control*
8. Transport to the appropriate medical facility.

EYE INJURIES

- I. General Considerations:
 - A. Little treatment can be given in the field for most eye injuries. Management should be directed at protecting the eye from further harm during transport.
 - B. Irrigation of the eye, when appropriate, should be initiated immediately, even if transport is delayed. Irrigation may continue during transport to the hospital.
 - C. Avoid touching the eyes.
 - D. Nausea and vomiting is common in patients with eye injuries.
 - E. Patients with glaucoma should receive prompt transport, as their condition may be an acute emergency.
 - F. Remove contact lenses when applicable
- II. History
 - A. Mechanism of injury: Blunt, Penetrating, Foreign Body
 - B. Treatment prior to arrival
 - C. Prior medical history
 - D. Medications and allergies
- III. Treatment-Blunt
 - A. Patch both eyes without putting pressure on globes of eyes
 - B. Transport patient in position of comfortTreatment-Penetrating
 - A. If the object is still in eye, **DO NOT REMOVE**
 - B. Stabilize object with soft pad or towel
 - C. Cover eye with plastic cup or other object
 - D. Patch unaffected eyeTreatment-Foreign Body
 - A. Flush eye as indicated
 - B. If patient remains symptomatic, continue to flush during transport
 - C. Administer 2 drops of Tetracaine
 - D. Cover eyes with moist dressing

BURNS

Specific information needed:

- A. History of injury: time elapsed since burn. Was patient in a closed space with steam, smoke, electrical contact, loss of consciousness, accompanying explosion, toxic fumes?
- B. Past history: prior cardiac or pulmonary disease, medications?

Specific Considerations:

- A. Extent of burns: description or diagram of areas involved.
- B. Depth of burns: superficial - epidermis only, significant - blistered or charred areas. (Radio report should include extent of significant burn only: one patient palm = 1% burn.)
- D. Evidence of CO poisoning or other toxic inhalation: altered mental state, headache, vomiting, seizure, and coma.
- E. Evidence of inhalation burns: Dyspnea, cough, hoarseness; singed nasal or facial hair; soot
- F. Entrance and exit wounds for electrical burns.
- G. Associated trauma

Treatment:

THERMAL BURNS:

- A. Safe scene, universal precautions
- B. Remove clothing which is smoldering or which is non-adherent to the patient.
- C. High flow oxygen via non-rebreather mask
- D. Assess and treat for associated trauma (blast or fall)
- E. Remove rings bracelets and other constricting items.
- F. If burn is moderate to severe (more than 20%), cover wounds with dry clean dressings.
- G. Use cool wet dressings in smaller burns (less than 20%) for patient comfort
- H. Vital signs.
- I. IV: 1000ml Normal Saline
- J. Provide pain medication
 - Fentanyl 25-50 mcg IV every 5 minutes
 - Fentanyl 100 mcg IN/IM every 10 minutes
 - *****Above May be given by Authorized EMT-Intermediates*****
- K. More than 20% body surface area burn, or if burns to the face, distal extremities or genitalia meets criteria for transport to burn center. (10% in pediatric patients)

INHALATION INJURY:

- A. Safe scene, universal precautions
- B. Oxygen 15lpm non-rebreather mask.
- C. Vital signs
- D. Be prepared to ventilate or assist if respirations inadequate – early intubation if stridor or airway burns are present.
- E. Monitor cardiac rhythm.
- F. Transport to burn center

CHEMICAL BURNS:

- A. Protect rescuers from contamination wear appropriate gloves and clothing.
- B. Remove clothing and any solid chemical that might provide continuing contamination.
- C. Assess and treat for associated injuries.
- D. Decontamination of the patient must done prior to transport if patient stable
- E. Check eyes for exposure and rinse with free-flowing water for 5 minutes. May use tetracaine drops for pain control.
- F. Evaluate for systemic symptoms which might be caused by chemical contamination
- G. Contact medical control for possible treatment.
- H. Remove rings, bracelets, constricting bands.
- I. Wrap burned area in clean, dry cloths for transport. Keep patient as warm as possible after decontamination
- J. IV: 1000ml Normal Saline
- K. Provide pain medication
 - Fentanyl 25-50 mcg IV every 5 minutes
 - Fentanyl 100 mcg IN/IM every 10 minutes
 - ****Above May be given by Authorized EMT-Intermediates****
- L. Transport to burn center if extensive burns

ELECTRICAL INJURY:

- A. Safe scene, universal precautions
- B. Initiate CPR as needed. Treat according to cardiac arrest protocol
- C. PROLONGED respiratory support may be needed.
- D. Immobilize cervical spine, assess for other injuries.
- E. Monitor patient for possible cardiac arrhythmia – 12 lead. Treat as per arrhythmia protocol.
- F. IV- Normal Saline
- G. Apply sterile dressings to entry and exit burns
- H. Provide pain medication
 - Fentanyl 25-50 mcg IV every 5 minutes
 - Fentanyl 50 mcg IN/IM every 10 minutes
 - ****Above May be given by Authorized EMT-Intermediates****

Specific Precautions:

- A. Leave blisters intact when possible.
- B. Suspect airway burns in any facial burns or burns received in closed places. Edema may become severe, but not usually in the first hour. Avoid unnecessary trauma to the airway.
- C. Assume carbon monoxide poisoning in all closed space burns.
- D. Field decontamination of chemical exposure has been shown to significantly reduce extent of burn. It is rare to encounter a chemical, which is not properly decontaminated by copious water. Unless a specific contraindication is known, do not waste time before initiating treatment to find out the specific culprit. Brush off dry chemicals before flushing. Do not use water for:
 - 1. Sulfuric acid; use liquid soap only.
 - 2. Mustard gas, sodium metal, phenol, creosote and white phosphorous; use oil.
 - 3. Gasoline; use soda and water.
- E. Avoid starting IVs in burned areas if possible.

RULE OF NINES

(A useful approximation of body surface burns)

Area of Body	ADULTS	CHILDREN
1. Head	9 %	18%
2. Arm (entire)	9% each	9% each
3. Chest & Abdomen	18%	18%
4. Back & buttocks	18%	18%
5. Leg (entire)	18% each	14% each
6. Genitalia	1%	1%

DROWNING/NEAR-DROWNING

Specific Information Needed:

- A. How long patient was submerged.
- B. Fresh or salt water, degree of contamination, water temperature.
- C. If a diving accident; Water depth?

Treatment:

- A. Safe scene, universal precautions
- B. Clear upper airway of vomitus or large debris
- C. Start CPR if needed. Do not drain lungs prior to initiating ventilatory assistance except in seawater victims.
- D. Backboard patient prior to removing from water if c-spine injury is suspected.
- E. Suction as needed.
- F. Oxygen high flow 15 lpm
- G. If patient unconscious:
Intubate and apply positive pressure ventilation.
- H. IV: Normal Saline, TKO
- I. Vital Signs, check blood sugar
- J. Monitor cardiac rhythm during transport.
- K. Transport patient, even if normal by initial assessment

Specific Precautions:

- A. ALL near drowning or submersions should be transported. Even if the patient initially appears fine, they can deteriorate.
- B. Pulmonary edema often occurs due to aspiration, hypoxia and other factors. It may not be evident for several hours after near drowning.
- D. If patient is hypothermic, defibrillation may be unsuccessful until the patient is rewarmed. Prolonged CPR may be needed. See Hypothermia Protocol.

HYPOTHERMIA AND FROSTBITE

Specific Information Needed

- A. Length of exposure
- B. Air temperature, water temperature, winds, patient wet?
- C. History and timing of changes in mental status
- D. Drugs: alcohol, tranquilizers, anticonvulsants, others.
- E. Medical problems: diabetes, epilepsy, alcoholism, etc.
- F. With local injury: history of thawing/refreezing?

Treatment:

A. General

- 1. Scene safe, universal precautions
- 2. CPR if NO pulse or respirations prolonged (If monitor present, no CPR if organized electrical activity present.)
- 3. Oxygen high flow
- 4. Avoid unnecessary suctioning or airway manipulation.
- 5. Remove wet or constrictive clothes from patient.
- 6. IV: 1000ml Normal Saline
- 7. Unconscious patient treat per altered Mental status protocol
- 8. Monitor cardiac rhythm. Attempt defibrillation if appropriate per protocol
- 9. Contact on-line *medical control*.

B. Local (frostbite):

- 1. Remove wet or constricting clothing. Keep skin dry and protected from wind.
- 2. Do not allow the limb to thaw if there is a chance that limb may refreeze before evacuation is complete or if patient must walk to transportation.
- 3. Dress injured areas lightly in clean cloth to protect from pressure trauma or friction. Do not rub. Do not break blisters.
- 4. Maintain core temperature by keeping patient warm with blankets, warm fluids.
- 5. Transport with frostbitten areas supported and elevated if feasible.

Hypothermia, continued

Hypothermia

- A. Shivering does not occur below 90 degrees F (patient temperature). Below this the patient may not even feel cold.
- B. The heart is most likely to fibrillate below 85-88 degrees F (30 degrees C). Defibrillation should be attempted, but prolonged CPR may be necessary until the temperature is above this level.
- C. ALS drugs should be used sparingly since peripheral vasoconstriction may prevent entry into central circulation until temperature is restored; at that time a large bolus of unwanted drugs may be infused into the heart. BRADYCARDIA is normal and should not be treated.
- D. Any handling and airway manipulation may induce ventricular fibrillation in the hypothermic patient. Delay intubation if airway can be managed by less invasive means.
- E. If not shivering don't ambulate patient and/or avoid unnecessary external stimuli (jarring of stretcher, loud noise). This activity can cause fibrillation.
- F. If patient has even a faint pulse, organized monitor rhythm and occasional respirations, CPR is currently felt to be unnecessary. In general, even very slow rates are probably sufficient for metabolic demands. CPR is indicated for Asystole and ventricular fibrillation, though the compression rate can be slower than usual (40/mm).
- G. Patients who appear dead after prolonged exposure to cold air or water should not be pronounced "dead" until they have been rewarmed. Full recovery from hypothermia with undetectable vital signs, severe Bradycardia and even periods of cardiac arrest has been reported.

FROSTBITE

- A. Thawing is extremely painful and should be done under controlled conditions, preferably in the hospital. Careful monitoring, pain medication, prolonged rewarming and sterile handling are required.
- B. It is clear that partial rewarming, or rewarming followed by refreezing, is far more injurious to tissues than delay in rewarming or walking on a frozen extremity to reach help. Do not rewarm prematurely. Indications for field rewarming are almost nonexistent
- C. Warming with heaters or stoves, rubbing with snow, drinking alcohol and other methods of stimulating the circulation are dangerous and should not be used.
- D. Do not allow patient to smoke or have caffeine.

HYPERTHERMIA

Specific Information Needed:

- A. Patient age, activity level
- B. Medications: depressants, tranquilizers, alcohol, etc.
- C. Associated symptoms: cramps, headache, nausea, and weakness.
- D. Exercise induced? Previous history of hyperthermia?

Treatment:

- A. Ensure airway; remove clothing and move to cool environment.
- B. O₂, as needed.
- C. Cool with ice or water-soaked sheets
- D. Vital signs and temperature
- E. IV: 1000 Normal Saline:
 - 1. TKO if vital signs stable.
 - 2. Fluid bolus, 1000 ml (20 ml/kg), if signs of hypovolemia, further fluids as needed.
- E. Test blood sugar
- F. Blood sugar < 60 mg/dl or blood sugar < 80 mg/dl and patient has signs and symptoms of hypoglycemia, administer 50% Dextrose IVP.
If no IV and blood sugar <60, administer 1 unit Glucagon IM.
*****Above may be given by Authorized EMT-Intermediates*****
- G. Administer Versed (See Sz. Protocol)
- H. Monitor cardiac rhythm.
- I. Contact on-line *Medical Control*.

Specific Precautions:

- A. Heat stroke is a medical emergency. It is distinguished by altered level of consciousness. Sweating may still be present, especially in exercise-induced heat stroke. The other persons at risk for heat stroke are the elderly and persons on medications, which impair the body's ability to regulate heat.
- B. Do not use wet sheets over patient without good airflow. This will tend to increase temperature by limiting evaporative loss.
- C. Definitive cooling requires ice water baths and careful monitoring. **DO NOT LET COOLING IN THE FIELD DELAY YOUR TRANSPORT.** Cool patient as much as possible while transporting to the hospital. Care should be taken not to make the patient become hypothermic.

Hazardous Material Situations Weapons of Mass Destruction (WMD)

This protocol will serve as a guideline for a life squad response to a hazardous materials or chemical agent incident. Its intent is not to be all-inclusive and personnel should remember that scene safety is paramount. It should also be realized that the life squad's role is not that of setting up zones or decontamination of patients. These tasks should be left to personnel specifically trained and equipped for these incidents. All responders, however, should have a basic knowledge of hazardous materials, hazardous material equipment and safety policies.

This protocol and our current training, resources and equipment are directed toward the chemical HAZMAT incident. Biological and nuclear/radiation events require an entirely different level of training, resources and equipment. A great difficulty with such events is simply the identification/recognition of such an event. Unfortunately, these patients may have already passed through the pre-hospital care services and into the hospital before recognition of an event has occurred. Subsequently, large amounts of resources, personnel, and equipment may already be contaminated.

I. Priorities at Hazmat Incident

- A. Recognition - recognizing the incident, dangers of the substance, and need for isolation.
- B. Scene Safe: - Back up to 1000 ft. upwind from incident.
- C. Identification - Begin identifying substances involved.
- D. Communication - Initiation of ICS and/or coordinated Hazmat response (per local FD protocol).
- E. Isolation of area/event - Initiate/assist with isolation of area - this is to prevent further contamination of personnel and equipment, communicate with safety officers.
- F. Medical Treatment - knowledge and ability to reference treatment modalities for identified agent.

II. Zones HAZMAT incidents should have zones established by the HAZMAT teams. Listed below are these zones and their restrictions.

- A. Hot Zone: (Restricted Area) This zone is only for personnel with the appropriate protective clothing and appropriate training, typically EMS personnel do not enter this zone.
- B. Warm Zone: This zone is where decontamination occurs and also is a limited access area. This may be a large zone dependant on what material is involved.
- C. Cold Zone: This zone is also known as the clean zone. Transport lines would form in this zone. Incident Command personnel and the life squad will be in this location.

NOTE: EMS units/personnel are **not** to enter incident beyond cold zone.

III. Roles of the paramedic (These roles may vary from department to department as training levels may vary, i.e., a paramedic who is a hazmat technician).

Hazardous Material Situations, continued

- A. To transport grossly decontaminated patients from the cold zone to an appropriate emergency facility.
- B. To provide medical care to patients/safety personnel in the cold zone including but not limited to triage.
- C. To monitor members of the HAZMAT team (rehab).

IV. Equipment Protection

Whenever possible a front line vehicle should not transport patients to a medical facility due to the risk of contamination of the vehicle, its equipment and the medical facility receiving the patient.

The paramedics should use their portable supplies on the patient and not supplies from the front-line vehicle. Do not use the equipment (i.e., BP cuff) from the vehicle on a patient and then return it to the front-line vehicle, as potential for cross contamination exists. Portable equipment should remain in the zone it is used in until properly decontaminated. Patients transported should be wrapped in cotton sheets, to further reduce the risk of cross contamination to the vehicle and paramedic.

V. Hospitals

Medical facilities should expect that the patients transported to their facility will have had gross decontamination performed by the on-scene Hazardous Materials Team. Gross decontamination means an attempt has been made to remove the majority of the agent the patient was exposed to by washing with soap and water. No assumption should be made that all of the agent, has been removed.

VI Chemical Agents

- A. If a scene is a suspected Weapons of Mass Destruction chemical event, life squad paramedics will not approach patients until they are decontaminated.
- B. Treatment shall be based on history and physical exam and does not require confirmation of the agent. Treat the patient's symptoms.
- C. Triage will occur as follows:
 - 1. Red Tag – Patients with symptoms
 - 2. Yellow Tag – Patients that were exposed, but are asymptomatic
 - 3. Black Tag – Cardiac arrest

Hazardous Material Situations, continued

VII Nerve Agent

- A If the suspected exposure is a nerve agent, use the Mark 1 Kit.
- B Pinpoint pupils and no other symptoms – do not use Mark 1 Kit.
- C Severe Rhinorrhea, administer Atropine 2mg IM only.
- D. Dyspnea, vomiting or diarrhea, administer one Mark 1 Kit containing Atropine 2mg and Pralidoxime Chloride (2-PAM CI) 600mg IM. Atropine 2mg IM should be repeated every 5 minutes until breathing improves.
- E. Seizures, apnea, severe respiratory distress, unconsciousness, muscle twitching, administer three (3) Mark 1 Kits containing Atropine 6mg and Pralidoxime Chloride (2-PAM CI) 1800mg IM. Also administer Valium 10mg IM even in the absence of seizures.
- F. Pediatrics
 - a. <2 years old Atropine, 0.5mg IM repeated every 5 minutes as needed.
 - b. 2-10 years old, Atropine 1 mg IM repeated every 5 minutes
 - c. The dose of 2-PAM CI is 15mg/kg. IM. Versed 0.1mg/Kg IM/IV
 - d. If cyanide suspected, follow Cyanide Protocol, Tab 900, K.
 - e. There are no specific antidotes for blister agents.

VIII Biological Agents

The prophylactic treatment of safety service personnel may include some of the following antibiotic regimens:

- A. Place a surgical mask on the patient for your protection. Use airborne/droplet PPE.
- B. Anthrax – Post exposure to Anthrax, Ciprofloxacin Hydrochloride (Cipro) 500 mg orally.
- C. Typhoid Tularemia – Doxycycline 100mg orally.
- D. Fever – From suspected biological agent, Doxycycline 100mg orally.
- E. Pneumonic Plague – Doxycycline 100mg orally.
- F. Brucellosis – Doxycycline 100mg orally.

Selective C-Spine Clearance Protocol

This protocol is designed to eliminate unnecessary spinal immobilization in the field and thereby reduce the types of injuries that are caused by unwarranted and prolonged immobilization.

Considerations:

1. Scene safety, infection control
2. ABC's (Follow the airway management protocol)(Manual c-spine control)
3. Evaluate the mechanism of injury:

If there is a positive mechanism of injury (MoI) patient should be immobilized. This MoI includes but is not limited to the following:

1. Axial loading injuries (diving accidents head impact falls)
2. Falls from greater than 20 feet
3. Death of occupant in same vehicle
4. Ejected from vehicle or motorcycle
5. Pedestrian struck by a vehicle traveling greater than 10mph
6. Vehicle rollover with signs of significant injury
7. Multisystem injuries (i.e.. burn injury and extremity fracture)
8. Distracting injuries
9. Significant trauma above the clavicle or head trauma
10. Any loss of consciousness

If there is no evidence of a positive mechanism of injury, and the patient is stable with intact ABC's, then continue with the spinal clearance protocol. **All unstable patients and those patients with primary survey deficits (problems with ABC's) will still be immobilized.**

Check List:

- The patient is alert and oriented (*Note: The patient must be a reliable historian and not suffering from an acute stress reaction, has no language barriers, and can cooperate with exam and questions*)
- Age 18 or older
- No neurological deficits (good PMS, no numbness or weakness in extremities)
- Not under the influence of drugs or alcohol
- No distracting injury or significant mechanism of injury.
- No cervical spine pain or point tenderness to axial load (push down on top head), palpation or attempted movement while maintaining manual c-spine immobilization.

If all of the above criteria are met, immobilization may be omitted

Document history and exam and affix clearance checklist sticker on run form. Advise transport crew that patient meets the selective c-spine clearance protocol.

MEDICAL PROCEDURES & EQUIPMENT

Medical Procedures and Equipment

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Sedation Assisted Intubation

INDICATIONS:

- * Severe head injury
- * Cerebral Vascular Accident
- * Trauma patient where oral-tracheal or nasotracheal intubation cannot be easily preformed with active reflexes or gag.
- * High-risk trauma patients.
- * Combative patients with altered mental status.
- * Impending Respiratory Failure requiring intubation

CONTRAINDICATIONS:

- * High-risk airways (i.e. extremely anterior, large neck, poor neck extension).
(Consider nasotracheal or “awake” intubation)
- * Unstable scene environment (i.e. when equipment or space would prevent optimum attempts).

COMPLICATIONS:

- * Apnea
- * Bruxism or jaw stiffness
- * Fasciculation's
- * Hypotension

PROCEDURE:

Prepare Patient

1. Scene safe & B.S.I. precautions
2. Manual C-spine precautions if indicated,
3. Establish and maintain basic A.B.C.s
4. Establish responsiveness (A.V.P.U.)
5. Apply cardiac monitor, pulse oximeter and get capnography ready with baseline vitals if possible.
6. Establish I.V. of Normal Saline at a TKO
7. Prepare equipment and have functioning suction available.
8. Back up LMA or KING LT airway as well as Flex guide Bougie should be available.

Pre-oxygenate

9. Administer oxygen @ 15 lpm. Non-rebreather Mask if spontaneously breathing and via B.V.M and supplemental oxygen if apneic or hypo ventilating.

Position Patient

10. Place patient in sniffing position and elevate head if possible. Have assistant ready to pull cheek and do Sellick maneuver or BURP (Back, Up, Right, Posterior movement of cricoid). If in c-spine precautions do not tape to board and have assistant take manual c-spine stabilization from anterior position. Front of c-collar may have to be opened to allow mandible movement.

Pre-medicate

11. Lidocaine 1.5 mg/kg IVP
12. Consider Fentanyl 25-50mg IVP if not hypotensive
13. Etomidate 0.3mg/kg (20 mg) IVP slowly over 60seconds
If Bruxism occurs, administer an additional dose of Etomidate (20mg) I.V. over 15 -20 seconds immediately
14. Using Cheek pull, BURP and/or Sellick Maneuver access airway
15. Place Endotracheal tube under direct visualization or Bougie
16. Do not release cricoid pressure until cuff inflated.
17. Ventilate with BVM and oxygen

Placement

18. Apply capnography or Chemical carbon dioxide detector
(if not available use Tube Check syringe or bulb device)
19. Check for Frost, Feel of compliance, Chest rise and Fall
20. Listen for Lung sounds over epigastrium and Lateral posterior lung fields.
21. Secure ET Tube and immobilize head and or use c-collar with towel rolls.
22. Consider sedation with 2 – 4 mg Midazolam (Versed) I.V every 5 minutes as needed after Etomidate sedation wears off.
- 23.** Capnometry must be used and checked with each patient move and documented.
- 24.** All use of SAI procedures require notification of the Medical Director or his designee
as soon as practical once patient care duties are completed.

INTUBATION
ADVANCED AIRWAY MANAGEMENT
(performed By Paramedics or Credentialed EMT I only)

1. Adult Endotracheal Intubation

A. Indications

1. Patients in deep coma, respiratory arrest or cardiopulmonary arrest
2. Patients where complete obstruction of the airway appears imminent
respiratory burns, acute anaphylaxis, upper airway foreign body

B. Contraindications

1. Patients with an intact gag reflex
2. Patients where irritation of the pharynx might cause laryngeal spasm -
croup or epiglottitis

C. Precautions

1. It is important not to take longer than 30 seconds per attempt. If it takes longer than 30 seconds you should stop, hyperventilate the patient before trying again.
2. Other techniques of airway management maybe indicated if there is a suspect injury to the c-spine.
3. The importance of verifying successful endotracheal intubation by auscultation of the chest following the procedure cannot be over emphasized. Accidental intubation of the esophagus, resulting in prolonged hypoxia is usually fatal if not quickly reversed.

D. Complications

1. Accidental intubation of the esophagus
2. Insertion of the endotracheal tube too deep into the trachea or right main stem bronchus.
3. Oropharyngeal trauma
4. Fractured teeth or dentures
5. Spasm of the vocal cords

E. Required equipment

1. Endotracheal tube
2. Lubricant
3. Stylet
4. 10 ml syringe
5. Laryngoscope blade
6. Laryngoscope handle
7. McGill forceps
8. Tube holder
9. Stethoscope
10. Suction
11. Tube check
12. Gloves and goggles

Intubation cont'd.

F. Procedure

1. Request partner to hyperventilate victim utilizing the Sellick Maneuver while assembling equipment and order auscultation of breath sounds prior to intubation. Use high flow O₂ if the patient is breathing.
2. Use RSI Protocol if Paramedic Scope of Practice
3. Assemble and check equipment
 - a. Select appropriate size laryngoscope blade and handle
 - b. Check light on laryngoscope to be certain it works and is tight
 - c. Select appropriate size endotracheal tube i.e. size of little finger
 - d. Check cuff of endotracheal tube, leave inflated for approximately 10 seconds. Leave syringe attached.
 - e. Tube should be lubricated
 - f. Prepare securing device, put on stethoscope
4. Place victim's head in sniffing position (maintain c-spine if indicated) hold laryngoscope in left hand. Hold Et tube in right hand. Interrupt bagging and move ventilator to side.
5. Position self over the victim, open the patient's mouth, and remove oral airway.
6. Insert laryngoscope blade in right side of mouth and sweep tongue to the left, while visualizing
7. Visualize landmarks: epiglottis, vocal cords
8. Do not use the teeth as a fulcrum, elevate the laryngoscope and advance the ET tube through the vocal cords.
9. Withdraw the laryngoscope and hold onto the ET tube
10. Inflate the cuff by feeling the pilot balloon tension. Use only enough air to create an effective seal.
11. Ventilate with BVM
12. Verify tube placement using the following:
 - a. Frost - when ventilating there should be frost in the ET tube
 - b. Feel - check compliance when ventilating
 - c. Look - visualize ET tube in trachea, watch chest rise and fall
 - d. Listen - auscultate lung sounds with stethoscope over apex, mid-Axillary and epigastrium
 - e. Aspirate - utilize Tube Check device
 - f. CO₂ - use capnography device. **THIS IS MANDATORY DOCUMENTATION**
Document capnography with each patient movement.
 - g. Saturation - monitor the patient's pulse oximetry

Intubation Cont.

13. Secure the tube in place with tape or tube holder
14. Document correct tube placement and depth using numbers on the ET tube

2. Tube Check Procedure

A. Compress the Tube Check device, attach to endotracheal tube and release

1. If air fills the bulb rapidly (less than 5 seconds), the tube is probably in the trachea. Confirm clinically, ventilate and secure tube.
2. If the air fills the bulb slowly (5-30 seconds), carefully assess tube placement using direct laryngoscopic visualization, confirm clinically, ventilate and secure tube.
3. If the air does not return to the bulb or vomit returns, the endotracheal tube is likely in the esophagus. Reintubate the patient or support ventilation by alternate means.

3. Pediatric Endotracheal Intubation

A. Indications

1. Patients in deep coma, respiratory arrest or cardio-pulmonary arrest
2. Patients where complete obstruction of the airway is imminent

B. Contraindications

1. Patients with intact gag reflex
2. Patients where irritation of the pharynx might cause laryngospasm
3. Croup or epiglottitis

C. Complications

1. Accidental intubation of the esophagus
2. Insertion of the endotracheal tube too far
3. Oropharyngeal trauma
4. Fractured teeth or gums
5. Spasm of the vocal cords

D. Required equipment

1. Pediatric non-cuffed endotracheal tube
2. Lubricant
3. Stylet
4. Laryngoscope blade
5. Laryngoscope handle
6. Tube holder
7. Stethoscope
8. Suction
9. Gloves and goggles

Intubation cont'd:

E. Procedure

1. Check laryngoscope and light to be bright and tight
2. Select appropriate size blade for age of infant/child
3. Hyperventilate the child
4. Consider Atropine 0.02 mg/kg IVP
5. Insert laryngoscope blade properly
6. Do not use teeth as fulcrum
7. Insert ET tube while maintaining visualization of the vocal cords
8. Check tube placement following insertion by auscultating the chest and the epigastrium area. Use Tube Check if over 5 years old
9. Secure the tube once breath sounds confirmed
10. Take no longer than 15 seconds per attempt. Hyperventilate the patient between attempts
11. If initial two attempts fail use BVM to ventilate -Load and Go
12. All pediatric patients will have c-spine immobilization placed after securing the tube to prevent ET tube dislodgment by excessive neck/torso movement

NASOTRACHEAL INTUBATION

(Paramedic only)

- A. Indications
 1. Respiratory compromise where oral tracheal intubation cannot be accomplished.
 2. Trauma to the mouth is apparent and there is no trauma to the face above the lips.
 3. Patient in status epilepticus and teeth are clenched
- B. Contraindications
 1. Irritation of the pharynx might cause laryngeal spasms (croup or epiglottitis)
 2. Nasal bleed or clear fluids from nose
 3. Patients with suspected basal skull fracture
- C. Complications
 1. Intubation of the esophagus
 2. Insertion of the endotracheal tube too far
 3. Laryngeal trauma, nasal bleeding and/or sinusitis
 4. Fractured teeth or dentures
 5. Spasm of the vocal cords
- D. Required Equipment
 1. Endotracheal tube (appropriate size) Endotrol preferred
 2. Lubricant
 2. 10 ml syringe
 4. McGill forceps
 7. Tube Tie
 8. Gloves
 9. Goggles
 10. Stethoscope
 11. Tube check
- E. Procedure
 1. Check equipment
 2. Select appropriate size tube
 3. Apply lubricant to the tube
 4. Inspect nose and select site
 5. Consider pre-intubation dose of Lidocaine 1.5mg/kg for trauma, head injury, CVA or critically ill patients
 6. Hyperventilate the patient
 7. Insert tube into nose. Perpendicular to face
 8. Advance tube to oropharynx; listen for inspiration on blind intubation
 9. Observe for bulging and anterior displacement of the laryngeal prominence
 10. Holding of ear over the opening of the ET tube will detect airflow.
 11. Ventilate patient
 12. Inflate cuff and secure the ET tube in place
 13. Check tube placement using tube check, auscultation and Captonography
 15. Reassess the airway.

NEEDLE DECOMPRESSION

(performed By Paramedics or Credentialed EMT I only)

Needle decompression is rarely required in the pre-hospital setting. If indicated, however, it must be recognized early and accomplished quickly. Tension Pneumothorax is a life threatening condition, which must be corrected early.

*****May be done by Credentialed EMT-Intermediates *****

- A. Signs & Symptoms of Tension Pneumothorax
 1. Acute dyspnea (severe)
 2. Unilaterally absent or severely diminished breath sounds on affected side.
 3. Subcutaneous emphysema
 4. Signs and symptoms of shock without other apparent causes
 5. Mediastinal shift with tracheal deviation (late sign).
 6. Jugular Vein Distention (JVD)
 7. Hyperresonant percussion (usually difficult in pre-hospital setting)
- B. Required Equipment
 1. #14 gauge or 16 2 ¼ inch IV catheter
 2. Betadine or Chlohexadine prep
 3. 1" Tape
 4. Stethoscope
 5. Universal Precautions (Gloves and Goggles)
- C. Procedure
 1. Assess the patient for signs and symptoms of a Tension Pneumothorax
 2. Auscultate breath sounds
 3. Administer Oxygen 15 lpm by non-rebreather mask or by bag valve mask
 4. Identify the fourth and fifth intercostal space anterior-axillary line on the affected side
 5. Cleanse site with alcohol or Bentidine
 6. Place patient in position of comfort, usually upright (only if no c-spine injury)
 7. Insert 14g IV needle into the skin between the fourth and fifth rib.
 8. Puncture the parietal pleura
 9. Advance the IV catheter and remove needle
 10. Secure the catheter in place
 11. Reassess the patient's vital signs, lung sounds, and respiratory effort.
- D. Precautions
 1. When making the puncture, DO NOT PENETRATE any further than the pleura. Too deep of an insertion may result in penetration of the lung.
 2. The puncture must be made close to the top of the rib so to avoid major nerves and vessels in that area
- E. Complications
 1. Puncture of the lung
 2. Hemorrhage from puncture of the blood vessels
 3. Severe pain if the patient is conscious

SURGICAL CRICOTHROTOMY

The paramedic considering a Cricothyrotomy must make a careful airway assessment focused on:

1. Determining the patient's ability to maintain his or her own airway without Further interventions
2. Need for non-surgical intubation, such as obstructed airway procedures, manual airway maneuvers, oral or nasal airways with positive pressure ventilations or medication administration.
3. A need for surgical Cricothyrotomy (pediatric age greater than 8)
4. This decision will be affected by; extrication time, transport time, distance to transport hospital, paramedic personal airway skills and on-line **Medical Control**

A. Procedure

1. Safe scene, universal precautions, gloves (sterile if possible)
2. Try to establish an airway using less invasive airway maneuvers.
3. Place in supine position with neck in a neutral position, c-spine control if indicated.
4. Palpate the thyroid notch, cricothyroid interval and sternal notch for orientation.
5. Use aseptic technique, as time and conditions will allow.
6. Stabilize the thyroid cartilage with the hand.
7. Using a #11 scalpel, make an vertical incision over the lower half of the cricothyroid membrane, approximately 1" to 1 - 1/2" in length. This should expose the cricothyroid membrane.
8. Carefully incise through the membrane, up to 1 cm. in length.
9. Using the handle of a second capped scalpel, insert it into the incision and rotate it 90 degrees to open the incision into the airway, or hemostats may be used to widen the opening.
10. Insert a cuffed 6.0 endotracheal tube through the cricothyroid membrane incision. Direct the tube distally into the trachea until cuff just passes tracheal incision.
11. Inflate the cuff approximately 10 ml and ventilate the patient, auscultating the chest.
12. Secure the ET tube to prevent dislodging with rolled gauze tie.
13. Attach to 100% oxygen by ambu bag and confirm with Captonography

B. Complications

1. Asphyxia
2. Aspiration
3. Creation of a false passage into tissues
4. Subglottic stenosis/edema
5. Laryngeal stenosis
6. Hemorrhage
7. Laceration of the esophagus or trachea
8. Mediastinal emphysema
9. Vocal cord paralysis

NEBULIZER

(performed By Paramedics or Credentialed EMT I only)

The oxygen powered hand held Nebulizer is a method of administering Albuterol or Atrovent by aerosol. The most ideal method of administration is using the T- mouthpiece that comes with the unit. If the patient is to symptomatic to utilize the "T" device, an alternative method of administration is using the aero mist oxygen mask it should be noted that the aero mist oxygen mask is not an oxygen delivery system. When the treatment is complete, the patient should be switched over to a standard oxygen delivery system, i.e. nasal cannula. If intubation is required, the in-line aerosol set should be utilized to administer the medication.

*****May be done by EMT-Intermediates *****

A. Nebulizer

1. Explain procedure to patient.
 - a. Instruct patient to create a seal around the T-device.
 - b. Instruct patient to inhale through their mouth and exhale through their nose as much as possible.
2. Open and assemble Nebulizer and hook up oxygen supply tubing to the unit and the oxygen delivery device.
3. Pour the desired medication (single unit dose) into the chamber by either unscrewing the top or by removing the "T" mouthpiece and poring down outlet.
4. Set liter flow at 8 liters.
5. The procedure should last approximately ten (10) minutes. Upon nearing the end of the treatment, the condensation will need to be moved down to the bottom of the bowl so it can be drawn up the siphon tube. To do this, shake the chamber or strike the chamber with your fingertip.
6. Monitor patient pulse rate, oximeter, color and respiratory effort for improvement or deterioration.

Dosing of an aerosol treatment is a single unit dose, reassess treatment response after completion of aerosol and administer a second unit dose if indicated.

PULSE OXIMETER

The pulse oximeter is an instrument used to ascertain a patient's arterial oxyhemoglobin saturation (% SpO₂). Measuring the absorption of infrared light passing through the tissue does this.

A. Advantages

1. Early warning system (May alert paramedic before cardiac monitors)
2. The Pulse Oximeter will enhance the paramedic's ability to identify, assess and treat hypoxia for any reason (i.e. drug overdose)
3. The Pulse Oximeter will assist in monitoring the effectiveness of other treatments (i.e. bronchodilators)
4. The Pulse Oximeter will assist in monitoring O₂ saturation during suctioning and intubation.
5. The Pulse Oximeter will assist in the assessment of perfusion in patients with orthopedic injuries

B. Ranges

- a. 95% - 100% ideal range
- b. 90% -95%, mild to moderate hypoxemia
- c. 85% - 90%, severe hypoxemia.
- d. Below 85%, if patient is symptomatic, intubate and ventilate.

C. Factors Affecting Reading

- a. Excessive ambient light, especially sunlight
- b. Excessive motion
- c. Nail polish - green, black, or red
- d. Moisture in sensor
- e. improper sensor attachment
- f. Poor patient perfusion
- g. Venous pulsation
- h. Anemia or low hemoglobin
- i. Sensor not at heart level.
- j. Pierced ears. (when using ear lobe sensor).
- k. Temperature
- l. Low Battery

INTRAOSSIOUS NEEDLE

(performed By Paramedics or Credentialed EMT I only)

Intraosseous should be accomplished in life threatening situations when peripheral cannulation is impractical or cannot be accomplished. The EZ-IO (IO drill tool) is the preferred IO device or the FAST 1 sternal IO (for adults ages 12 and above). The 15 gauge Jamshidi IO needle is acceptable and currently carried by EMS Providers for this procedure. This procedure is a paramedic or specially trained intermediate only procedure. This procedure is acceptable for adults and pediatrics after less invasive procedures has been attempted. The rule of thumb is that if peripheral cannulation cannot be accomplished within 90 seconds, or two attempts, an IO should be established. It should also be realized that in the pediatric arrest scenario, the IO could be attempted first if it is felt it could be accomplished quicker and other routes may be attempted as necessary after establishment of IO.

A. Intraosseous Infusion

1. Safe scene, universal precautions
2. Try to establish vascular access using less invasive techniques.
3. Use aseptic technique scrub site with chlorohexadine prep or betadine and let dry
4. Using a 15 gauge Jamshidi IO needle, insert the needle at least one finger width distal to the tibial tuberosity on the medial flat surface of the bone. Angle the penetration at least 20 degrees distal to avoid the epiphyseal plate. An alternate IO site is the distal 1/3 of the femur. The EZ IO can be used in the proximal humerus.
5. Using a screwing motion, advance the needle until it penetrates the bone marrow. Do not penetrate bone more than one (1) time, fluid or medication may leak out of extra puncture negating reasons for procedure.
6. Remove stylet.
7. Infuse 10 ml. Saline using a syringe to ensure placement. (You *may* attempt to aspirate bone marrow into syringe; however, sometimes this will not occur even with correct placement and may clog needle.)
8. Secure needle if needed, with tape.
9. Put appropriate IV solution in pressure infuser bag and attach to IV tubing.
10. Infuse appropriate medication or fluid amount. (Remember to flush with saline if administering medications)

Complications of Intraosseous infusion are:

- A. Fracture of bone
- C. Soft tissue infusion (improper placement)
- D. Slow infusion from marrow cloning
- E. Leakage out of bone, due to more than one (1) bone puncture

F.A.S.T. One Sternal; Intraosseous

(performed By Paramedics or Credentialed EMT I only)

INDICATIONS:

- The inability to obtain vascular access in a patient who is in need of immediate resuscitative measures
- 12 years or older

INSERTION SITE:

- Sternum

TECHNIQUE:

- Prepare the equipment
- Apply gloves
- Expose the sternum and identify the sternal notch
- Cleanse the site with Chlorohexadine prep.
- Place the target patch by placing your index finger on the sternal notch perpendicular to the skin. Next align the “locating notch” with the sternal notch and apply the target patch.
- Verify that the target zone (the whole in the patch) is directly over the patient’s sternum at the midline.
- Place the cluster of needles in the target zone of the target patch and hold the introducer perpendicular to the skin
- Apply force perpendicular to the skin along the long axis of the introducer until a distinct release is heard.
- Gently withdraw the introducer straight back in the direction of insertion.
- Place needle end of device in supplied orange sharps plug. Dispose of sharps appropriately
- Flush and Connect IV tubing to the infusion tube. .
- Place the Protector Dome over the target patch
- Place removal kit with patient (newer devices do not need removal tube.)

EZ-IO Protocol

Training:

EZ-IO® infusion systems require specific training prior to use.

INDICATIONS:

EZ-IO®AD (40 kg and over) & EZ-IO® PD (3 – 39 kg) EZ-IO® LD (excessive tissue)

Note: Certain patients may require a Needle Set outside their ideal weight range "One size does not fit all"

1. Immediate vascular access in emergencies.
2. Acute need for intravenous fluids or medications

CONTRAINDICATIONS:

- Fracture of the bone selected for IO infusion (*consider alternate sites*)
- Excessive tissue at insertion site with the absence of anatomical landmarks (*consider alternate sites*)
- Previous significant orthopedic procedures (*IO within 24 hours, prosthesis - consider alternate sites*)
- Infection at the site selected for insertion (*consider alternate sites*)

APPROVED INSERTION SITES:

- Proximal Tibia 2cm Bellow Patella
- Distal Tibia 3cm above medial malleolus
- Proximal Humerus 1 cm above surgical neck with arm " sling position"

PROCEDURE:

If the patient is conscious, explain procedure

- Apply non-sterile latex free gloves
- Cleanse site using Chlorohexadine prep.
- Allow to *air dry thoroughly*
- Connect appropriate Needle Set to driver
- Stabilize site
- Remove needle cap
- Insert EZ-IO needle into the selected site.
IMPORTANT: Keep hand and fingers away from Needle Set
- Position the driver at the insertion site with the needle set at a 90-degree angle to the bone surface. Gently pierce the skin with the Needle Set until the Needle Set tip touches the bone.
- Ensure visualization of at least on black line Needle Set
- Penetrate the bone cortex by squeezing driver's trigger and applying gentle, consistent, steady, downward pressure (allow the driver to do the work)
 - *Do not use excessive force. In some patients insertion may take greater than 10 seconds, if the driver sounds like it is slowing down during insertion; reduce pressure on the driver to allow the RPMs of the needle tip to do the work.
- Release the driver's trigger and stop the insertion process when a sudden "give or pop" is felt upon entry into the medullary space or when desired depth is obtained
- Remove EZ-IO Power Driver from Needle Set while stabilizing the catheter hub
- Remove stylet from catheter by turning counter-clockwise and immediately dispose of stylet in appropriate biohazard sharps container
 - *NEVER return used stylet or cartridge to the EZ-IO kit
- Secure site with EZ Stabilizer
- Connect primed EZ-Connect to exposed Luer-lock hub
- Syringe bolus: flush the catheter with 10 ml of normal saline
 - * If the patient is responsive to pain, 2% Lidocaine 50 mg (or 0.5 mg/kg)
- Disconnect 10 ml syringe from EZ-Connect extension set
- Connect primed EZ-Connect extension set to primed IV tubing
- Begin infusion utilizing a pressure delivery system
- Secure tubing per institution policy
- Continue to monitor extremity for complications
- Place EZ-IO armband on patient, document time and date

Tourniquet Use

Indications:

1. Uncontrolled extremity bleeding not responsive to direct pressure
2. Extremity bleeding in Tactical or Unsafe environment.

INSTRUCTIONS AND USE



1 Place around limb, above injury.



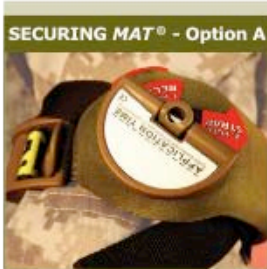
2 "Click" buckle into place.



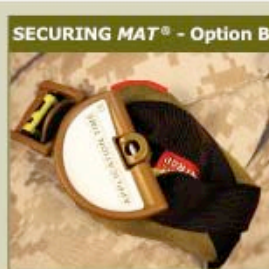
3 Pull strap down snugly.



4 Rotate turnkey to tighten and securely occlude blood flow.



SECURING MAT® - Option A
Wind strap around turnkey stem and fold turnkey down.



SECURING MAT® - Option B
Tuck strap underneath and tighten.



SECURING MAT® - Option C
Wrap excess strap over turnkey and tuck under.

Press the Release tab or lift on the buckle to release.



RELEASING MAT®

PYNG MEDICAL
7-13511 Crestwood Place
Richmond BC V6V 2E9 Canada
+1-800-349-7964
info@pyng.com www.pyng.com

IMPORTANT

Make sure that **MAT®** is **FULLY RESET** before each application.

TO RESET

While pushing in **RED RELEASE** button, pull strap all the way out.

PM-031a



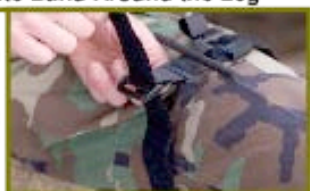
Instructions For Use

Application To A Leg Or Trapped Extremity



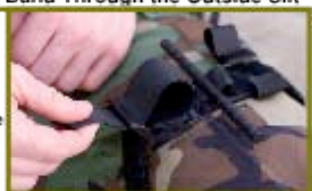
1 Route Band Around the Leg

And pass the free-running end through the inside slit of the buckle



2 Pass Band Through the Outside Slit

of the buckle. This Utilizes the Friction Adaptor Buckle which will lock the band in place



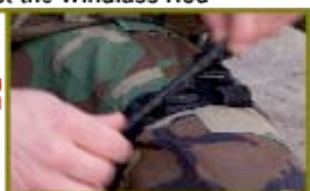
3 Pull the Band Tight

And securely fasten the band back on itself



4 Twist the Windlass Rod™

Until bright red bleeding has stopped



5 Lock the Rod With the Clip

Bleeding is controlled



6 Secure the Rod With the Strap

C-A-T™ is ready for transport



Utilization of the Friction Adaptor Buckle

When using two hands to apply the C-A-T or if the Self-Adhering Band becomes exceptionally dirty, use the Friction Adaptor Buckle to lock the band in place

1 Pass Band Through the Inside Slit

Of the buckle



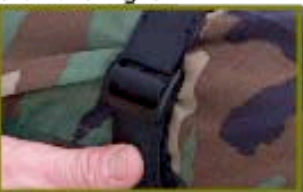
2 Pass Band Through the Outside Slit

Of the buckle. This will lock the band in place



3 Pull the Band Tight

And securely fasten the band back on itself



RESTRAINT POLICY

At times it is necessary to physically restrain individuals who are incompetent to refuse treatment or transport. The intent of physical restraint is to protect the patient, emergency responders and the public from dangerous actions of individuals.

Types of restraints used are divided into three categories. They are listed below.

- A. Soft restraints (applied by EMS)
 - 1. Kling or Cravats
 - 2. Commercial soft restraints
 - 3. Cloth (i.e. sheets or bath blankets)
- B. Hard restraints (applied by law enforcement)
 - 1. Handcuffs or Wrist chains
 - 2. Cable ties
 - 3. Leg shackles
 - 4. Hobble restraints
- C. Chemical Restraint
 - 1. Haldol 5.0mg IM, may repeat once in 5-10 minutes
 - 2. Benedryl 25-50 mg IV/IM if Dystonic (stiff neck or jaw) or Dyskinesia (apprehension or skin sensations) develops
 - 3. May consider 2 mg Versed slow IV push every 2-3 minutes until patient becomes sedated (maximum dosage of Versed is 10 mg), if Haldol not effective. Versed 5 Mg each nostril can also be used if IV access not available.

If a restraint is applied by law enforcement, the officer should accompany the patient to the hospital in the squad.

The following are recommended steps for the application of soft restraints.

- A. Offer the patient a final chance to cooperate.
- B. Universal precautions
- C. Approach the patient swiftly from all sides at once.
- D. The EMTs should maintain communication with the patient.
- E. Place the patient supine on a backboard and secure all extremities to the backboard.
 - One arm up and one arm down will reduce the patient's ability to struggle.
 - Secure the legs to the corners of the backboard.
- F. Continue to monitor the patient for signs and symptoms of hypoxia. Be prepared to release the restraints as necessary. Document your findings on the run sheet.
- G. Begin appropriate medical treatment.
- H. Monitor and document the neurovascular status of restrained extremities every 15 minutes. Adjust the device as necessary.
- I. Notify on-line medical control of patient status and the possible need for security.

Personnel should not use the following restraint techniques.

Choke holds, Hog Ties, restraints used in the prone position, restraint by sitting on patient's torso, restraint by sandwiching between backboards or any restraint by any method that would interfere with breathing.

Protocol for use of Alternative IV access

In the pre-hospital environment patients often have permanent IV access, dialysis catheters or Port-a-cath subcutaneous ports that may need to be used by Paramedics for IV access. In the event of an emergency these catheters may be used to provide IV fluids or medications if peripheral IV access is impractical or unavailable. Care should be taken to use aseptic technique and to prevent air from entering these central IV lines.

To Access central lines:

1. Wear appropriate eye protection and gloves
2. Scrub port to be used with betadine and/or alcohol preps
3. Apply clamp if present
4. Access needles port or remove cap and plug IV tubing directly into tubing. (Using sharp needles to access to these ports is strongly discouraged)
5. Open clamp, flush line with saline to ensure patency of the line.
6. Infuse medication/IV fluid as per protocol

To Access Port-a-cath:

1. Wear appropriate eye protection, gloves, mask
2. Scrub port site with betadine preps starting in center and in small circles expanding outward.
3. Allow solution to dry while preparing equipment in a sterile fashion.
4. Don sterile gloves
5. Flush extension set and/or Huber 90 degree needle set.
6. Access port-a-cath site by stabilizing subcutaneous port with thumb and index finger of one hand and placing needle in center rubber receptacle through the overlying skin.
7. Advance needle till bottom of device comes in contact with needle and it can no longer be advanced and remove plastic gripper wings if present.
8. Attempt to aspirate air/blood from system.
9. Flush with saline.
10. Attach IV Tubing to huber needle/extension set.
11. Apply sterile dressing and use tape to secure tubing and needle in place.
12. Infuse Medication or IV fluid per protocol.

Saline Lock Protocol

Patients not needing IV fluids but in need of IV access in case of future problems may have a Saline lock or capped IV started.

1. Flush saline lock device with Normal Saline
2. Start IV per protocol
3. Place saline lock device on IV Catheter Hub
4. Flush with 3cc of normal saline and flush after each medication given through the saline lock.

AUTO VENT

Overview

The Auto Vent 200 is a time-cycled, constant flow, gas powered ventilator, providing IMV at up to 20 breaths per minute, tidal volume of 400 to 800ml and inspiratory time of 1.5 seconds.

Indications

1. Profound hypoxia with is evidence by one of the following:
 - A. Respiratory Arrest
 - B. Cardiac Arrest
 - C. Patients with a tracheotomy tube in need of ventilatory assistance
2. Any intubated patient weighting more than 40 kg in whom an adequate tidal volume and rate can be obtained

Contraindications

1. Patients no in need of ventilatory assistance
2. Not for use with pediatric patients or patients less than 40 kg
3. **Patients with spontaneous respiration and not tolerating timed ventilations**

Procedure for use

1. Ensure proper ET, Tracheostomy or Cricothyroid tube placement (see intubation protocols)
2. Ventilate patient with bag mask valve device
3. Prepare Auto Vent
 - A. Attach O2 source gas line to quick connect on O2 outlet
 - B. When used with portable O2 cylinder, ensure that the cylinder has adequate volume to power ventilator and ensure that the valve is completely open.
 - C. Attach ventilator Circuit with non-rebreather valve to patient valve assembly by means of corrugated tubing.
 - D. Attach pulse oximetry unit to patient and document initial reading
 - E. Set tidal volume equal to 10 ml per kg of patient's body weight or at patient's current setting if patient is already on a ventilator.
 - F. Set BPM to desired position
 1. Use setting that the patient is already at if patient is already on a ventilator, other wise, use setting of 18-20 BPM
 2. Hyperventilation may be achieved by increasing tidal volume and rate
 - G. Ensure that gas flow is detected as ventilator cycles
 - H. Occlude the outlet to check for proper function of high-pressure alarm.
4. Attach Ventilation circuit to ET tube
5. Auscultate for bilateral breath sounds
6. Observe for symmetrical and adequate chest rise
7. Document Ventilator use, settings and patient's response on run report

Auto Vent Cont.

Complications / High Pressure Alarm

1. In the event of any suspected failure by the audible alarm alert, cessation of chest rise or air exchange and/or decrease in SaO₂, perform the following:
 - A. Immediately auscultate the chest for positive bilateral air exchange
 - B. Check ET tube for correct placement, blockage, kinks and/or pilot balloon inflation
 - C. Check patient valve for foreign material or obstruction
 - D. Check green breath indicator on delivery valve for position function
 - E. Check hose and supply line assemblies
 - F. Check Tidal Volume and BPM settings
 - G. Check O₂ source and regulator
 - H. If unable to promptly (<30 secs) resolve problem, disconnect Auto Vent and ventilate patient with bag valve device and high flow O₂. Re-evaluate patient and auscultate chest for air movement

Cleaning

1. If a disposable patient circuit is used (recommended)
 - A. Discard the circuit after every use
 - B. Visible external contamination may be wiped off using a clean cloth soaked in a detergent solution or in isopropyl alcohol
2. If reusable non-rebreathing valve and circuit are used
 - A. Clean after every use
 - B. Detach corrugated hose from valve assembly
 - C. Unscrew the valve inlet side from the outlet side and remove the diaphragm
 - D. Wash with soap and water
 - E. Autoclave or sterile in an approved solution

Training

All EMS Provider employees using the Auto Vent 2000 will be provided with a mandatory in-service training and will have to show competence in its use. Ongoing training will be provided as needed.

ALL VENT PATIENTS MUST BE TRANSPORTED BY AN PARAMEDIC

LMA Protocol

EMT's may utilize the LMA for the unconscious, apneic or near apneic patient or in cases when CPR is initiated. The LMA may be used initially or after beginning CPR with Bag Valve Mask ventilations. The LMA is the preferred advanced airway for EMT Basics

Paramedics may use the LMA as a bridge to intubation or for use with the failed airway. If an LMA is in place and ventilations are adequate the LMA may be used as the primary field airway until other medical issues such as defibrillation, IV therapy, and medication therapy have been initiated. The LMA may not be adequate for use in upper airway obstruction proximal to the Larynx and if total airway occlusion is present despite efforts to clear the obstruction, access to the airway surgically is indicated.

LMA Unique™ Selection Guidelines

Mask Size	Patient Selection Guidelines	*Maximum Cuff Inflation Volume (Air)	Maximum ETT ID
2	Infants/children 10-20 kg	up to 10 ml	4.5 mm <u>Uncuffed</u>
2½	Children 20-30 kg	up to 14 ml	5.0 mm <u>Uncuffed</u>
3	Children 30-50 kg	up to 20 ml	6.0 mm <u>Cuffed</u>
4	Adults 50-70 kg	up to 30 ml	6.0 mm <u>Cuffed</u>
5	Adults 70-100 kg	up to 40 ml	7.0 mm <u>Cuffed</u>

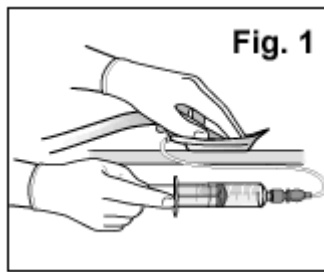
*These are maximum volumes that should never be exceeded. It is recommended the cuff be inflated to 60 cm H₂O intracuff pressure.

ETT = endotracheal tube, ID = Internal Diameter

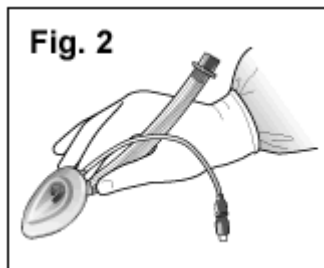
Insertion Method

1. Confirm apnea or near apnea and unconsciousness with absence of a gag.
2. Ensure suction, oxygen, and BVM are set up and available
3. Select correct size airway
4. Use insertion technique described below and/or in training video.
5. Secure the LMA with Tape, 2" kling or Airway Restraint device
6. Confirm ventilation with Capnography or CO₂ detector (if available) and clinically by observing expansion of the chest and auscultation of lung sounds.
7. Check for Air leak and adjust mask inflation pressure. If leak is severe remove and replace or use larger size.
8. Slow ventilations and lower tidal volumes also will minimize mask leak.

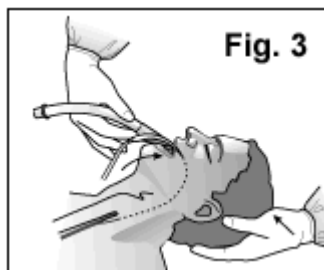
Medical Procedure M-1
01/2008



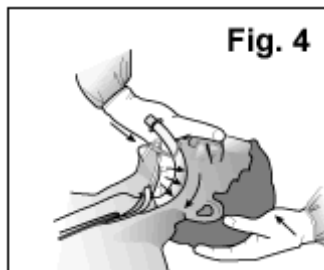
Tightly deflate the cuff so that it forms a smooth "spoon-shape" (Fig. 1). Lubricate the posterior surface of the mask with water-soluble lubricant.



Hold the LMA™ airway like a pen, with the index finger placed at the junction of the cuff and the tube.

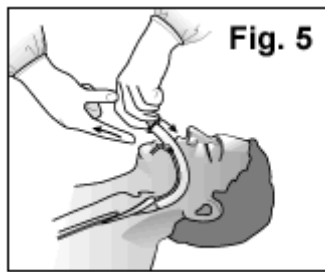


With the head extended and the neck flexed, carefully flatten the LMA™ airway tip against the hard palate.

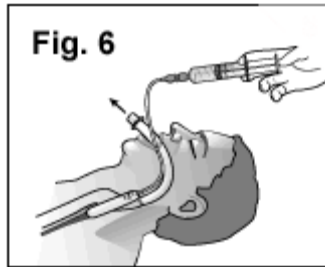


Use the index finger to push cranially, maintaining pressure on the tube with the finger. Note position of the wrist. Advance the mask until definite resistance is felt at the base of the hypopharynx (Fig. 4).

Medical Procedure M-2
01/2008



- Gently maintain cranial pressure with the non-dominant hand while removing the index finger (Fig. 5).



Without holding the tube, inflate the cuff with just enough air to obtain a seal (to a pressure of approximately 60 cm H₂O)(Fig. 6). Never overinflate the cuff.

An improperly placed *LMA*[™] airway, a mask with too little or too much air in the cuff, an *LMA*[™] cuff that has folded back on itself, and/or too small an *LMA*[™] device for size of the patient can cause an air leak. Check the position of the *LMA*[™] cuff and reinsert or replace, as necessary. Do not simply add more air to the cuff, as adding air may increase tension in the cuff, pushing it away from the laryngeal opening.

When using assisted or positive pressure ventilation with the *LMA*[™] device, high airway pressures can cause the mask to leak. Reduce the airway pressure by lowering the tidal volume, lowering the inspiratory flow rate, increasing muscle relaxation, or treating bronchospasm if present.

For more information see website <http://www.lmana.com>

Medical Procedure M-2
01/2008

CPAP (Continuous Positive Airway Pressure) for CHF

- CPAP enables the EMT/paramedic to immediately treat the CHF/pulmonary edema patient who can cooperate, has adequate spontaneous respirations and a stable airway. Currently CPAP used in this protocol is for pulmonary edema with the 10 mmHg peep valve.
- Indications: Acute respiratory distress demonstrated by two or more of the following:
 - Retractions or Accessory muscle use
 - Tachypnea (respiratory rate >25/min)
 - Pulse oximetry reading <90%
 - Bibasilar or diffuse rales or medical history and presenting complaints consistent with cardiogenic pulmonary edema.
- Contraindications: Endotracheal intubation should be considered for any patient who exhibits one or more of the contraindications listed below:
 - Respiratory or cardiac arrest
 - Systolic blood pressure < 90mmHg
 - Severely depressed level of consciousness
 - Inability to maintain airway patency
 - Major trauma, especially head injury with increased ICP or significant chest trauma
 - Vomiting
 - Signs and symptoms of pneumothorax
 - Gastric distention
- Procedure:
 - Place the patient in a seated position with legs dependent
 - Monitor ECG and vital signs (BP, HR, RR, SpO2 EtCO2 with nasal Prongs)
 - While one member of the team is setting up the CPAP equipment, the second team member should treat the patient according to established CHF treatment protocols
- Intubation should be considered if the patient fails to show improvement with CPAP as evidenced by:
 - Sustained or increased heart rate, respiratory rate, and blood pressure
 - Sustained or decreasing pulse oximetry readings
 - Decrease in the level of consciousness
- Setting up the system:
 - Assemble all the Whisper flow equipment. Connect the flow generator to a 50psi oxygen source. This may be the DSSI port or a quick connect on an oxygen cylinder. Maintain a filter on the air entrainment port of the generator at all times. (Replace with a clean filter in place after use)
 - Assemble the patient mask, securing device, tubing and 10mmHG CPAP valve.
 - The whisper flow generator operates at a fixed 28% O2 concentration and a full tank will last approximately:
 - “D” Cylinder = 28 minutes (portable tank)
 - “M” Cylinder + 236 minutes

- Documentation:
 - The use of CPAP must be documented
 - Vital signs (BP, HR, RR, SpO2 ETCO2) must be documented every 5 minutes
 - Narrative documentation should include a description of the patient's **response** to CPAP. Refer to "Goals of CPAP" for some descriptive terms that may be useful.
 - Additional narrative documentation should include if the patient does not respond to CPAP and endotracheal intubation is required.

The use of CPAP in this protocol has not been approved for the treatment of respiratory distress due to: COPD, emphysema, asthma, or inhalation injuries at this time.

ResQPOD

(Perfusion on Demand)

- The ResQPOD is an Impedance Threshold Device (ITD) that improves hemodynamics and increases the return of spontaneous circulation in cardiac arrest. The device regulates pressures within the thorax which:
 - Doubles the blood flow to the heart
 - Increases blood flow to the brain by 50%
 - Doubles the systolic blood pressure
 - Increases survival rates
 - Increases the likelihood of successful defibrillation

Indications:

- This device should be use on all patients in cardiopulmonary arrest if it is available and not otherwise contraindicated

Contraindications:

- Flail Chest
- Pediatric patients under twelve year of age or eighty pounds
- Discontinue use after the return of spontaneous respiration or circulation
- Do not use on patients who are breathing or have a pulse

Cautions:

- If the lights malfunction leave the ResQPOD in place as the internal diaphragm mechanism is independent of the lights (Ventilate at 8-10/minute)
- If the Res-Q-POD fills with blood or fluids remove it from the ET Tube and shake the fluids out and reapply

Operation:

- Use with a BVM and oral or nasal airway
 - Attach the ResQPOD to the mask
 - Ventilate after each light blink for (10/min)
 - Maintain an airtight seal
- For an intubated patient or with the use of an LMA
 - Attach the ResQPOD to the ETT or LMA
 - Attach capnography to the ResQPOD
 - Ventilate after each light blink (10/min) with an appropriate tidal volume

Documentation:

- When the ResQPOD is used it shall be documented in the narrative of the patient care report

12-LEAD ECG PROTOCOL

The potential for identification of some patients with an acute Myocardial Infarction (AMI) in the field exists with acquisition of a prehospital 12-lead ECG. For treatment of cardiac chest pain or an acute MI, see Cardiac Protocols, section O. EMT Basic and Intermediates may set up and get 12 Lead EKG's only in the presence of Paramedic.

- A. A 12-lead acquisition should be performed on the following patients.
 - 1. Adults with a complaint of non-traumatic, cardiac chest pain
 - 2. Patients whom the paramedic suspects AMI for any reason.
 - 3. Patients on whom a physician requests that the paramedic do a 12-lead ECG for Evaluation.
 - 4. All patients with previous cardiac risk factors and diabetic patients with medical complaints.
 - Risk Factors:
 - 1. Smoker
 - 2. HTN history
 - 3. Obesity/Sedentary
 - 4. Diabetes
 - 5. Family history
 - 6. Elevated Cholesterol
 - 5. Patient with upper abdominal pain.

- B. Criteria for exclusion of a 12-lead acquisition:
 - 1. A patient for whom the acquisition of a prehospital 12-lead ECG will cause significant time delay.
 - 2. A patient who refuses to allow a 12-lead ECG to be performed.
 - 3. Any other circumstance that is not in the best interest of the patient.

- C. Acquisition
 - 1. Lead Placement - Limb leads (augmented leads). The limb leads are the paramedic's first response to acquire rate and rhythm. Four patches are required for this procedure.
 - a. Left anterior axillary line - Left anterior shoulder
 - b. Right anterior axillary line - Right anterior shoulder
 - c. Left anterior superior iliac crest - left hip
 - d. Right anterior superior iliac crest - right hip
 - 2. Lead placement - Precordial leads
 - a. V-1, fourth intercostal space just to the right of the sternum.
 - b. V-2, fourth intercostal space just to the left of the sternum.
 - c. V-3, in between V-2 and V-4
 - d. V-4, fifth intercostal space mid-clavicular line.
 - e. V-5, anterior axillary line level with V-4
 - f. V-6, mid axillary line level with V-4 and V-5
 - g. V-4R, fifth intercostal space in right mid-clavicular line.

12-lead ECG, continued

3. What each lead sees
 - a. Leads I, AVL, V-5, V-6 lateral wall, left ventricle
 - b. Leads II, III, AVF inferior wall, left ventricle
 - c. Leads V-1, V-2 septal wall, left ventricle
 - d. Leads V-3, V-4 anterior wall, left ventricle
 - e. Leads V4R right ventricle

D. Procedure

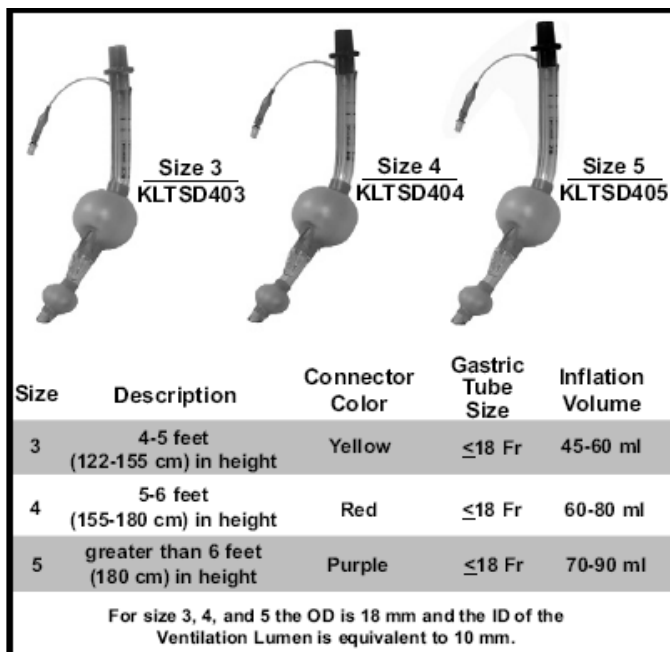
1. 12-lead interpretive findings should be reported to on-line Medical Control during the patient assessment and sent via cell phone if possible.
2. If an AMI is suspected, the Thrombolytic check sheet should be filled out on the way to the hospital, as time permits.
3. A copy of the 12-lead ECG will be hand delivered to the receiving hospital with the patients name appearing on the 12-lead. A second copy of the 12-lead shall be attached to the run report.
 - a. Attach the precordial leads and acquire the 12-lead while the patient assessment is taking place.
 - b. Acquire the 12-lead ECG in the patient's residence or incident location prior to moving the patient to the vehicle or in vehicle just prior to beginning transport.
 - c. Towels should be used as needed to protect the modesty of your patient. In the female patient, the chest leads must be positioned under the breast.
 - d. When time allows, acquire a second 12-lead ECG during transport AFTER the administration of a Nitro, Lidocaine, Fentanyl or other medication.
 - e. If defibrillation, synchronized cardioversion or pacing is necessary, quickly remove the necessary precordial leads to allow for quick combo patch placement and proceed with the appropriate protocol or place pads below such pads.
 - f. If feasible, the 12-lead ECG should be acquired with the patient in the supine position. Do not, however, compromise your patient to acquire it. Many of your cardiac patients will be orthopneic and unable to tolerate the supine position. Write on the 12-lead what position it was acquired in.

King LTS-D Airway

The King LTS is a “dual lumen” airway designed for use as a primary or back up airway in the event intubation is not authorized or not successful. It is approved for EMT-B, EMT-I or Paramedic scope of practice. It can and should be used with capnography and a 16 or 18 fr. Nasogastric tube can be placed through the Gastric Access Lumen to decompress the stomach. Size of device is based on height of the patient with a size four being the most widely used size for patients 5-6 feet in height. (see attached size chart),

Procedure:

1. Assess for absence of gag reflex, hypoventilation or apnea and visible foreign body in airway.
2. Choose appropriate size based on height.
3. Position the patient in sniffing position (if c-spine injury not suspected) and do chin lift after grasping lower jaw.
4. Introduce King-LTS-D airway into mouth and under base of the tongue rotating tube to the midline.
5. Advance tube till connector is aligned with teeth.
6. Inflate cuff according to size
7. Attach BVM while gently ventilating, slowly withdraw tube until ventilation is easy and free flowing with visual chest rise and fall.
8. Attach capnography device to monitor ventilation.
9. Secure device noting depth of insertion.
10. May decompress stomach by insertion of lubricated 16 or 18 fr NG tube and attach to suction.
11. Ventilate every 6 seconds with 100% oxygen.



BASIC PROTOCOLS

BASIC PROTOCOLS

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EMT-B USE OF PRESCRIBED ALBUTEROL INHALER

INDICATIONS:

MUST MEET BOTH:

1. Patient exhibits signs and symptoms of severe respiratory distress with history of Asthma, COPD or the patient is wheezing.
2. Patient has a physician prescribed hand held Albuterol inhaler or a prescription for one.

CONTRAINDICATIONS:

1. Patient unable to use device (decreased mental status)
2. Albuterol Inhaler not prescribed for patient
3. Medical direction denied authorization for use
4. Patient has taken maximum dose prior to EMS arrival, six (6).

ADMINISTRATION:

1. Assure Albuterol inhaler is prescribed for patient
2. Assure patient is alert and orientated
3. Check expiration date on inhaler
4. Assure the patient has not taken max. dose prior to EMS arrival
5. Assure Albuterol inhaler is room temperature or warmer
6. Shake vigorously several times
7. Have patient exhale deeply
8. Connect inhaler with the Aerochamber
9. Have patient place Aerochamber in mouth
10. Have patient depress inhaler as they inhale deeply
11. Instruct patient to hold breath as long as comfortable before exhaling
12. Administer oxygen as indicated
13. Allow patient to breath several times and repeat second dose if authorized to so
14. Monitor vital signs and respiratory efforts
15. Perform BLS treatment as indicated

SIDE EFFECTS:

- 1 Increased heart rate
- 2 Tremors
- 3 Nervousness

EMT-B USE OF EPINEPHERINE AUTO-INJECTOR

INDICATIONS:

MUST MEET BOTH

1. Patient exhibits signs and symptoms of severe allergic reaction to include:
 - a. Respiratory distress and wheezing
 - b. Hives/Itching
 - c. Shock symptoms, delayed cap refill > 3 seconds
2. Patient has a physician prescribed medication.

NOTE: The EMT may take an Epi-Pen out of stock drugs if one (1) following condition exists.

1. The patient's own medication is determined to be beyond the expiration date.
2. The patient's own medication is empty or malfunctioning
3. The patient does not have their Epi-Pen with them at the time of the emergency.

CONTRAINDICATIONS:

1. None

ADMINISTRATION:

If ALS not immediately available administer EPIPEN Autoinjector for age greater than 8yrs or 55 lbs otherwise use EpiPen Jr.

1. Assure medication is prescribed to your patient
2. Assure medication is not discolored
3. Remove cap from auto - injector
4. Place tip of auto - injector against patient's thigh lateral portion of thigh midway between waist and knee
5. Push firmly against thigh until injector activates
6. Hold injector in place until medication is injected (at least 10 seconds)
7. Properly dispose of injector
8. Reassess patient

CONTINUED TREATMENT:

1. If the patient's condition continues to worsen (decreased LOC, increased Dyspnea, hypotension)
 - a. Transport immediately to the closest hospital
 - b. Contact medical control for authorization of a second dose if available
 - c. Administer BLS procedures as indicated

SIDE EFFECTS:

1. Elevated heart rate
2. Pallor
3. Dizziness
4. Chest pain
5. Headache
6. Nausea/Vomiting
7. Anxiety

BLOOD GLUCOSE METER

The Blood Glucose Meter is the device used for determining the patient's blood glucose level and giving a plasma value in milligrams per deciliter. Blood for testing may be either capillary or venous. It should be noted, venous and capillary values may differ 10%. If the Blood glucose Meter malfunctions for any reason, this should not hinder patient care. Paramedics and all trained Em's may do this procedure.

A. Blood Glucose Testing

1. Safe scene, universal precautions
2. Explain procedure to patient.
3. Prep area with alcohol wipes and let dry
4. Turn on the Blood Glucose Meter
5. Obtain either capillary or venous sample preferably a capillary and put on test strip.
6. Place test strip in meter. Glucose reading will take approximately 30 seconds.
7. Document reading on run form.

Protocol for Administration of Aspirin by Basic and Intermediate EMTs

Indications:

Patients presenting with chest pain or signs/symptoms of Acute Coronary Syndrome such as: jaw pain, arm pain, diaphoresis, dyspnea, and tachycardia when the patient has a hx. of diabetes, hypertension, coronary artery disease, smoking, or age greater than 30 with any of the above signs or symptoms.

Contraindications:

- ✓ Aspirin Allergy – TRUE history resulting in hives, itching, dyspnea, & hypotension.
- ✓ Active Gastro-Intestinal bleeding.
- ✓ New signs/symptoms of a Cerebral Vascular Accident (Stroke).
- ✓ Any bleeding disorders.

Procedures:

1. E.M.T. shall assess for existence of any “Contraindications”. If true contraindication(s) exist, than Aspirin **shall not** be administered.
2. If patient presents with any of the “Indications”, four (4) 81mg tablets of children’s chewable aspirin shall be given by mouth. Have the patient chew and swallow the tablets (use minimal amount of water, only if needed).
3. **NOTE:** Prior to administration ensure the aspirin strength is 81mg/tablet, and that the medication has not expired.
4. Patient (written) report must reflect time of aspirin administration, and the absence of all contraindications. Verbal notification must be given to paramedics and/or hospital as to the administration of the aspirin.

EMT Intermediate Scope of Practice

The EMT Intermediate medication shall be kept in a separate box, bag or pouch and shall be tagged with a unique numbered tag and access to such shall be logged with each entry into the medication box, bag or pouch. EMT Intermediates SHALL NOT have access to Paramedic Drug box or Drug storage Lockers without a supervising Paramedic physically present. They shall have extended scope of practice Only when a Paramedic is physically present.

Independent Practice without a supervising Paramedic shall allow the following medication administration and skills according to protocol:

1. Epinephrine 1:1000 IM, Epi Pen and Diphenhydramine (Benedryl) 50 mg IV, IO, IM for Anaphylactic Shock
2. Dextrose 50% IV for Blood sugar < 60 mg/dl, or if blood sugar < 80 mg/dl and the patient has signs and symptoms of hypoglycemia. If no IV can be established, administer 1 unit Glucagon IM.
3. Albuterol or other approved bronchodilator via nebulizer or nebulizer mask for treatment of asthma or COPD per according to protocol.
4. Naloxone 4 mg IV, IM, Nasal, IO for suspected narcotic overdose per protocol.
5. Orotracheal Intubation for Apneic patients if and only if End tidal capnography is immediately available.
6. Needle decompression of Tension Pneumothorax
7. Nitroglycerine SL For chest pain (BP > 110 mmHg)
8. Versed IV IO or IM for seizures according to ALOC and seizure protocol
9. Fentanyl IV, IM, or IN for treatment of chest pain or isolated extremity trauma

Any implementation of EMT _I_ protocols without a paramedic present shall trigger an immediate supervisor review and Medical Director will be contacted as soon as practical .

Some agencies have chosen to not stock Scheduled narcotics or benzodiazepines in the intermediate medication bag and in these departments a supervising Paramedic will need to be present for access and administration of such scheduled medications.

Advanced EMT IV Access

Advance EMTs may start IV's or Saline Locks for the following medical reasons:

- Cardiac or Respiratory Arrest
 - Chest Pain
 - Symptomatic Bradycardia
 - Symptomatic Tachycardia
 - Hypotension (systolic below 100 with other signs or symptoms)
 - Hypertension (diastolic above 130)
 - Shortness of Breath associated with COPD, Asthma, Pulmonary Edema, CHF, Pneumonia
 - Hypothermia / Frostbite
 - Hyperthermia
 - CVA
 - Altered Mental Status
 - Poisons and Overdoses
 - Seizures
 - Syncopals
 - Anaphylaxis
 - Abdominal Pain, Vomiting, Diarrhea
 - Shock, of any type
 - Vaginal Bleeding / OB
 - Burns
 - Drownings or near Drownings
 - Trauma
 - Dehydration
-
- Only peripheral IV's can be established by the Advanced EMT.
 - Advanced EMTs **cannot** access Central Lines, Port-a-caths
 - Whenever an IV or Saline Lock has been established you must include location of IV start, size of catheter, type of IV solution and rate of drip, and how many attempts on your run sheet.
 - Type of solution to be used is 0.9% Sodium Chloride (Normal Saline).

Advanced EMT IV Access cont:

- The only time an IV should be ran at wide open or bolus is for Hypotension (with other signs and symptoms), or Hypovolemic Shock. All other IVs should be at TKO (to keep open). Whenever IV is running wide open, or when bolusing a patient, reassess lungs sound frequently. Watch for Pulmonary Edema. Boluses are given at 20 cc/Kg, reassess patient after each bolus.
- Whenever an IV has been established consider ALS backup.

SALINE LOCKS

Patient not needing IV fluids but in need of IV access in case of future problems may have a Saline Lock or capped IV started.

1. Flush saline lock device with Normal Saline
2. Start IV per protocol
3. Place saline lock device on IV catheter hub
4. Flush with 3 cc of normal saline

Interfacility MEDICATION

INFUSION



PROTOCOLS

Medication Infusion Protocols

NITROGLYCERINE DRIPS

1) SPECIFIC INFORMATION

- A) Nitro drips will be in a glass bottle. Care must be taken during transport to avoid breakage. Secure to IV pole with Tape or Velcro Strap
- B) Standard concentration of Nitro is 50 mg in 250ml D5W which then equals 200 micrograms per ml.

2) SPECIFIC OBJECTIVE FINDING

- A) The patient must be on a cardiac monitor throughout transport
- B) Nitro drips are to be pre-established or initiated by ems protocol for chest pain or pulmonary edema as permitted in authorized locations.
- C) If a transfer, check with the transferring institution to see if the drip is maintenance or to be titrated
- D) All Nitro drips must be on a pump.

3) TREATMENT (for patients with orders for titration)

- A) B/P to be taken and documented every 5 minutes with heart rate and patient response during titration
- B) Systolic B/P should be maintained at no less that 120mmHg or as ordered.
- C) Nitro can be increased 10mcgs=3cc every 5 minutes provided B/P is within normal limits for parameters
- D) After 40 mcg, increase without pain relief may give Fentanyl 50micrograms before continuing titration
- E) Maximum drip rate without med orders, will be 100 mcg
- F) If B/P drops below 100, decrease by half or stop the drip. If B/P does not increase to above 90 within 1-2 minutes, bolus patient with 250 cc normal saline if lungs are clear throughout.

4) TREATMENT (for patients without orders for titration)

- A) On all Nitro drips that are not to be titrated, B/P, heart rate, and patient's response must be documented no less than every 15 minutes. Decrease or dc if Bp falls below 100 mmHG.

10 micrograms/minute	3 ml/hr
20 micrograms/minute	6 ml/hr
30 micrograms/minute	9 ml/hr
40 micrograms/minute	12 ml/hr
50 micrograms/minute	15 ml/hr

POTASSIUM DRIPS

- 1) SPECIFIC INFORMATION
 - A) Potassium drips are to be done by paramedic interfacility transport only
 - B) Patient must be on a cardiac monitor throughout transport
- 2) SPECIFIC OBJECTIVE FINDINGS
 - A) Potassium drips are to be on a pump throughout transport
 - B) Ordered drip rates should be established before transport
 - C) Potassium drips are to be pre-established
- 3) TREATMENT
 - A) These drips are not to be titrated or bolused
 - B) Drips rate may not exceed 10 meq Potassium per hour
 - C) In the event of ventricular arrhythmia's, especially idioventricular, multi-focal ventricular ectopy, or asystole, medical control should be established immediately

HEPARIN DRIPS

- 1) SPECIFIC INFORMATION
 - A) Heparin drips are to be done by paramedic interfacility transports only
 - B) Heparin drips are to be pre-established
- 2) SPECIFIC OBJECTIVE FINDINGS
 - A) Heparin rates should be established before transport
 - B) Common concentration is 25,000 units in 250 ml
 - C) Dosages commonly at 15 units /kg/hr max 1200 units/hr
- 3) TREATMENT
 - A) Heparin drips are to be on a pump throughout transport
 - B) These drips are not to be titrated or bolused
 - C) In the event of excessive bleeding, immediate contact with medical control should be established

INTEGRILIN (eptifibatide) DRIPS

- 1) SPECIFIC INFORMATION NEEDED
 - A) When was drip started
 - B) Rate of drip and current dosage
 - C) To be done by paramedic interfacility transports only
- 2) SPECIFIC OBJECTIVE FINDINGS
 - A) Patient's past medical history
 - B) Current vital signs at time of pick up
 - C) Drips will be pre-established before transport
 - D) Ordered drip rate will be obtained before transport
 - E) Common concentration is 200mg in 100 cc (2 mg/ ml)
 - F) Dosage at 2 micrograms/kg/min
- 3) TREATMENT
 - A) Must be on a pump during transport
 - B) Drips are not to be titrated or Bolused

- C) Patient must be on a cardiac monitor
- D) In the event of excessive bleeding or adverse patient condition, contact medical control
- E) Frequently check all IV sites for bleeding
- F) If patient requires Lasix do not administer it through the same line that the Integrilin is running.
If needed, start an additional line.

NATRECOR (NESIRITIDE) DRIPS

- 1) SPECIFIC INFORMATION NEEDED
 - a) When was drip started
 - b) Rate of drip and current dosage
 - c) Other medications given for Acute CHF
- 2) SPECIFIC OBJECTIVE FINDINGS
 - a) Patient's past medical history
 - b) Current vital signs at time of pick up
 - c) Drips will be pre-established before transport
 - d) Ordered drip rate will be obtained before transport
 - e) Common concentration is 0.75 mg in 125 cc D5W at (6mcg/ml)
 - f) Dosage 0.01 micrograms/kg/min
- 3) TREATMENT
 - a) Must be on a pump during transport
 - b) Drips are not to be titrated or Bolused
 - c) Patient must be on a cardiac monitor with vitals every 5 minutes
 - d) Half ordered dose or stop if blood pressure lowers below 100 mg systolic.

Dopamine, Epinephrine and Cardiazem drips can also be utilized for Interfacility transport.

Antibiotics, TPN with additives, and Blood products are not authorized by the State of Ohio in the Paramedic scope of practice and as such cannot be maintained during a interfacility transfer. Such can be discontinued and restarted by receiving facility upon arrival.