CITIZENS MEMORIAL HEALTHCARE
Emergency Medical Services
Adult Protocol Index

MEDICAL PROTOCOLS

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CITIZENS MEMORIAL HOSPITAL
PRE-HOSPITAL SERVICES
AMBULANCE

PRE-HOSPITAL PATIENT CARE PROTOCOLS

These pre-hospital patient care protocols have been designed to assist the Citizens Memorial Hospital (CMH) Emergency Medical Technicians (EMT), Emergency Medical Technician-Paramedics (EMT-P)), and the Emergency Medical Services Physicians in coordinating and standardizing the care administered to patients at the scene of their illness or injury, and during transport to the hospital. These protocols will provide emergency Medical Technicians and Paramedics with standing written orders so that they may provide immediate definitive therapy.

These protocols have been compiled and approved by the CMH Pre-Hospital Services Physician medical Director. Any request for additions, deletions, changes, or exceptions must be submitted to the Medical Director for action.

Many protocols were utilized in forming these procedures. The Missouri Division of Health recommended treatment and drug guidelines for Advanced Life Support Ambulance Services provided the format and much of the procedure content. Information from the University of Missouri, Maryland Institute for Emergency Medical Services, Kansas State paramedic protocols, and the American Heart Association were some of the additional sources utilized in forming the following guidelines.

Citizens Memorial Hospital and Citizens Memorial Hospital Pre-Hospital Services does retain the right and obligation to periodically review and update the following treatment guidelines.

MEDICAL DIRECTOR LETTER OF AGREEMENT

Dr. Roger Merk M.D. DOES hereby agrees to be the Medical Director of Citizens Memorial Hospital Ambulance Service.

I agree to take an active part in the Service as the Medical Director. The following are the agreed upon roles and responsibilities:

1. The Medical Director, in cooperation with the Ambulance Service Administrator, shall ensure that all licensed service personnel meet the education and skills competencies required for their level of license and their patient care environment. The Medical Director shall have the authority to require additional education and training for any licensed service personnel who fail to meet this requirement and limit the patient care activities of those who deviate from established standards.

2. The Medical Director, in cooperation with the Ambulance Service Administrator, shall be responsible for the development of Ambulance Service protocols in the areas of medical and treatment protocols for medical, trauma, and pediatric patients; triage and transport protocols; DO-Not-Resuscitate request protocols; air ambulance utilization protocols; and protocols for medications and equipment to be utilized.

3. The Medical Director shall meet monthly with the Ambulance Service Administrator. The Ambulance Service Administrator shall be responsible for pulling trip reports meeting certain criteria such as cardiac arrest, major trauma. The trip reports shall be presented to the Medical Director for a review by both the Medical Director and Ambulance Service Administrator.

4. The Medical Director, in cooperation with the Ambulance Service Administrator, shall be responsible for conducting a formal audit on particular calls where questions of patient care have arisen. The audit shall be directed at serving educational purposes and shall not be used, at least initially, for any disciplinary measures except for limiting the scope of practice of EMS personnel when appropriate or necessary as provided in paragraph 1 above.

5. The Medical Director, in cooperation with the Ambulance Service Administrator, shall develop and implement a quality assurance and improvement program which includes a review of, but is not limited to, prolonged ambulance response, scene, or transport times; incomplete run documentation; ambulances that are diverted from their original destinations; compliance with adult and pediatric triage, treatment, and transport protocols; skill performance; and any other activities that the Ambulance Service Administrator or Medical Director deem necessary.

6. The Medical Director shall be required to meet at least annually with all the service personnel in order to ascertain whether they have any general questions, problems, or concerns regarding medically related issues. The Medical Director shall represent the Ambulance Service to the medical community and shall conduct discussions with local emergency department personnel and local physicians who have questions or concerns regarding the medical aspects of the Ambulance Service.

7. The Medical Director shall be responsible for providing input to the Board concerning recommendations for special training programs for personnel.

8. The Medical Director shall be involved in the review of all new equipment and medications and shall at least annually review medications utilized by the Ambulance Service in order to assure that useless medication is not being carried.

The following is the outlined grievance procedure a department staff member will need to follow if they do not agree with actions taken by the Medical Director:

Within three (3) days of action follow the procedure below:

1. Talk the problem over with your immediate supervisor. If you request in writing, your Supervisor will officially answer you within three (3) working days. If an understanding is not reached, you may use the next step.
2. Within three (3) working days of your Supervisor's answer, you may approach your Department Head/Administrative Assistant. If you wish, the Director of Human Resources will accompany you and assist in your presentation of facts. If you request in writing, the Department Head will answer you within three (3) working days. If no understanding is reached, you may use the next step.
3. Within three (3) working days of the Department Head's answer, you may submit to the CEO/ Executive Director a written request for review. If you desire, the Director of Human Resources will assist in writing the request and accompany you and assist in your presentation to the CEO/Executive Director. The CEO/Executive Director will answer you within three (3) working days. His decision is final and binding.

I have read and reviewed this agreement and understand my responsibilities.

_____

Roger Merk M.D.

MEDICAL PROTOCOL APPROVAL AND MEDICAL CONTROL PLAN

As Physician Medical Director for the Pre-Hospital Services of Citizens Memorial Hospital; I have reviewed these protocols and have approved the following protocols, and consent to their use as standing written orders. These orders are to be used by Missouri State Licensed EMT's, Paramedics, and Registered Nurses employed by Citizens Memorial Hospital.

As provided for in Missouri Law, the Paramedic may render Basic Life Support nd the Following Advanced Life Support procedures according to the following protocols, prior to contacting the medical control physician. Registered Nurses, when working on the Ambulance may initiate protocols and perform any procedure for which trained.

Emergency Medical Technicians (EMT's) may perform all Basic Life Support Procedures and assist the Paramedic and/or Registered Nurse as directed.

I have reviewed the ambulance equipment, supply, and medication inventory and approve of the configuration of CMH ambulances.

Unless specifically approved by online Medical Control, a patient should not be transferred from the care of CMH Ambulance Service to another agency or hospital that has personnel with a lesser level of EMS training or competency that what CMH Ambulance Service is providing at the scene or during transport.

Jeff Smieshek DO,
Physician Medical Director
Pre-Hospital Services
Citizens Memorial Hospital

Medical Assessment Protocol

Confirm Scene Safety

Appropriate Body Substance Isolation Precautions

Nature of Illness Number of Patients

Evaluate Need for Assistance

B.L.S.	
ABCs and LOC Focused History & Physical Exam	
RESPONSIVE	UNRESPONSIVE
S.A.M.P.L.E. History Focused Assessment Baseline Vital Signs Treatment Decision BLS/ALS Treat per Appropriate Protocol Transport	A.L.S. PATIENT

A.L.S.	
ABCs and LOC Focused History & Physical Exam	
RESPONSIVE	UNRESPONSIVE
S.A.M.P.L.E. History Focused Assessment Baseline Vital Signs Treatment Decision BLS/ALS Treat per Appropriate Protocol Transport	Rapid Medical Assessment Baseline Vital Signs S.A.M.P.L.E. History Treatment Decision ALS Treat per Appropriate Protocol Transport

GENERAL MEDICAL PROTOCOL
PATIENT CRITERIA

Adult medical patients with any one for the following signs or symptoms should be transported ALS

Signs

Systolic Blood Pressure <100
Pulse Rate <60 or >120
Respiratory Rate <12 or >30
Clinical Signs of Shock
Pulse Oximeter reading <90
- On room air or prescribed O2

Need for IV fluids or medications

Symptoms

Altered Mental Status
Respiratory Distress
Chest Discomfort
Pain requiring analgesics

These protocols are guidelines to appropriate patient care:

- Medications and procedures requiring Medical Control are shaded in black boxes.
- In the event that Medical Control cannot be established, these protocols should be considered standing orders, as approved by the Medical Director.
- On-line Medical Control should be provided by the receiving facility.
- Any orders accepted from the sending facility should be consistent with these protocols.

DO NOT RESUSCITATE (DNR) REQUEST

Outside the hospital, Do Not Resuscitate (DNR) Requests are orders by a patient's physician to refrain from initiating cardiopulmonary resuscitative measures in the event of a cardiac or respiratory arrest. DNR Requests are compatible with maximal therapeutic care and the patient may receive vigorous support (intravenous lines (IV's), drugs) until the point of cardiac respiratory arrest.

CMH Pre-Hospital personnel can honor a DNR Request From when properly executed and presented.

9. If any doubt exists about the validity of the DNR Request Form, resuscitation should be initiated and medical control may be contacted.

10. The DNR Request form shall be signed and dated by the patient and the witness and patient's physician.

11. The DNR Request Form shall be with the patient when PHS personnel arrive.

12. No cardiac monitoring is necessary. No medical control contact is necessary.

13. If the DNR Request Form is presented after BLS/ALS support procedures are started, the PHS personnel can honor the form.

14. PHS personnel should assist appropriate agencies in documenting the existence and form number (i.e. fire, police, rescue squad). The DNR Request Form shall remain with the patient.

PHS personnel should document the number of the DNR Form, Physician's name and event that transpire.

TERMINATION OF RESUSCITATION IN THE FIELD

Studies show that patients in asystole or EMD who do not respond to ACLS procedures within the first fifteen to twenty minutes will not survive in the Emergency Department. Continued resuscitation efforts are traumatic to the patient, patient's family, costly, and hazardous to the EMS crew transporting the patient.

15. Perform ABC's

16. If breathing, cardiac output, and pulse are absent for ten minutes or less, start ACLS procedures. Factors that may influence this step would be clear evidence that a patient would refuse ACLS (i.e., a declaration of intent) or a clear indication of futility (i.e., a terminal illness or verifiable absence of ABC's longer than 10 minutes).

17. If patient develops asystole or EMD, full ACLS resuscitation efforts should continue at the scene for twenty minutes.

18. If patient remains in asystole or EMD, pulseless and non-breathing after twenty minutes of ACLS treatment, including assessment for treatable causes for EMD, Medical Control will be contacted and the emergency physician informed of these facts. The paramedic should consult with the emergency physician and the emergency physician may direct the paramedic to terminate resuscitation efforts.

19. Arrests in, drowning, poisonings, hypothermia, and children are excluded and will be fully resuscitated and transported.

20. Patients in whom an endotracheal tube or IV line cannot be inserted are excluded and will be fully resuscitated and transported.

21. If the resuscitation has been terminated, the paramedic will have the responsibility of informing the family that the patient has been declared dead by the emergency physician. If the family has questions about the decision, they will be referred to the emergency physician.

    After the resuscitation has been terminated and the family informed, the paramedic shall inform the law enforcement agency that has jurisdiction that a death has occurred. The paramedic shall remain on scene until law enforcement arrives. The paramedic will determine the appropriateness of leaving the scene, considering the family's needs.

Asystole

EMT - B | **EMT - P**

Confirm Pulselessness & Apnea,
Attempt to Determine Down Time, Prior CPR, History, & Code Status*
Begin CPR
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads

During CPR
Push hard and fast (100/min)

Ensure full chest recoil

Minimize interruptions in chest compressions. Initially, do not delay CPR for intubation.

CPR Cycle = Compressions:Ventilations 30:2
Unless a secured airway then continuous compressions and ventilate at 8 – 10 breaths per minute.

Avoid hyperventilation

Rotate compressors every 2 minutes with rhythm checks

Search for and treat possible causes

Confirm in 2 leads

IV NS or **EZIO**

Epinephrine 1:10,000 1mg IV/IO
Repeat every 3 minutes

Atropine 1mg IV/IO
Repeat every 3 minutes up to 3 doses

2 minutes CPR
Check rhythm

Consider & Correct Field Treatable Causes

Pulmonary Embolus
Acidosis
Tension Pneumothorax
Cardiac Tamponade
Hyperkalemia
Hypokalemia
Hypoxia
Hypovolemia
Hypothermia
Myocardial infarction
Drug overdose

Consider
Sodium Bicarb 1mEq/kg
IV/IO in
Tricyclic OD
Or
Hyperkalemia

If no response after 10 minutes,
CONTACT MEDICAL CONTROL
For possible termination of resuscitation **
Address decision to terminate with family and all personnel involved in resuscitative efforts.

Refer to Protocol Policies
* "Withholding of Resuscitation"
** "Termination of Resuscitation in the Field"

Pulseless Electrical Activity

EMT - B | **EMT - P**

Confirm Pulselessness & Apnea,
Attempt to Determine Down Time, Prior CPR, History, & Code Status*
Begin CPR
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads

During CPR
Push hard and fast (100/min)

Ensure full chest recoil

Minimize interruptions in chest compressions. Initially, do not delay CPR for intubation.

CPR Cycle = Compressions:Ventilations 30:2 Unless a secured airway then continuous compressions and ventilate at 8 – 10 breaths per minute.

Avoid hyperventilation

Rotate compressors every 2 minutes with rhythm checks

IV NS or **EZIO**

Epinephrine 1:10,000 1mg IV/IO
Repeat every 3 minutes

Atropine 1mg IV/IO
Repeat every 3 minutes up to 3 doses
For bradycardiac rhythm

2 minutes CPR
Check rhythm

Consider & Correct Field Treatable Causes

Pulmonary Embolus
Acidosis
Tension Pneumothorax
Cardiac Tamponade
Hyperkalemia
Hypokalemia
Hypoxia
Hypovolemia
Hypothermia
Myocardial infarction
Drug overdose

If no response after 20 minutes,
CONTACT MEDICAL CONTROL
For possible termination of resuscitation **
Address decision to terminate with family and all personnel involved in resuscitative efforts.

Refer to Protocol Policies
* "Withholding of Resuscitation"
** "Termination of Resuscitation in the Field"

V-Fib / Pulseless V – Tach

EMT - B | **EMT - P**

Confirm Pulselessness & Apnea,
Attempt to Determine Down Time, Prior CPR, History, & Code Status*
Begin CPR
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads

During CPR
Push hard and fast (100/min)

Ensure full chest recoil

Minimize interruptions in chest compressions. Initially, do not delay CPR for intubation.

CPR Cycle = Compressions:Ventilations 30:2
Unless a secured airway then continuous compressions and ventilate at 8 – 10 breaths per minute.

Avoid hyperventilation

Rotate compressors every 2 minutes with rhythm checks

If witnessed arrest, shock immediately at **200J**
If unwitnessed arrest, perform 2 minutes of CPR
Defibrillate once at **200J**
Immediately do CPR for 2 minutes after shock before rhythm or pulse checks.

Epinephrine 1:10,000 1mg IV/IO
Repeat every 3 - 5 minutes

Defibrillate once at **200J or higher**
Immediately do CPR for 2 minutes after shock before rhythm or pulse checks.

Lidocaine, 1-1.5 mg/kg IV may repeat in 3-5 minutes at **0.5 – 1 mg/kg** total of 3 doses or **3mg/kg** max

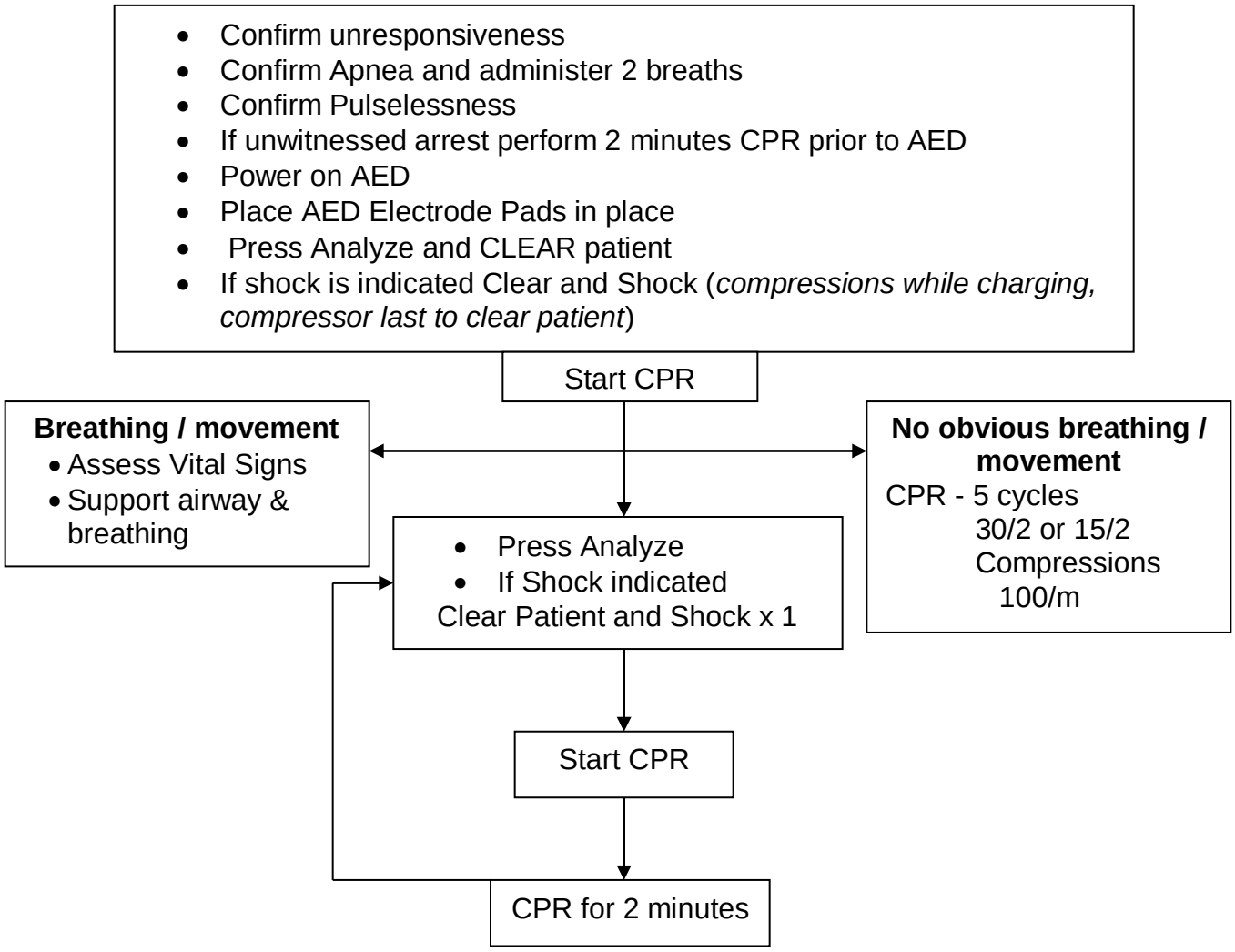
Consider **Mag-Sulfate 1-2 g IV/IO** for torsades de pointes

Refer to Protocol Policies
* “Withholding of Resuscitation”

Automated External Defibrillation (AED)

NOTE:
Request Advanced Life Support if not already enroute.

Do not use the Automated External Defibrillator (AED) on a Pediatric Cardiac Arrest unless the AED is equipped for and FDA approved for use in children less than 8 years of age!



Post Resuscitative Care

EMT - B | **EMT - P**

Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor, Quick Combo Pads
O2 Sat
Obtain Vital Signs

Obtain 12 lead EKG

Secure airway if necessary

Establish **IV of Normal Saline**
If not accomplished

Treat Rate & Rhythm problems per protocol.
If **Lidocaine** converted the rhythm, a maintenance drip is required
1 – 4 mg/min

If patient remains hypotensive, assess lung sounds for possible pulmonary edema.
If clear, administer fluid challenge of **250 – 500 cc's of NS**.
If ineffective, presence of pulmonary edema or B/P #70-100 systolic
Consider **Dopamine 5 – 20 mcg/kg/min drip**

Transport rapidly to the nearest facility with frequent reassessment of vitals.

Consider **Versed 2.5 – 5 mg** for tube tolerance

Chest Discomfort (Cardiac)

EMT - B | **EMT - P**

Calm and reassure the patient. **NO EXERTION**
O2 via appropriate delivery device
Attach ECG monitor & pulse oximetry

15 lead EKG
is indicated in all
- Normal EKGs
- Inferior MIs
- ST segment depression in V-leads.

Obtain 12 lead EKG
Consider 15 lead EKG*

Aspirin 324 mg
(**4 baby aspirin** – chewable)

IV of **Normal Saline**
Treat unstable dysrhythmias per protocol.

→ **IF RVI**

Nitroglycerin 0.4 mg SL
1 spray q 5 minutes prn pain
Up to 3 doses. (If BP is >100)
Use with caution in patient with evidence of Right Ventricular AMI

Consider **Nitroglycerin drip**. Start @ **10 mcg/ min** titrated to BP and pain.

Thrombolytic Checklist

Consider **Zofran 4 mg** Slow IV prn, N/V
May repeat one time

Morphine **Sulfate 2-10 mg** Slow IV,
Maintain BP >100 systolic

CONTACT MEDICAL CONTROL

Heparin Bolus
(Max dose **4000u** with **Retavase**)
Thrombolytics

Consider the use of air ambulance to expedite transport.

Bradycardia

EMT - B

EMT - P

Calm and reassure the patient. **NO EXERTION**
O2 via appropriate delivery device
Attach ECG monitor & pulse oximetry
Place Quick-combo pads Anterior / Posterior

Obtain 12 lead EKG

Consider application of pacer pads

IV/IO Normal Saline

HR <60, S/S of Shock, Chest Pain,
SOB Altered LOC, Hypotension, CHF/Pulmonary Edema

No

Yes

2^0 AV Block Type II
Or
3^0 AV Block

No

Yes

Transport

Prepare for TCP

If serious signs and symptoms occur, initiate TCP
Do not delay for IV attempts
Consider sedation
Versed 2.5 – 5 mg Slow IV

Initiate **TCP**
Do not delay for IV attempts
Consider sedation
Versed 2.5 – 5 mg Slow IV

Atropine 0.5 mg in 5 minutes
Up to a total of 3 mg

Consider
Dopamine drip 5 – 20 mcg/kg/min

CONTACT MEDICAL CONTROL

Consider **Epinephrine Drip 2 – 10 mcg/min**
(Mix 1 mg in 250 ml D5W = 4 mcg/ml

Tachycardia Narrow Complex

EMT - B | **EMT - P**

Calm and reassure the patient. **NO EXERTION**
O2 via appropriate delivery device
Attach ECG monitor & pulse oximetry
Place Quick-combo pads Anterior / Posterior

Obtain and transmit 12 lead EKG

IV Normal Saline

Stable
Ventricular Rate >150
Hemodynamically stable
Conscious, Alert, Oriented

Vagal Maneuvers Contraindicated for CAD

Adenosine 6 mg rapid IV, may repeat in 2 minutes at **12 mg** x2

Pulmonary Edema

No

Diltiazem 0.25 mg/kg IVP over 2 min. May repeat at **0.35 mg/kg** IVP after 15 minutes

Yes

Amiodarone 150 mg over 10 min. May repeat at **150 mg** over 10 minutes if rhythm returns

A-Fib / A-Flutter
Rate > 130

Pulmonary Edema

No

Diltiazem 0.25 mg/kg IVP over 2 min. May repeat at **0.35 mg/kg** IVP after 15 minutes

Yes

Amiodarone 150 mg over 10 min. May repeat at **150 mg** over 10 minutes if rhythm returns

WPW

Procainamide 20 mg/min
Until
- Arrhythmia subsides
- Hypotension
- QRS widens by more than 50%
- Total dose of **17 mg/kg**

Mix **1g** in **100 ml D5W = 10 mg/ml**
Drip at **2 ml/min** = **20 mg/min**
Maintenance Infusion
Mix **1g** in **250 ml NS = 4 mg/ml**
Drip at **1 mg/min** = **4 mg/min**

Critically Unstable
Ventricular Rate > 150

If patient is conscious consider sedation **2.5 – 5 mg Versed**
Do not delay Cardioversion
Perform synchronized cardioversion **120J**

A brief trial of **Medication** can be used if the patient can tolerate it. Do not delay Cardioversion if needed.

Tachycardia Wide Complex

EMT - B | **EMT - P**

Calm and reassure the patient. **NO EXERTION**
O2 via appropriate delivery device
Attach ECG monitor & pulse oximetry
Place Quick-combo pads Anterior / Posterior

Obtain and transmit 12 lead EKG

If supraventricular in origin use Narrow Complex Tachycardia Protocol

IV Normal Saline

Stable	**Torsades de Pointes**	**Critically Unstable**
Ventricular Rate >150		Ventricular Rate > 150
Amiodarone 150 mg IV over 10 minutes. **150 mg** in **100cc** of **D5W** dripped in over 10 minutes. May repeat as needed to a maximum of **2.2G** over 24 hours.	**Mag Sulfate 1-2 grams** over 5-60 minutes. Mix **1-2 grams** in **100 D5W**.	If patient is conscious consider sedation **2.5 – 5 mg Versed** Do not delay Cardioversion Perform synchronized cardioversion **120J** (If Polymorphic, use unsynchronized defibrillation at **200J**)

Mag Sulfate is indicated for prolonged Baseline QTc
QT interval divided by the RR interval should be less than 0.40
QT/RR <0.40

Ventricular Ectopy

EMT - B

EMT - P

Calm and reassure the patient. **NO EXERTION**
O2 via appropriate delivery device
Attach ECG monitor & pulse oximetry
Place Quick-combo pads Anterior / Posterior

Obtain and transmit 12 lead EKG

IV Normal Saline

Ventricular Ectopy
>6 min., Multifocal couplets, Bigeminy, R on T, Symptomatic due to PVCs

Treat the causes of the PVCs (infarction, ischemia)

CONTACT MEDICAL CONTROL
Consider **Lidocaine 1 mg/kg** IVP
Repeat at **0.5 mg/kg** every 10 minutes
until ectopy resolves or a total of **3 mg/kg** is given.
If ectopy resolves, **Lidocaine** drip at a rate of **2-4 mg/min.**
Consult Medical Control for further antiarrhythmic therapy.

Near Drowning / Drowning

EMT - B

EMT - P

Remove from water
Open & maintain airway
Begin CPR if necessary
Dry and warm patient
O2 via appropriate delivery device
Attach cardiac monitor Pulse oximetry
Be prepared to suction the patient

Near Drowning

Drowning

IV Normal Saline, Intubate if necessary

Monitor for Respiratory Compromise
Treat per appropriate protocol

If patient is in V-fib,
Defibrillate one time at
200J

Check body core temperature
Treat for hypothermia
DO NOT DELAY TRANSPORT

Treat cardiac dysrhythmias per specific protocol

Core Temp > 86
Code per protocol

Core Temp<85
CPR Only
IVs may be attempted if warm IV fluids are available.

Rapid transport to closest appropriate facility

Passive rewarming in route

Thermometer must be in "Monitor" Mode. After you remove the probe, while the thermometer is doing its self check, push and hold the "Pulse Timer" button until "Monitor Mode" appears.

Localized Cooling (Frostbite) / Hypothermia

EMT - B | **EMT - P**

Attempt to determine time of exposure
Remove patient from exposure
Remove wet or constrictive clothing from the site
O2 via appropriate delivery device (warmed if possible)
Obtain core temperature via rectal or oral
Do not attempt to thaw frozen tissue if there is a chance of refreezing
Cover the effected tissue with a loose, dry, sterile dressing
Transport to the hospital (Do not delay to thaw injured part).
Pulse oximetry monitor Attach cardiac monitor

Localized Cooling (Frostbite)

Hypothermia

Obtain temperature oral or rectal

IV Normal Saline warmed

Consider **Zofran 4 mg** Slow IVP, for N/V
May repeat one time.

Consider **Morphine 2 mg** q 5 min titrated to pain
Maintain SBP >100
Max 10 mg

or

Consider **Fentanyl 50-100 mcg IVP** q 5-20 minutes
Max 200 mcg

Hypothermic Cardiac Arrest

EMT - B

EMT - P

Attempt to determine time of exposure
Remove patient from exposure
Remove wet or constrictive clothing from the site
O2 via appropriate delivery device (warmed if possible)
Obtain core temperature via rectal or oral
Do not attempt to thaw frozen tissue if there is a chance of refreezing
Cover the effected tissue with a loose, dry, sterile dressing
Transport to the hospital (Do not delay to thaw injured part).
Pulse oximetry monitor Attach cardiac monitor

If patient is in V-fib, defibrillate 1 time at **200J**

Obtain core temperature

Core Temp > 86 degrees, work code per protocol.

Core Temp < 85 degrees, Continue CPR. (no ALS)

Rapid transport to the hospital
Do not attempt rewarming in the field.

IVs may be attempted if warm IV fluids are available.

Heat Exhaustion / Heat Stroke

EMT - B | **EMT - P**

Remove patient from hot environment
O2 via appropriate delivery device
Attach cardiac monitor Pulse oximetry

Heat Exhaustion	Heat Stroke
Body temp< 105^0	Body temp > 105^0
Treat specific complaints per protocol.	Rapid cooling is indicated. Attempt to reduce temperature to 102 degrees.

IV of NS or LR at 125 cc/hr.
Bolus therapy as needed for hypotension.

Monitor ECG closely for arrhythmias.
Treat per protocol.

Monitor core temperature.

Abdominal Pain / Nausea

EMT - B | **EMT - P**

Identify possible causes
O2 via appropriate delivery device
Attach cardiac monitor Pulse oximetry

IV **Normal Saline**

Consider
Zofran 4 mg Slow IVP
May repeat once

or

Phenergan 25mg IM
(If 65 years or older **12.5mg**)

Consider **Morphine 2 mg** q 5 min
titrated to pain, maintain SBP > 100
Max 10 mg

or

Consider **Fentanyl 50-100 mcg**
IVP q 5-20 minutes
Max 200 mcg

Altered Mental Status

EMT - B | **EMT - P**

Identify possible causes
O2 via appropriate delivery device
Attach cardiac monitor, pulse oximetry, glucometry

Hypoglycemia

IV Normal Saline
Draw blood samples and perform glucose check

Glucose <70 mg/dl

Thiamine, 100 mg IV

D-50W, 25g IV
or
Oral Glucose
Dependent of LOC

If unable to obtain Venous Access
Glucagon 1mg IM
Patient must be transported after administration.
Patient must eat after administration.

Narcotic Overdose

IV Normal Saline
Draw blood samples and perform glucose check

Glucose >70 mg/dl

Narcan 2-10 mg IV titrated @ **0.4mg** increments to maintain airway and respirations

STROKE

IV Normal Saline
Draw blood samples and perform glucose check

Complete Cincinnati Stroke Scale, grimace, arm droop, speech

Complete Stroke Thrombolytic Screen
Obtain 12 ECG

Activate Stroke Team

CONTACT MEDICAL CONTROL prior to PRC
If patient is on oral hypoglycemic and treated with D-50 or Glucagon patient SHOULD be transported
If I/O was inserted, Medical Control must be contacted prior to PRC

Anaphylaxis

EMT - B

EMT - P

Identify possible causes
Remove allergen
O2 via appropriate delivery device
Attach cardiac monitor, pulse oximetry

IV **Normal Saline** titrated to B/P

Epinephrine 1:1000, 0.3 to 0.5 mg IM
(Caution in Pts >55, w/CAD, cardiac history)

If patient is critical with BP <80 or unresponsive
Epinephrine 1:10,000, 0.3 Slow IV

Consider **Benadryl 25-50 mg** IV

Consider **Albuterol 2.5 mg**
via nebulizer for wheezing

Consider **Solu-Medrol 125 mg** IV

Behavioral Health Disorders

EMT - B	EMT - P
Verbal De-escalation Scene Safety – Law Enforcement for physical restraint if necessary If Etiology of altered LOC determined, follow appropriate protocol Obtain history of current event, crisis, toxic exposure, drugs ETOH, suicidal or homicidal ideations Obtain history of past medical/psychiatric illnesses	
Mild Responds to verbal de-escalation, police standby, and/or family Mild agitation/anxiety Oppositional Confused	**Moderate to Severe** Requires restraint for crew/patient safety, adequate evaluation, treatment, and/or transport Agitation/anxiety with potential for violence Combative, Delirium
Evaluate for medical or traumatic etiology Transport	4-point soft restraints *
Consider **Versed 2 mg** IV/IM for anxiety **Haldol 2.5-5 mg** IV/IM for agitation	**Haldol 5 mg** IV/IM for agitation Consider **Versed 2-4 mg** IV/IM for anxiety
Transport in position of comfort	Evaluate for medical or traumatic etiology Transport in position of safety
CONTACT MEDICAL CONTROL Patients requiring physical restraint or pharmacologic intervention must be transported Perform 12-lead ECG, Assess QT	

*

Poisoning / Overdose

EMT - B

EMT - P

Identify substance
O2 via appropriate delivery device
Attach cardiac monitor, pulse oximetry

IV **Normal Saline**

Protect airway if necessary

If altered LOC
Treat per appropriate protocol

CONTACT MEDICAL CONTROL
Discuss Poison Control's recommendation
Consider Activated Charcoal
Consider Sodium Bicarbonate for Tricyclic overdose

Contact Poison Control for information on specific substances

Hypertensive Emergencies

EMT - B | **EMT - P**

Identify possible causes
O2 via appropriate delivery device
Attach cardiac monitor, pulse oximetry

IV **Normal Saline**

Diastolic B/P over 115 – 130 mm/hg
Accompanied by nausea/vomiting, confusion, or blurred vision.
More severe symptoms include severe headache, chest pain, visual disturbances, paralysis, stupor, and coma.

CONTACT MEDICAL CONTROL
Consider **Labetalol** (Normodyne)
20 mg slow IVP over 2 minutes

or

Consider **Hydralazine** (Apresoline)
20 mg slow IVP over 2 minutes

Transport with the patient's head slightly elevated
Carefully monitor ECG and vitals
Treat other complaints per protocol or Medical Control orders

Respiratory Emergencies

EMT - B

EMT - P

O2 via appropriate delivery device
Attach cardiac monitor, pulse oximetry, obtain temperature

Assess the need to intubate

ASTHMA

Consider IV of Normal Saline

Albuterol 2.5 MG
Atrovent 0.5 MG
Duo-Neb
0r
Xopenex 0.63 MG
Via nebulizer

Epinephrine 1:1000, 0.3 – 0.5 mg SC
Caution in Pts >55, w/CAD, cardiac history

Consider **Solu-Medrol 125 mg** Slow IV

Congestive Heart Failure

Obtain and transmit 12 lead EKG

Consider C-PAP
Consider Saline lock

Nitroglycerin 0.4 mg SL
q 5 minutes if B/P is >100 up to 3 doses

Nitroglycerin drip 50 mcg/min if SBP >100 then titrate to maintain SBP>100 and pain.

Albuterol 2.5 mg via nebulizer

Dopamine infusion 2-15 mcg/ kg/min for SBP <100

Morphine Sulfate 2-10 mg Slow IV, maintain BP > 100 systolic.

Furosemide (Lasix) 40 mg IV or **80 mg** IV for patients currently on diuretics

C.O.P.D.

Consider IV of Normal Saline

Consider 12 lead ECG with Tachycardia

Albuterol 2.5 mg
Atrovent 0.5mg
Duo-Neb
Xopenex 0.63
Via nebulizer

Consider **Solu-Medrol 125 mg** Slow IV

OB/GYN Emergencies

EMT - B

EMT - P

O2 via appropriate delivery device
Inspect for Active Bleeding / Crowning Determine amount of blood loss
Attach cardiac monitor as needed Pulse oximetry
Orthostatic vital signs
Transport third trimester patients in left lateral recumbent position

Vaginal Bleeding

IV Normal Saline

Titrated to B/P

Hypertension

B/P over 140/90, abnormal weight gain, edema in face, hands and ankles, headache

Calm and reassure patient

If pregnant patient is actively seizing, give **Magnesium Sulfate 4 grams** IM or Slow IV (over 5 minutes) and manage seizure per seizure protocol

If patient is not seizing
Contact Medical Control
Consider **Magnesium Sulfate**
Dosage per medical control
Consider **Hydralazine**
Dosage per medical control

Dim lights in ambulance,
Avoid loud noises.

Consider Code 1 transport
(without lights or siren)

OB/GYN Emergencies

EMT - B | **EMT - P**

O2 via appropriate delivery device
Inspect for Active Bleeding / Crowning Determine amount of blood loss
Attach cardiac monitor as needed Pulse oximetry
Orthostatic vital signs
Transport third trimester patients in left lateral recumbent position

Preterm Labor	**Postpartum Hemorrhage**	**Emergency Childbirth**
IV Normal Saline		
500 – 1000 ml Fluid bolus	Rapidly infuse IV fluids, treat for shock Titrate IVs to B/P	If crowning, deliver infant
		IV Normal Saline Titrated to B/P
	Massage the fundus	Deliver Infant Suction airway Assess APGAR scores 1 & 5 minutes Ensure infant warmth
	Put the baby to nurse	
		Re-evaluate mother and infant Treat any problems per appropriate protocol

Status Seizures

EMT - B

EMT - P

Clear area to decrease chance of injury
O2 via appropriate delivery device
Attach cardiac monitor as needed Pulse oximetry

IV Normal Saline
Draw a blood sample, perform glucose test
If glucose <70mg/dl, treat per Hypoglycemia protocol

Valium 5-10 mg IV or Ativan 1 to 2 mg
If actively seizing, can be rectal if no IV access

If seizure activity continues contact medical control for further orders

TRAUMA ASSESSMENT PROTOCOL

Confirm Scene Safety

Appropriate Body Substance Isolation Precautions

Mechanism of Injury Number of Patients

Evaluate Need for Assistance

B.L.S.	
ABCs and LOC Focused History & Physical Exam	
No Significant M.O.I.	**Significant M.O.I.**
Focused Trauma Assessment	A.L.S. PATIENT
Baseline Vital Signs	
S.A.M.P.L.E. History	
Transport Decision	
Detailed Assessment	
Treat per Appropriate Protocol	

A.L.S.	
ABCs and LOC Focused History & Physical Exam	
No Significant M.O.I.	**Significant M.O.I.**
Focused Trauma Assessment	Rapid Trauma Assessment
Baseline Vital Signs	Baseline Vital Signs
S.A.M.P.L.E. History	S.A.M.P.L.E. History
Transport Decision	Transport Decision
Detailed Assessment	Detailed Assessment
Treat per Appropriate Protocol	Treat per Appropriate Protocol

GENERAL TRAUMA PROTOCOL
PATIENT CRITERIA

Upon arrival, all equipment should be taken to the scene with intent to transport:

X Monitor

X ALS bag

X Airway bag

These can easily be placed on the cot before initial patient contact.

Criterion for initiating therapy prior to medical control contact and for considering transport to trauma center:

Physiologic Criteria

A. B/P <90 mm/hg or absence of radial pulses
B. Respiratory distress or rate of 12< or >30
C. GCS <13 or AVPU scale of P or U
D. Clinical Signs of Shock

Mechanism of Injury

A. Occupant ejection
B. Fall from height of more than 20 feet
C. Pedestrian struck at speed greater than 20 MPH
D. Death of same car occupant
E. Prolonged extrication >20 minutes

Anatomic Criteria

Penetrating injury to the head, chest, abdomen, neck, or groin
Any injury that may require IV fluids or medication administration

TREATMENT

1. If patient is in no distress and meets none of the above criteria, then appropriately immobilize the patient and transport with frequent reassessment of vital signs and patient status.

2. If the patient meets any of the anatomical, physiological, or mechanism criteria listed, the EMS personnel will initiate the following therapy **PRIOR** to contacting Medical Control, in accordance with the appropriate trauma protocols.

X Establish an airway with the appropriate maneuvers or adjuncts
X Administer oxygen
X Establish IV therapy, initiate fluid resuscitation if indicated
X Apply cardiac monitor
X Apply pulse oximeter
X Administer protocol medications

When called to the scene of a trauma patient, consider your proximity to the nearest trauma facility. When 10 minutes or less from a trauma facility consider rapid transport rather than time consuming interventions at the scene. If

transport to the nearest facility is in the patient's best interest, then consider loading the patient and treating in transport.

TRAUMA

EMT - B | **EMT - P**

Control Bleeding / Bandage / Splint as required
O2 via appropriate delivery device
Assist respirations as needed
Attach cardiac monitor Pulse oximetry
SMR as required
Stabilize any impaled objects

Abdominal Trauma	Chest Trauma	Extremity Trauma
Cover eviscerations with moist sterile dressings.	Stabilize flail segments On open wounds Apply dressing taped on 3 sides	If pelvic or bilateral lower extremity fractures are suspected consider PASG

IV NORMAL SALINE
Titrated to B/P 90 systolic or radial pulses

Support respirations
Intubate if necessary

Consider **Fentanyl 50-100 mcg IV** q 5-20 minutes**, max 200 mcg**
Or
Consider **Morphine** 2 mg q 5 min titrated to pain, maintain SBP>100, **max 10 mg**
Use M**orphine** with caution due to hypotension

Consider **Zofran 4 mg** Slow IV prn, N/V
May repeat one time

SPECIFIC TRAUMA

EMT - B | **EMT - P**

Control Bleeding / Bandage / Splint as required
O2 via appropriate delivery device
Assist respirations as needed
Attach cardiac monitor Pulse oximetry
SMR as required
Stabilize any impaled objects

IV NORMAL SALINE IV LR FOR BURNS
Titrated to B/P 90 systolic or radial pulses

Intubate as necessary
Consider conscious sedation

Head Trauma

Lidocaine, 1/5 mg/kg
IVP prior to intubation

Consider **Fentanyl 50-100 mcg IV** q 5-20 minutes**, max 200 mcg**
Or
Consider **Morphine**
2 mg q 5 min titrated to pain, maintain SBP>100, **max 10 mg**
Use M**orphine** with caution due to hypotension

Spinal Trauma

CONTACT MEDICAL CONTROL
High dose Solu-Medrol

Consider **Fentanyl 50-100 mcg IV** q 5-20 minutes**, max 200 mcg**
Or
Consider **Morphine**
2 mg q 5 min titrated to pain, maintain SBP>100, **max 10 mg**
Use M**orphine** with caution due to hypotension

Burns

BE ALERT FOR AIRWAY BURNS

Consider **Fentanyl 50-100 mcg IV** q 5-20 minutes**, max 200 mcg**
Or
Consider **Morphine**
2 mg q 5 min titrated to pain, maintain SBP>100, **max 10 mg**
Use M**orphine** with caution due to hypotension

Major Burn
Fluid Replacement as follows
0 – 10% BSA
2ml/kg x BSA/ 2 = 8hr
11 – 20% BSA
3ml/kg x BSA/ 2 = 8hr
21 – 30% BSA
4ml/kg x BSA/ 2 = 8hr
Water Gel Pads on
Minor burns 1^0 or 2^0 of <3% BSA **ONLY**

Consider **Zofran 4 mg** Slow IV prn, N/V
May repeat one time

SPECIFIC TRAUMA

EMT - B | **EMT - P**

Control Bleeding / Bandage / Splint as required
O2 via appropriate delivery device
Assist respirations as needed
Attach cardiac monitor Pulse oximetry
SMR as required
Stabilize any impaled objects

IV NORMAL SALINE
Titrated to B/P 90 systolic or radial pulses

Intubate as necessary

EYE INJURY

Trauma	Foreign Substance
Cover open wounds with protective cover. Do not apply ANY pressure to eye. If impaled object, leave it in and secure the object from unnecessary movement. Cover both eyes to limit sympathetic movement of the un-affected eye.	**Consider Tetracaine** 1-2 drops in affected eye. Flush eye with at least 1 liter of Normal Saline. If unknown substance or alkali, flush for at least 20 minutes.

SPECIFIC TRAUMA

EMT - B | **EMT - P**

CPR
O2 via appropriate delivery device
Attach cardiac monitor Pulse oximetry
SMR as required
Control Bleeding / Bandage / Splint as required
Stabilize any impaled objects

TRAUMA ARREST

IV NORMAL SALINE
Wide open x 2 large bore

Inline intubation

Treat rhythm per protocol

Bilateral chest decompression if
Chest trauma etiology

Transport immediately
Consider air transport

CONTACT MEDICAL CONTROL

See protocol policy "Termination of resuscitation in the field"

Inter-facility Transport of a Trauma Patient

EMT - B

EMT - P

O2 via appropriate delivery device
Pulse oximetry
SMR as required*
Control Bleeding / Bandage / Splint as required
Stabilize any impaled objects

Any trauma patient being transferred to ETC for evaluation and admission by Trauma Services should be transported with spinal motion restriction.*

Includes:

- Patients “cleared” by transferring physician despite plain films and/or CT
- Patients with mechanism for injury, unknown mechanism, and/or intoxication
- Elderly patient falling from standing position, with head injury/laceration
- “Isolated” facial fractures

Excludes:

- Elderly patient falling from standing position with isolated extremity fracture (i.e. hip fracture)
- Isolated extremity fractures, without mechanism for spinal injury

*Deviation from this trauma services policy requires on-line medical control with the accepting physician.

IV NORMAL SALINE
Titrated to B/P 90 systolic or radial pulses

Support respiratory status
Intubate as necessary

Treat per protocol

MORGAN LENS

INSERTION:

a. Apply/Instill topical anesthetic, tetracaine.
b. Start NS flowing to lens.
c. Have patient look down.
d. Retract upper lid. Insert edge of lens under upper lid, release, have patient look up. Retract lower lid and insert lens and release.
e. Set flushing solution to continuous flow.
f. Tape tubing to forehead.

REMOVAL:

a. Have patient look up and retract lower lid behind interior border or lens hold position. Have patient look down. Retract upper lid and slide lens out.

INTRAOSSEOUS CANNULATION

Reference material from the American Heart Association textbook of Pediatric Advanced Life Support.

From that text:
"...documented the difficulty in rapidly obtaining vascular access in children, especially those under two years of age, in emergency situations. The intraosseous administration of fluids and medications has long been known to be a safe and effective procedure. Catecholamines, whole blood, calcium, antibiotic, digitalis, heparin, lidocaine, atropine, and sodium bicarbonate have been successfully infused by the intraosseous route. ... ...reported 326 successful bone marrow infusions with only one complication. ... ...Intraosseous fluid and drug administration would therefore appear to be a valuable and safe technique in the treatment of critically ill infants and children and should be considered as a temporary measure during emergencies when other vascular sites are not immediately available."

A. ASSESSMENT

1. During the initial assessment of the patient for their chief complaint it has been established that there is a definite need for immediate fluid and/or medication infusion.
2. During the initial assessment it has been determined that no other means of emergency IV access is immediately available.
3. The patient is a pediatric patient age 8 years or under. (If the patient is older than 8 years of age or an adult, medical control should be contacted for consult.)

B. TREATMENT

1. The need for intraosseous infusion has been established.
2. Equipment -- bone marrow needle (15g Jamshidi or 18g) -- IV fluids and tubing -- 4X4 gauze sponges and tape to secure the site -- Betadine and alcohol/alcohol for site prep. ... ...(In an emergency, and in the absence of a 15g Jamshidi needle, a 16 g or 18g hypodermic needle may be used.)
3. Locate the medial anterior surface of the tibial bone, approximately 1 to 3 cm below the tibial tuberosity.
4. Prep that area first with Betadine then with Hibistat and/or alcohol.
5. Insert the needle into the medial anterior surface of the tibial bone 1 to 3 cm below the tibial tuberosity. The needle should be directed perpendicularly and slightly inferiorly (down) in order to avoid the epiphyseal plate. a "pop" will be felt as you break through the bone wall (bony cortex) into the marrow cavity.
6. Attach the IV fluid and tubing for IV infusion. Infusion will be successful if the needle is clearly in the marrow cavity as evidenced by:

    a. A lack of resistance after the needle passes through the bony cortex.
    b. The needle will stand upright without support.
    c. The ability to aspirate bone marrow into a syringe connected to the needle.

d. Free flow of the infusion without significant subcutaneous infiltration.

7. If the needle becomes obstructed with bone marrow, it can be replace with a second needle passed through the same cannulation site.
"Medications, including epinephrine, atropine, lidocaine, and naloxone, should be administered via the endotracheal tube while vascular access is being established. In children under 3 years of age, an intraosseous cannula should be immediately and used for volume expansion and additional medications..."
--from AHA PALS text--
8. After the intraosseous cannulation is complete the needle should be secured in place. This is done by placing gauze 4X4's which have been cut with line to center, around the IV site. The gauze pads should be secured with tape to insure that the needle does not become bent or pulled out of place. The IV tubing should also be secured with tape.
9. The IV site should be monitored as you would any IV site to insure that the line remains patent with no evidence of infiltration.

DIFFICULT AIRWAY

A. Assessment

1. Obtain brief history
2. Critical need for airway control excite and unable to intubate due to combative patient or patient with active gag reflex.

B. Treatment

1. Position patient and apply high flow O_2. Assist ventilation as necessary. Monitor Pulse OX.
2. Place patient on cardiac monitor
3. Establish at least one IV, possible 2
4. Allow patient to breathe 100% oxygen for 4-5 minutes or ventilate patient with 100% for 1-2 minutes.
5. Medicate the patient
   - Lidocaine 1.5mg/Kg in patients with head injury or increased ILP
   - Atropine 0.5mg for bradycardiac patients
   - Atropine 0.02 mg/Kg for pediatrics (min 0.1mg)
   - Etomidate 0.3 mg/Kg
6. Apply and maintain cricoid pressure from time of sedation until tube placement is confirmed and tube is secured.
7. Perform intubation and confirm tube placement
8. Versed 2.5mg for continued sedation

BLOOD PRODUCT MONITORING

If transporting a patient receiving blood, watch for S/S of transfusion reaction:

- fever/chills
- hives/skin flushing
- headaches
- backaches
- nausea
- hypotension
- tachycardia
- loss of consciousness

If any of the above occur:

- stop infusion immediately
- replace the blood with normal saline
- administer high flow O_2
- contact medical control
- consider use of diuretics or Benadryl with medical control approval

Watch for S/S of fluid overload including:

- increase dyspnea
- pulmonary congestion
- edema
- altered mental status

If these S/S occur:

- stop infusion immediately
- administer normal saline TKO rate
- administer O_2
- contact medical control

Document all vital signs on any reaction or complication.

Document the specific unit of blood and the tags on the IV blood bags.

DOUBLE LUMEN AIRWAY

A. Assessment
   1. Obtain brief history
   2. Critical need for airway control and unable to intubate

B. Treatment
   1. Position patient and apply high flow O_2
   2. Assist ventilation as necessary
   3. Monitor Pulse OX

A. Procedure for use of the King Airway
   1. Select the correct size KING LT-D airway
      a. Size 3 is for adults 4 to 5 feet in height
         i. Yellow connector color
      b. Size for is for adults 5 to 6 feet in height
         i. Red connector color
      c. Size 5 is for adults greater than 6 feet in height
         i. Purple connector color
   2. Test the cuff inflation system for leaks
   3. Apply a water soluble lubricant to the distal tip.
   4. Advance the tip behind the base of the tongue while rotating the tube back to the midline so that the blue orientation line faces the chin of the patient.
   5. Without exerting excessive force, advance tube until base of connector is aligned with teeth or gums.
   6. Hold the Cuff Pressure Gauge in non-dominant hand; inflate the cuffs of the King LT-D with air to a pressure of 60 cc H_2O. If a pressure gauge is not available and a syringe is being used to inflate the King, inflate it with the min. volume necessary to seal the airway at peak ventilatory pressure employed.
      a. Typical Inflation volumes of King LT-D airway:
         i. Size 3 (Yellow) = 45 – 60 ml
         ii. Size 4 (Red) = 60 – 80 ml
         iii. Size 5 (purple) = 70 – 90 ml
   7. Attach the BVM to the airway. While bagging the patient, gently withdraw the tube until ventilation becomes easy and free flowing. Adjust cuff inflation if necessary to obtain a seal of the airway at the peak ventilatory pressure employed. You must see the chest rise, hear breath sounds, feel good compliance, and hear no breath sounds over the epigastrium to be sure that the King LT-D airway is correctly placed. Capnography is recommended for confirming and monitoring the position of the tube.
   8. Like other BIADs, if the patient becomes conscious you must remove the airway. Extubation is like to cause vomiting so be prepared to suction the pharynx and turn the backboard.

B. Essential Points

1. Use the King LT-D airway only in patients who are unresponsive and without protective reflexes.
2. Do not use it in any patient with injury to the esophagus (e.g., caustic ingestions) or in children who are below the age of 15 and/or below average height/weight.
3. Do not use in patients who are less than 4 feet tall.
4. Pay careful attention to proper placement. Unrecognized intratracheal placement of the tube is a lethal complication that produces complete airway obstruction! Such an occurrence is not always easy to detect and the results are catastrophic. Capnography is recommended for confirmation of tube placement.
5. You must gently insert and without force.
6. If the patient regains consciousness, you must remove the airway as it will cause retching and vomiting.

MAST PANTS

NO ROUTINE USE. USE ONLY ON DIRECT MEDICAL CONTROL ORDER.

MAST -- Military Anti Shock Trousers

The terms MAST, PCPD, or Shock Pants all refer to the same device and are used interchangeably.

The MAST is a device designed to help delay the process of SHOCK due to inadequate perfusion by applying pressure to the legs and abdomen. This pressure decreases peripheral circulation to those areas and makes that blood available for more vital areas. The MAST has also shown benefit for use as a lower extremity splint and for applying direct pressure to pelvic fractures; both applications slow blood loss.

INDICATIONS:

a. Patients systolic B/P is under 90 mmHg.
b. Patients pulse rate greater than 100 per minute.
c. Patients shows clinical manifestations of hypovolemic shock, i.e., diaphoresis, confusion or restlessness etc.
d. Patient does have known or suspected etiology for the clinical picture.
e. Patient exhibits NO relative contraindications for use of MAST.

Note: Treatment Protocols outline the recommended time to consider use of the MAST.

CONTRAINDICATIONS:

a. Pulmonary edema.
b. Evisceration -- legs use only may be considered with suitable anti-shock suits.
c. Impaled Objects -- in legs or abdomen where the suit would put pressure on the object.
d. Pregnancy beyond the second trimester.

APPLICATION OF MAST:

The application of the MAST may be done when the patient meets the proper indication and when recommended in the proper patient treatment protocol. The use of MAST shall be initiated as any other treatment protocol.

a. Remove the patient's shoes, socks, and sharp objects from pants and examine patient for pedal pulses, sensation, and motor function.
b. If possible, explain the procedure to the patient.
c. Unfold the garment and prepare it for application. (There are various methods for putting the garment on the patient. Select the method most appropriate for

the patient's condition. Be most aware of unnecessary movement of the patient that could cause spinal injury.)

d. Place the patient in the anti-shock garment using the technique appropriate for the patient's injuries. (i.e., log roll the patient or slide the garment under the patient.) It is recommended to use the MAST on top of a backboard.
e. Attach foot pump and open appropriate stop cocks to prepare to inflate the garment. If an alternate means of inflating the garment is selected, prepare the garment for inflation. (i.e., blowing up the garment by "mouth" until the velcro crackles. ...When this method is selected, all precaution should be taken to NOT make direct contact with the garment with the medic's mouth. An extension tube or barrier should be used.)
f. Secure the patient to MAST and to backboard.
g. Recheck placement of garment making sure it does not incase the lower ribs.

    1. Velcro-wrap the legs and abdomen snugly. The velcro should attach over at least 80% of the surface area.
    2. Secure velcro and remove any dead air space. The garment should not have any unnecessary wrinkles or folds.

h. Inflate the MAST: The standard is to inflate the left leg, right leg, and then the abdomen to 30 mmHg, checking the patient's B/P and lung sounds after each section is inflated. However, in the instance of obvious shock. especially secondary to trauma, it may be necessary to inflate all three sections at once. When this is done, do not inflate the abdomen before the legs are complete and inflate until you hear the velcro begin to crackle. This should bring you to a pressure of approximately 30 mmHg per section.
i. Stop inflating when:

    1. Vital signs stabilize -- systolic pressure between 100 and 110 mmHg.
    2. Velcro crackles and/or air is released through escape valve.
    3. Pressure is at a predetermined level.

j. Close all stop cocks.
k. Listen to lung sounds for pulmonary edema.

l. Record the time of inflation.
m. Recheck vital signs every 3 to 5 minutes or as often as possible

PRECAUTIONS:

a. Respiratory difficulties may develop if the MAST is placed too high.
b. MAST application may cause pulmonary edema. Monitor the patient for possible development.
c. Emesis may occur due to the pressure on the abdominal section. Have suction ready.

REMOVAL:

a. As a general rule, the MAST should never be deflated in the field. (NOTE: In the event of development of severe pulmonary edema that outweighs the benefits of the MAST, medical control may request that the abdominal section of the MAST be deflated. If the situation does not resolve, medical control may option to completely deflate the MAST. This should only be done with reserve and under direct order of MEDICAL CONTROL.)
b. Never deflate the suit all at once.
c. Never deflate the legs before the abdomen.
d. Deflation should not be attempted until IV lines are secure, blood is available and/or definitive intervention to stop the bleeding can be started. (i.e., a surgical team)
e. Deflation should be done only upon the direct supervision of a trained physician familiar with this equipment.
f. Vital signs must be monitored to insure stability of the patient's condition.
g. IV fluids should be infused prior to and during the deflation process.
h. DEFLATE SLOWLY -- abdominal section first then each leg if separate compartments. Deflation must be done in 10 mmHg increments. Close stop cocks and reassess the patient's vital signs. if the vital signs are stable, then deflate the suit again in 10 mmHg increment. Continue this process until the patient's blood pressure drops. Infuse IV fluids to increase the pressure to normal. Resume the deflation process.
i. The deflation process should be stopped if blood pressure fails to respond to IV therapy. In that instance, the deflation process should continue in the operating room with the surgical team ready.
j. If the blood pressure drops rapidly then reinflate the suit and prepare the patient for surgery.
k. Monitor the patient and suit pressure in hot and cold weather since temperature changes can alter the reading on the gauges.

POST USE CARE:

a. Wash the MAST with soap and water. Appropriate hospital approved disinfectants may be used after the soap and water wash. These disinfectants should then be rinsed from the garment.
b. Allow the trousers to AIR DRY with all valves in the open position. (With most models of the MAST, the rubber bladder sections can be removed from the outside garment for cleaning and drying.)
c. Inspect the trousers for any leaks.
d. Gently fanfold the garment and store in the appropriate container/compartment.

SURGICAL CRICOTHYROTOMY

An emergency surgical cricothyrotomy is indicated for a patient when less invasive means of establishing an airway is unfeasible or unsuccessful. The procedure of surgical cricothyrotomy may be performed by a physician, trained registered nurse, or an emergency medical technician - paramedic who has been trained in the technique.

A. ASSESSMENT

1. Obtain brief history of the event particularly noting time of onset.
2. Check vital signs.
3. Briefly evaluate cardiovascular and respiratory status.
4. Evaluate the patient for care and treatment under the guidelines of a respiratory distress patient.

B. TREATMENT

1. Establish the need for the procedure: 90 seconds.

    a. Inability to ventilate patient after repositioning.
    b. Cyanosis.
    c. Apnea or extreme dyspnea.
    d. If involved in MVA, steering wheel mark to the throat area.
    e. Inability to establish secure airway by other means.

2. Locate the cricothyroid notch by first locating the thyroid cartilage (Adam's Apple) and cricoid cartilage (the next prominence below the Adam's Apple).
3. The cricothyroid membrane lies between these two structures and forms somewhat of a "trough".
4. Prep the area with Betadine then Hibistat or alcohol.
5. Using a #11 scalpel, make a 1-2 cm long longitudinal (up and down) incision right over the "trough" incising the skin only.
6. Visualize the membrane which will appear grayish and make a "stab hole" approximately the width of the scalpel straight into the membrane. LEAVE THE SCALPEL THERE -- DO NOT REMOVE IT YET.
7. With a hemostat, go beside the scalpel and gently spread the opening vertically. After this is done you may remove the scalpel but LEAVE THE HEMOSTAT IN PLACE to hold the surgical hole open.
8. Insert an already prepared #6 ET Tube. (The ET Tube should have been cut off just above the balloon port entrance.) Remove the hemostats and inflate the ET cuff.
9. Secure the ET tube in place with tape or ties and ventilate the patient with BVM and 100% oxygen. Assess breath sounds bilaterally as you would with any intubated patient.
10. Monitor the patient closely for adequate ventilation. Monitor the SpO2 if available. (monitor pulse-Ox)
11. Keep medical control advised of the patient's status and of the emergency procedure having been done.

SURGICAL CRICOTHYROTOMY USING MELKER EMERGENCY CATHETER SETS

An emergency surgical cricothyrotomy is indicated for a patient when less invasive means of establishing an airway is unfeasible or unsuccessful. The procedure of surgical cricothyrotomy may be performed by a physician, trained registered nurse, or an emergency medical technician - paramedic who has been trained in the technique.

A. ASSESSMENT
   1. Obtain brief history of the event particularly noting time of onset.
   2. Check vital signs.
   3. Briefly evaluate cardiovascular and respiratory status.
   4. Evaluate the patient for care and treatment under the guidelines of a respiratory distress patient.

B. TREATMENT
   1. Establish the need for the procedure: 90 seconds.
      a. Inability to ventilate patient after repositioning.
      b. Cyanosis.
      c. Apnea or extreme dyspnea.
      d. If involved in MVA, steering wheel mark to the throat area.
      e. Inability to establish secure airway by other means.
   2. Identify the cricothyroid membrane between the cricoid and thyroid cartilages.
   3. Carefully palpate the cricothyroid membrane and while stabilizing the cartilage, make a vertical incision 1-2 cm in the midline using the #15 short handle scalpel blade. An adequate incision eases introduction of the dilator and airway.
   4. With the supplied 6cc syringe attached to the 18 gauge TFE catheter introducer needle, advance it through the incision into the airway at a 45 degree angle to the frontal plane in the midline in a caudad direction. When advancing the needle forward, verification of entrance into the airway can be confirmed by aspiration of the syringe resulting in free air return.
   5. Remove the syringe and needle, leaving the TFE catheter in place. Advance the soft, flexible end of the wire guide through the TFE catheter and into the airway several centimeters.
   6. Remove the TFE catheter, leaving wire guide in place.
   7. Advance the handled dilator, tapered end first, into the connector end of the airway catheter until the handle stops against the connector. Advance the emergency airway access assembly over the wire guide until the proximal stiff end of the wire guide is completely through and visible at the handle end of the dilator. It is important to always visualize the proximal end of the wire guide during the airway insertion procedure to prevent its inadvertent loss into the trachea. Maintaining the wire guide position, advance the emergency airway access assembly over the wire guide with a reciprocating motion, and completely into the trachea. Care should be taken not to advance the tip of the dilator beyond the tip of the wire guide within the trachea.
   2. Remove the wire guide and dilator simultaneously.
   3. Fix the emergency airway catheter in place with the cloth tracheostomy tape strip in a standard fashion.
   4. Connect the emergency airway catheter, using its standard 15-22 adapter to an appropriate ventilatory device.

CAPNOGRAPHY

Patients with respiratory complaints, who are sedated or intubated, have need of emergency or advanced airway management, or following placement of an endotracheal tube will be monitored using a portable capnography.

A. Equipment:
    1. Nellcor portable capnography
    2. Pulse oximeter Oxi Max N85
    3. Life Pak monitors equipped with capnography
B. Check at beginning of shift for adequate battery charge. Charge unit if required.
    1. Prior to start up slide open filter line input connector and connect filter line. Connect appropriate $ETCO_2$ and oxygen saturation (SPO_2) monitor sensor and connect to patient.
    2. Turn monitor on. Monitor is preset to monitor both ETCO2 and SPO2. The wave form will appear automatically.
    3. Normal $ETCO_2$ is 34-45 millimeters of mercury (mmHg)
    4. Use manual methods along with monitoring devices to determine adequate ventilations or endotracheal tube (ETT) placement, including but not limited to:
        a. Chest Rise
        b. Auscultation
        c. Pulse oximetry
        d. $ETCO_2$
        e. Direct visualization of ETT placement
        f. ETT fogging
    5. Document use in patient's medical record. Confirm ETT placement upon transferring care by documenting wave form, $ETC0_2$ and SPO_2 readings.
    6. Keep monitor surfaces clean. Clean with a dampened cloth with non-abrasive cleaner/disinfectant.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) PROTOCOL

Introduction

Continuous Positive Airway Pressure (CPAP) works by “splinting” the airways with a constant pressure of air, which reduces the work of breathing. In CHF it forces the excess fluid out of the alveoli and interstitial space back into the vasculature as well as decreases venous return to the heart thereby lessening its workload. In asthma and COPD, it is thought to splint the constricted airways open allowing air exchange. CPAP can also be a palliative intervention for patients with DNR orders due to the noninvasive nature of pressure support verses ventilatory support.

Indications

1. Age > 14 years old.

2. Patient is awake and oriented.

3. Patient has the ability to maintain an open airway (GCS > 10).

4. Systolic blood pressure above 90 mmHg.

Contraindications

1. Respiratory arrest.

2. Suspected pneumothorax.

3. Patient has a tracheostomy.

4. Patient is at risk for aspiration i.e.: vomiting, foreign body airway occlusion.

5. The patient is intubated. (The CPAP device is not configured for use with ETT).

Physical Findings

1. Acute Respiratory Distress due to Congestive Heart Failure, COPD ..

2. INCLUSION CRITERIA (2 OR MORE OF THE FOLLOWING)

A. Respiratory rate > 25 breaths per minute.

B. Retractions, accessory muscle use or fatigue.

C. SaO2 < 94% at any time.

D. Lung exam could have wheezing, rales, or diminished breath sounds depending on etiology of respiratory distress.

E. Respiratory Failure of any etiology if a valid DNR is present

Protocol

The CPAP device should be applied as soon as it is found to be indicated by the responding unit, and continued on the patient until transferred to the receiving medical facility

1. Ensure that the patient is on continuous cardiac monitor and pulse oximetry.

2. Explain the procedure to the patient.

3. Ensure adequate oxygen supply and assemble CPAP mask, circuit, and device.

5. Turn CPAP on to start airflow.

6. Place the mask over the mouth and nose.

7. Secure the mask with straps.

8. Set CPAP pressure to 10 cm H2O.

9. Check for air leaks and adjust mask as needed.

10. Do not break the mask seal to administer nitroglycerin (nitro-lingual) SL.

11. Continue to coach patient to keep mask in place, however if the patient is experiencing increasing anxiety versed 1 mg IV diluted may be administered. The goal of versed is to decrease anxiety enough so that the patient tolerates CPAP.

12. Reassess patient's vital signs and response to CPAP every 5 minutes.

13. If the patient's status improves continue CPAP until the patient is transferred to the care of the receiving hospital.

14. If patient's status deteriorates discontinue CPAP and assess the patient for the need for intubation

15. Notify destination hospital that CPAP has been used.

16. CPAP is only to be removed at the receiving hospital under the following circumstances.

    A. Personnel are present to transfer the patient to their equipment, or

    B. The receiving ED PHYSICIAN is present and requests that CPAP be discontinued.

Quicktrach II

Protocol #8-294 - April 1st, 2012 **Advanced Life Support**	
INDICATIONS: Patients needing emergency airway access and control when they are unable to be adequately ventilated or intubated due to trauma or other causes. THIS PROCEDURE IS A LAST RESORT WHEN ALL ATTEMPTS AT VENTILATING THE PATIENT HAVE FAILED.	CONTRAINDICATIONS: None in emergency setting. PRECAUTIONS: Complications include hemorrhage from great vessel lacerations and damage to surrounding structures. Constantly check ventilation by standard techniques.

PROCEDURE:

1. Prepare the device: Remove valve opener and completely evacuate the cuff with the included 10ml syringe. Remove and fill syringe for inflating the cuff with 10ml of air.

2. Prepare the patient: Hyperextend the head of the patient. Locate the cricothyroid membrane by palpation of the depression between the thyroid and cricoids cartilage. Stabilize this point with forefinger and thumb for puncture.

3. Puncture the cricothyroid membrane and insert Quicktrach II until red stopper touches skin. An incision is not necessary.

4. Aspirate syringe to determine position of cannula. Aspiration of air indicates proper placement in trachea. If no air is aspirated, remove red stopper and advance slowly until air can be aspirated.

5. Remove red stopper.

6. Push cannula forward into the trachea and remove metal needle.

7. Inflate cuff with 10ml of air.

8. Secure with foam necktape.

9. Attach BVM with connector and verify placement with auscultation and capnography.

BOUGIE

Protocol #8-30 - April 1st, 2012 **Advanced Life Support**	
INDICATIONS: Unable to fully visualize vocal cords during an intubation attempt or predicted difficult intubation.	CONTRAINDICATIONS: Age less than 8 years. Use of a 6.0 or smaller ETT. PRECAUTIONS: None

PROCEDURE:

1. Lubricate Bougie.

2. Using a laryngoscope and standard ETT intubation techniques, attempt to visualize the vocal cords. If vocal cords are not fully visible, pass Bougie behind the epiglottis, guiding the tip of the Bougie anteriorly towards the trachea. Tracheal placement will yield the ability to feel cricoids rings and resistance at the carina. Esophageal placement will yield the ability to advance Bougie completely without resistance.

3. While maintaining the laryngoscope and Bougie in position, an assistant threads an ETT over the end of the Bougie. The assistant then holds the Bougie.

4. Rotate ETT 1/4 turn and advance through cords. Inflate cuff, remove Bougie and laryngoscope.

5. Confirm placement with auscultation and capnography.

CITIZENS MEMORIAL HEALTHCARE
Emergency Medical Services
Pediatric Protocol Index

PEDIATRIC MEDICAL PROTOCOLS

TRAUMA PROTOCOLS

Pediatric Medical Assessment Protocol

Confirm Scene Safety

Appropriate Body Substance Isolation Precautions

Nature of Illness

Number of Patients

Evaluate Need for Assistance

B.L.S.	
ABCs and LOC Focused History & Physical Exam	
RESPONSIVE	UNRESPONSIVE
S.A.M.P.L.E. History Focused Assessment Baseline Vital Signs Treatment Decision BLS/ALS Treat per Appropriate Protocol Transport	A.L.S. PATIENT

A.L.S.	
ABCs and LOC Focused History & Physical Exam	
RESPONSIVE	UNRESPONSIVE
S.A.M.P.L.E. History Focused Assessment Baseline Vital Signs Treatment Decision BLS/ALS Treat per Appropriate Protocol Transport	Rapid Medical Assessment Baseline Vital Signs S.A.M.P.L.E. History Treatment Decision ALS Treat per Appropriate Protocol Transport

PEDIATRIC TREATMENT PROTOCOL CRITERIA

For the PEDIATRIC medical patient with any one of the following criteria:

Systolic Blood Pressure
<70 +2 x age in years if over 1 year old
<70 for one month to one year
<60 for under one month of age

Pulse Rate
> 200 at any age

Newborn to 3 months	< 85 or > 200
3 months to 2 years	< 100 or > 190
2 to 10 years	< 60 or > 140

Respiratory Rate
> 60 at any age

Infants to 1 year old	> 40
Toddler (1 to 4)	> 30
School Age	> 25
Adolescent	> 20

Glasgow Coma Score < 13

Any of these symptoms
- Altered Mental Status
- Respiratory Distress
- Clinical Signs of Shock
- Chest Discomfort

Any C/C or S/S that may indicate the need for IV fluids or medications

Paramedics will institute the following care **PRIOR** to contact with medical control in accordance with the appropriate patient care protocol.

1. Establish an airway with the appropriate maneuvers or adjuncts.
2. Administer oxygen
3. Establish IV / IO therapy. Initiate fluid resuscitation if indicated.
4. Apply cardiac monitor, pulse oximetry, and capnometry if indicated.
5. Administer medications as indicated.
6. Obtain temperature as indicated.
7. Contact **Medical Control** for report, consult, or orders.

In the event communications with Medical Control **cannot** be established, EMS personnel will treat patients under these protocols until communications can be established.

Pediatric Resuscitation Chart

Age	Mean Weight in KG	Min. Sys. BP	Norm AL HR	Norm AL RR	ET Tube Size	NG	Average Insertion Depth (CM at LIP)	Fluid Bolus
Prem.	< 2.5	40	120-170	40-60	2.5-3.0	10	9.5-10	25
Term	3.5	60	100-170	40-60	3.0-3.5	10	10-10.5	35
3 Mo	6	60	100-170	30-50	3.5	10	10.5-11	120
6 Mo	8	60	100-170	30-50	4.0	10	11-12	160
1 Yr	10	72	100-170	30-40	4.0	10	12-12.5	200
2 Yr	13	74	100-160	20-30	4.5	12	12.5-13.5	260
4 Yr	15	78	80-130	20	5.0	12	14-15	300
6 Yr	20	82	70-115	16	5.5	14	15.5-16.5	400
8 Yr	25	86	70-110	16	6.0	14	17-18	500
10 Yr	30	90	60-105	16	6.5	16	18-18.5	600
12 Yr	40	94	60-100	16	7.0	16	18.5-19.5	800

PEDS CARDIAC ARREST

EMT - B

EMT - P

Confirm Pulselessness & Apnea,
Attempt to Determine Down Time, Prior CPR, History, & Code Status
Establish & Maintain Airway & Ventilate 100% O2
Begin CPR
Apply Cardiac Monitor / Pulse Oximeter
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines

Asystole

Confirm in 2 leads
Consider intubation
IV/IO **Normal Saline**

Epinephrine
0.01 mg/kg (1:10,000)
IV/IO
0.1 mg/kg (1:1,000)
ETT
Repeat every 3-5 minutes

CONTACT MEDICAL CONTROL
Immediate Transport

Consider possible causes:

Hypoxemia
Hypovolemia
Hypothermia
Hyper/HypoKalemia
Tamponade
Tension Pneumothorax
Toxin/Poisons/Drugs
Thromboembolism

PEDS CARDIAC ARREST

EMT - B

EMT - P

Confirm Pulselessness & Apnea,
Attempt to Determine Down Time, Prior CPR, History, & Code Status
Establish & Maintain Airway & Ventilate 100% O2
Begin CPR
Apply Cardiac Monitor / Pulse Oximeter /
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines

Pulseless Electrical Activity

Consider intubation
IV/IO **Normal Saline**

Epinephrine
0.01 mg/kg (1:10,000)
IV/IO
0.1 mg/kg (1:1,000)
ETT
Repeat every 3-5 minutes

CONTACT MEDICAL CONTROL
Immediate Transport

Consider possible causes:

Hypoxemia
Hypovolemia
Hypothermia
Hyper/HypoKalemia
Tamponade
Tension Pneumothorax
Toxin/Poisons/Drugs
Thromboembolism

PEDS CARDIAC ARREST

EMT - B | **EMT - P**

Confirm Pulselessness & Apnea,
Attempt to Determine Down Time, Prior CPR, History, & Code Status
Establish & Maintain Airway & Ventilate 100% O2
Begin CPR
Apply Cardiac Monitor / Pulse Oximeter /
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines

V-Fib / Pulseless V – Tach

Shock at **2J/kg**
Resume CPR immediately
(5 cycles)

Consider Intubation
IV/IO **Normal Saline**

Shock at **2J/kg**
Resume CPR immediately
(5 cycles or 2 minutes)

Epinephrine
0.01 mg/kg (1:10,000) IV/IO
0.1 mg/kg (1:1,000) ETT
Repeat every 3-5 minutes

Shock at **2J/kg**
Resume CPR immediately
(5 cycles or 2 minutes)

Amiodarone, 5mg/kg IV/IO
May repeat up to 3 times
OR
Lidocaine 1 mg/kg IV/IO **2–3 mg/kg** ETT
Followed by an infusion of **20-50 mcg/kg/min**

Mag-Sulfate 25-50 mg/kg IV/IO
For Torsades Max **2g**

CONTACT MEDICAL CONTROL
Immediate Transport

PEDS CARDIAC ARREST

EMT - B

EMT - P

Confirm ABCs
Attempt to Determine Down Time, Prior CPR, History, & Code Status
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines
Pulse Oximeter

POST RESUSCITATIVE CARE

Treat RATE & Rhythm problems per protocol.

If antiarrhythmics were used, establish a drip:
Lidocaine 20 – 50 mcg/kg/min
Mix **120 mg in 100ml of D5W**

Consider **20ml/kg of LR**
if hypotensive

CONTACT MEDICAL CONTROL

Dopamine 5 – 20 mcg/kg/min drip
if Pulmonary Edema present

Versed 0.05-0.2mg/kg
for sedation if needed

PEDS CARDIAC DYSRHYTHMIAS

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines
Pulse Oximeter

BRADYCARDIA (UNSTABLE)

With S/S of Hypo-perfusion
initiate chest compressions if HR does not rise above 60/min
with oxygenation and ventilation

Epinephrine 0.01 mg/kg (1:10,000) IV/IO
0.1 mg/kg (1:1,000) ETT
Repeat every 3-5 minutes

Atropine 0.02 mg/kg
(Minimum **0.1 mg**)
(Maximum **0.5mg** for child, **1.0mg** for adolescent)
May be repeated once

Search for and treat contributing factors:

Hypovolemia
Hypoxia
Hydrogen Ion (Acidosis)
Hyper/HypoKalemia
Hypoglycemia
Hypothermia
Toxins
Tamponade
Tension Pneumothorax
Thrombosis
Trauma (Hypovolemia, increased ICP)

PEDS CARDIAC DYSRHYTHMIAS

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines
Pulse Oximeter

TACHYCARDIA (UNSTABLE)
Narrow Complex

Heart Rate > 220
With S/S of Hypo-perfusion

Consider vagal maneuvers

Adenosine 0.1 mg/kg max **6 mg**

Consider sedation **Versed 0.1 mg/kg** max **4 mg**

Synchronized cardioversion **0.5 to 1.0 J/kg**

Be prepared to suction and/or intubate the patient.

Search for and treat contributing factors:

Hypovolemia
Hypoxia
Hydrogen Ion (Acidosis)
Hyper/HypoKalemia
Hypoglycemia
Hypothermia
Toxins
Tamponade
Tension Pneumothorax
Thrombosis
Trauma (Hypovolemia, increased ICP)

PEDS CARDIAC DYSRHYTHMIAS

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines
Pulse Oximeter

TACHYCARDIA (UNSTABLE)
Wide Complex

Heart Rate > 220
With S/S of Hypo-perfusion

Consider sedation **Versed 0.1 mg/kg** max **4 mg**
Do not delay Cardioversion

Synchronized cardioversion **0.5 to 1.0 J/kg**

Amiodarone 5mg/kg IV over 20-60 minutes
OR
Procainamide 15 mg/kg IV over 30-60 minutes

Search for and treat contributing factors:

Hypovolemia
Hypoxia
Hydrogen Ion (Acidosis)
Hyper/HypoKalemia
Hypoglycemia
Hypothermia
Toxins
Tamponade
Tension Pneumothorax
Thrombosis
Trauma (Hypovolemia, increased ICP)

PEDS CARDIAC DYSRHYTHMIAS

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway & Ventilate 100% O2
Apply Cardiac Monitor
Quick Combo Pads / Limb Leads
Utilize Broslow tape for equipment and drug dosage guidelines
Pulse Oximeter

TACHYCARDIA (UNSTABLE)
Wide or Narrow Complex

Ventricular rate 160 - 220
Hemodynamically stable
(Tachycardia appropriate for clinical condition)

Identify origin and cause of Tachycardia
Treat underlying cause

SVT / A-Fib / A-Flutter	Wide
CONTACT MEDICAL CONTROL BEFORE TREATING STABLE TACHYCARDIA Consider **Adenosine 0.1 mg/kg** IV May repeat at double the dose	**CONTACT MEDICAL CONTROL BEFORE TREATING STABLE TACHYCARDIA** Consider **Lidocaine 1.0 mg/kg** IV OR **Amiodarone 5mg/kg** IV over 30-60 minutes OR **Procainamide 15 mg/kg** IV over 30-60 minutes

Consider synchronized cardioversion

PEDS ENVIRONMENTAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device (warmed if possible)
Apply Cardiac Monitor / Pulse Oximeter
Handle patient gently to avoid arrhythmia
Remove patient from cold. Remove any wet clothing.
Insulate patient from the cold.
Obtain core temperature.
Utilize Broslow tape for equipment and drug dosage guidelines

LOCALIZED COOLING
Frostbite

HYPOTHERMIA

IV / IO as indicated

Obtain core temperature.
Thermometer must be in "Monitor" mode. After you remove the probe, while the thermometer is doing its self check, push and hold the "Pulse Timer" button until "Monitor Mode" appears.

Cover the effected tissue with a loose, dry, sterile dressing. NEVER rub or massage the damaged area.

Do not attempt to thaw frozen tissue if there is a chance of refreezing.

If an IV is necessary, use warmed fluids if possible.

A pocket mask and one way valve are ideal ways for delivering warmed ventilations.

CONTACT MEDICAL CONTROL

for analgesia orders.
Transport to the hospital
(do not delay to thaw injured part).

PEDS ENVIRONMENTAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device (warmed if possible)
Apply Cardiac Monitor / Pulse Oximeter
Handle patient gently to avoid arrhythmia
Remove patient from cold. Remove any wet clothing.
Insulate patient from the cold.
Obtain core temperature.
Utilize Broslow tape for equipment and drug dosage guidelines

HYPOTHERMIA: CARDIAC ARREST

IV / IO as indicated

V-fib	Non-Shockable Rhythm
Shock once at **2J/kg**	

Obtain core temperature

≥ 86 degrees	<85 degrees
Work per protocol	Continue CPR (no ALS)

Rapid transport to the hospital
Do not attempt rewarming in the field.
IVs may be attempted if warm IV fluids are available.
Oxygen should be warmed if possible.

A pocket mask and one-way valve is an ideal way to deliver warmed ventilations.

PEDS ENVIRONMENTAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device (warmed if possible)
Apply Cardiac Monitor / Pulse Oximeter
Handle patient gently to avoid arrhythmia
Remove patient from heat.
Obtain core temperature.
Utilize Broslow tape for equipment and drug dosage guidelines

HEAT EXHAUSTION	HEAT STROKE
IV / IO as indicated	
Core temperature	
$\leq 105^0$	$\geq 105^0$
Supportive therapy	Rapid cooling to 102^0

Normal Saline fluid bolus of **20 ml/kg** as indicated
Repeat if necessary

PEDS MEDICAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device
Apply Cardiac Monitor / Pulse Oximeter
12 lead as indicated
Utilize Broslow tape for equipment and drug dosage guidelines

Altered Mental Status

IV / IO as indicated
Draw blood sample, perform a Glucose test
Recheck 5 – 10 minutes after sugar administration

Glucose < 40 mg/dl	Glucose > 40 mg/dl
If patient is able to swallow and is alert enough to follow commands, Give oral **glucose (1 tube)** or other form of sugar orally.	**Narcan 10 mcg/kg** IVP Titrated to increase respirations
If patient is unable to follow commands or protect their airway, **D-25W** **0.5 to 1.0 gm/kg** IVP (Draw dose out of **D50W** vial then dilute with the same amount of Normal Saline) May repeat **D-25** PRN	
Use **D-10** for neonates Dispose of all but **10ml of D-50** and replace with **40 ml NS.** Then give the desired dose.	

PEDS MEDICAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device
Apply Cardiac Monitor / Pulse Oximeter
12 lead as indicated
Utilize Broslow tape for equipment and drug dosage guidelines

ANAPHYLAXIS
(Allergic Reactions)

IV / IO as indicated

Normal Saline- Titrate to blood pressure

Epinephrine
0.01 mg/kg SQ 1:1,000
(Maximum 0.3mg)
Repeat every 15 minutes as needed.
*May be administered prior to IV if patient distress is severe.

Consider **Benadryl 1-2 mg/kg** IVP

Consider **Albuterol 2.5 mg**
via nebulizer for wheezing

Consider **Solu-Medrol 1-2 mg/kg** IVP

PEDS MEDICAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device
Apply Cardiac Monitor / Pulse Oximeter
12 lead as indicated
Utilize Broslow tape for equipment and drug dosage guidelines

CONTROL OF PAIN & NAUSEA

Morphine Sulfate
0.1 to 0.2 mg/kg IVP

Versed **0.1 mg/kg** IV, IO, or PR for anxiety or sedation

Monitor respiratory status closely
Be prepared to assist respirations and/or secure airway

Consider **Zofran 0.15 mg/kg** for patients over 2 years of age and less than 27kg.
If patient weight is 27 kg or higher, use adult dose of **4 mg**

PEDS MEDICAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device
Apply Cardiac Monitor / Pulse Oximeter
12 lead as indicated
Utilize Broslow tape for equipment and drug dosage guidelines

RESPIRATORY EMERGENCIES

ASTHMA

Albuterol 2.5 mg in 3cc saline via nebulizer

Atrovent, 0.5 mg in 3cc saline via nebulizer **with or without Albuterol**

CROUP

Mix **0.5 ml of Racemic Epinephrine** with **3ml Saline** Administer via nebulizer

ACUTE PULMONARY EDEMA (CHF)

Furosemide (Lasix) 1-2 mg/kg IVP

Albuterol 2.5 mg via nebulizer

Monitor patient closely for cardiac rhythm changes and development of chest pain.

CONTACT MEDICAL CONTROL

Methylprednisolone (Solu-Medrol) 2mg/kg IVP

CONTACT MEDICAL CONTROL

Morphine 0.1 – 0.2 mg/kg Slow IV

PEDS MEDICAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device
Apply Cardiac Monitor / Pulse Oximeter
12 lead as indicated
Utilize Broslow tape for equipment and drug dosage guidelines

FEVER

IV / IO as indicated

Fever > 102^0

Remove excess clothing / blankets
Begin cooling

Tylenol Elixir 15 mg/kg
If Acetaminophen has not been given in the last 4 hours

Pediaprofen 10 mg/kg
If Acetaminophen has been given in the last 4 hours

STATUS SEIZURES

If actively seizing, administer
Valium 0.3 mg/kg Max **10mg**
Slow IVP.
If IV access cannot be obtained,
Valium *may be given PR (rectal)*

If dextrose test is < 40 mg/dl,
Administer D25/D-10 per protocol

CONTACT MEDICAL CONTROL

Valium (higher dose)

PEDS MEDICAL EMERGENCIES

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway
O2 via appropriate device
Apply Cardiac Monitor / Pulse Oximeter
12 lead as indicated
Utilize Broslow tape for equipment and drug dosage guidelines

POISONING / OVERDOSE

IV / IO as indicated

Specific overdose or poison management depends upon the substance involved. Contact Poison Control for treatment recommendations.

CONTACT MEDICAL CONTROL
Discuss treatment recommendations
Consider administration of **Activated Charcoal 1g/kg**

NEONATAL RESUSCITATION

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway / Suction thoroughly
O2 via appropriate device (warmed if possible)
Apply Cardiac Monitor / Pulse Oximeter
Warm, Dry, Stimulate,
Maintain warmth of infant
Utilize Broslow tape for equipment and drug dosage guidelines

MECONIUM

BEFORE STIMULATION
If baby is non-vigorous, laryngoscopy and suction trachea with ET tube and aspirator

Suction mouth first then nose with a bulb syringe.

Continue to suction nasal and oral airway with bulb syringe.

POSITION
On back in slight trendelenberg – open the airway

STIMULATE
Dry the infant with a clean towel

If infant does not vigorously respond

OXYGEN
Ventilate at 40 – 60 breaths/minute with 100% O2

Intubate the infant
If there is thick Meconium BVM has not been effective
Prolonged positive pressure ventilation is needed

NEONATAL RESUSCITATION

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway / Suction thoroughly
O2 via appropriate device (warmed if possible)
Apply Cardiac Monitor / Pulse Oximeter
Warm, Dry, Stimulate,
Maintain warmth of infant
Utilize Broslow tape for equipment and drug dosage guidelines

NEONATAL RESUSCITATION

Chest Compressions
HR < 60 or between 60 and 80 and not improving
Stop compressions when HR is above 80
Rate is 120/min interposed with ventilations
Ratio is 3:1 (3 compressions to 1 ventilation)

Medications
Indicated HR < 80 despite BVM and chest compressions
Epinephrine 1:10,000 0.01 to 0.03 mg/kg IV / IO or ET
If no response, **Epinephrine 1:1,000 0.01 mg/kg** ET
Narcan 0.1 mg/kg IV, IO, ET, or SQ
May be indicated in respiratory depression or a recorded narcotic administration within 4 hours of delivery

AIRWAY COMPLICATIONS

Displaced Tube:	re-intubate
Obstructed Tube:	remove tube and re-intubate
Pneumothorax:	Consider needle decompression
Equipment:	Check O2, connections
Gastric Distention:	Insert an OG tube for decompression

POST RESUSCITATION
Get a rapid glucose reading. Treat per protocol
Maintain infant's warmth

PEDIATRIC TRAUMA ASSESSMENT PROTOCOL

Confirm Scene Safety

Use of Appropriate Body Substance Isolation Precautions

Mechanism of Injury Number of Patients

Evaluate Need for Assistance

B.L.S.	
ABCs and LOC Focused History & Physical Exam	
No Significant M.O.I.	**Significant M.O.I.**
Focused Trauma Assessment	A.L.S. PATIENT
Baseline Vital Signs	
S.A.M.P.L.E. History	
Transport Decision	
Detailed Assessment	
Treat per Appropriate Protocol	

A.L.S.	
ABCs and LOC Focused History & Physical Exam	
No Significant M.O.I.	**Significant M.O.I.**
Focused Trauma Assessment	Rapid Trauma Assessment
Baseline Vital Signs	**Baseline Vital Signs**
S.A.M.P.L.E. History	S.A.M.P.L.E. History
Transport Decision	Transport Decision
Detailed Assessment	Detailed Assessment
Treat per Appropriate Protocol	Treat per Appropriate Protocol

PEDIATRIC GENERAL TRAUMA PROTOCOL CRITERIA

Criteria for initiating therapy prior to medical control contact:

Physiologic Criteria

A. B/P <5th percentile for age (see PED 1)
B. Respiratory distress or rate >60 (see PED 1)
C. GCS <13
D. Clinical Signs of Shock (may present with normal or high B/P)

Mechanism of Injury

A. Occupant ejection
B. Fall from height of more than 3x patient's height
C. Pedestrian struck at speed greater than 10 MPH
D. Death of same car occupant
E. Prolonged extrication >20 minutes

Anatomic Criteria

A. Penetrating injury to the head, chest, abdomen, neck, or groin
B. Any S/S or C/C that indicates a need for administration of IV fluids or medication

TREATMENT

1. If patient is in no distress and meets none of the above criteria, then appropriately immobilize the patient and transport with frequent reassessment of vital signs and patient status. (STABLE)

2. If the patient meets any of the anatomical, physiological, or mechanism criteria listed, the paramedic may initiate the following therapy **PRIOR** to contacting Medical Control, in accordance with the appropriate trauma protocols. (UNSTABLE)

- X Establish an airway with the appropriate maneuvers or adjuncts
- X Administer oxygen
- X Establish IV/IO therapy, initiate fluid resuscitation if indicated
- X Apply cardiac monitor
- X Apply pulse oximeter and capnography
- X Administer protocol medications
- X In the **STABLE** patient, complete spinal motion restriction is indicated by mechanism of injury and/or chief complaint. This includes appropriately sized C-collar, K.E.D., long spine board, straps, and CID.
- X In the **UNSTABLE** patient, transport should not be delayed by the application of the K.E.D. prior to extrication. Rapid extrication technique should be used.
- X Contact Medical Control

PEDIATRIC TRAUMA PROTOCOL

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway / O2 via appropriate device
SMR and splint fractures as necessary
Apply Cardiac Monitor / Pulse Oximeter
Bandage & dress wounds appropriately
Maintain body temperature
Utilize Broslow tape for equipment and drug dosage guidelines

Trauma

IV / IO as indicated

Normal Saline 20mg/kg as required

HEAD Trauma

Intubate if necessary moderate hyperventilation of the patient to a (paCO2 of 28-30) **Lidocaine 1 mg/kg IVP** prior to intubation to prevent increase in ICP. **Atrophine 0.02 mg/kg IVP** (Minimum of 0.1 mg) prior to intubation to prevent Bradycardia. If normotensive or hypertensive, keep fluids at KVO rate.

CHEST Trauma

Cover any open wounds with sterile occlusive dressing. Eviscerations will be covered with a moist sterile dressing.

ABDOMINAL Trauma

If Tension Pneumothorax is suspected, needle compression

CONTACT MEDICAL CONTROL
Consider analgesia

PEDIATRIC TRAUMA PROTOCOL

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway / O2 via appropriate device
SMR and splint fractures as necessary
Apply Cardiac Monitor / Pulse Oximeter
Bandage & dress wounds appropriately
Maintain body temperature
Utilize Broslow tape for equipment and drug dosage guidelines

Trauma

IV / IO as indicated

Normal Saline **20mg/kg** as required

Spinal Trauma

Spinal Shock should be considered in hypotensive patients without tachycardia or other signs of shock.

Extremity Trauma

CONTACT MEDICAL CONTROL
Consider pain medications
Initiate all other treatment per trauma protocol en route

PEDIATRIC TRAUMA PROTOCOL

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway / O2 via appropriate device
SMR and splint fractures as necessary
Apply Cardiac Monitor / Pulse Oximeter
Bandage & dress wounds appropriately
Maintain body temperature
Utilize Broslow tape for equipment and drug dosage guidelines

Trauma

IV / IO as indicated

Normal Saline **20mg/kg** as required

TRAUMATIC CARDIAC ARREST

In the event of suspected chest pathology, consider
Bilateral Needle Decompression
2nd intercostal space, mid-clavicular line.

Load and go.

CONTACT MEDICAL CONTROL
Initiate all other treatment per trauma protocol en route

PEDIATRIC TRAUMA PROTOCOL

EMT - B | **EMT - P**

Confirm ABCs
Establish & Maintain Airway / O2 via appropriate device
SMR and splint fractures as necessary
Apply Cardiac Monitor / Pulse Oximeter
Bandage & dress wounds appropriately
Stop the burning
Maintain body temperature
Utilize Broslow tape for equipment and drug dosage guidelines

BURNS

IV / IO as indicated of **L.R.**

Minor Burns	**Moderate Burns**	**Major Burns**
0 – 10% BSA burn	11 – 20% BSA burn	21 – 100% BSA burn
$\frac{2ml/kg \times BSA}{2}$ =8 hr dose	$\frac{3ml/kg \times BSA}{2}$ =8 hr dose	$\frac{4ml/kg \times BSA}{2}$ =8 hr dose

CONTACT MEDICAL CONTROL
For use of analgesics

Use of **Water Gel** is only approved on burns of *less than 3%* BSA and 1^0 or 2^0 in severity

APPROVED MEDICATION LIST

ACTIVATED CHARCOAL

Class: Absorbent

Action: Absorbs toxins by chemical binding and prevents gastrointestinal absorption

Indications: Poisoning following emesis or when emesis is contraindicated

Contraindications: Acetaminophen overdose

Precautions: Should only be administered following emesis in cases in which it is so indicated. May adsorb ipecac before emesis; if ipecac is administered, wait at least 10 minutes to administer activated charcoal

Side Effects: Nausea, vomiting, and constipation

Dosage: 0.5 – 1 g/kg mixed with a glass of water to form slurry

Route: Oral

Pediatric Dosage: 0.5 – 1 g/kg mixed with a glass of water to form slurry

Physician Order: Yes

ADENOSINE (ADENOCARDβ)

Class: Anti-arrhythmic

Action: Slows AV conduction

Indications: Symptomatic PSVT

Contraindications: Second or third degree heart block
Sick-sinus syndrome
Known hypersensitivity to the drug

Precautions: Arrhythmias, including blocks, are common at the time of Cardioversion
Use with caution in patients with asthma

Side Effects: Facial flushing, headache, shortness of breath, dizziness, and nausea

Dosage: 6 mg given as a rapid IV bolus over a 1-2 second period. If after 1-2 minutes, if cardioversion does not occur, administer a 12 mg dose over 1-2 seconds. May repeat 12 mg dose once more after 1-2 minutes.

Route: IV. Should be administered directly into a vein or into the medication administration port closest to the patient and followed by flushing of the line with IV fluid.

Physician Order: No

ALBUTEROL (PROVENTILβ) (VENTOLINβ)

Class:	Sympathomimetic (B2 selective)
Action:	Bronchodilation
Indications:	Asthma Reversible bronchospasm associated with COPD
Contraindications:	Known hypersensitivity to the drug
Precautions:	Blood pressure, pulse, and EKG should be monitored Use caution in patients with known heart disease
Side Effects:	Palpitations, anxiety, headache, dizziness, and sweating
Dosage:	Small volume nebulizer 0.5 (2.5 mg) in 2.5 ml normal saline over 5-15 minutes
Route:	Inhalation
Pediatric Dosage:	2.5 mg in 2/5 ml normal saline
Physician Order:	No

AMIODARONE (CORDARONE)

Class:	Class III Anti-arrhythmic but possesses characteristics of all four Vaughan Williams classes
Action:	Sodium, Calcium, Potassium channel blocker Prolongs intranodal conduction Prolongs refractoriness of the AV node
Indications:	VF / Pulseless VT, VT, Narrow complex tachycardia
Contraindications:	Known hypersensitivity, cardiogenic shock, sinus bradycardia, and third degree AV block
Precautions:	Pro-arrhythmic with concurrent anti-arrhythmic meds Consider slower administration on patients with hepatic or renal dysfunction May prolong QT interval
Side Effects:	Hypotension, Bradycardia (slow down the rate of infusion)
Dosage:	**300 mg** IVP initial VF/pulseless VT **150 mg** IVP for recurrent VF/pulseless VT also wide and narrow complex tachycardias
Route:	IV
Pediatric Dosage:	**5 mg/kg IVP**
Physician Order:	No

ASPIRIN

Class:	Platelet inhibitor / anti-inflammatory / analgesic
Action:	Blocks platelet aggregation
Indications:	New chest pain suggestive of AMI Signs and symptoms of acute stroke (CVA)
Contraindications:	Patients with hypersensitivity to the drug
Precautions:	GI bleeding and upset stomach
Side Effects:	Heartburn Nausea and vomiting Wheezing
Dosage:	162 mg chewable
Route:	PO, must be chewed
Pediatric Dosage:	Not indicated
Physician Order:	No

ATROPINE

Class: Parasympatholytic (anticholinergic)

Action: Blocks acetylcholine receptors
Increases heart rate
Decreases gastrointestinal secretions

Indications: Bradycardia
Hypotension secondary to bradycardia
Third-degree heart block
Asystole
Organophosphate poisoning
RIS of pediatrics under 10 or any bradycardic patients

Contraindications: None when used in emergency situations

Precautions: Dose of 0.04 mg/kg should not be exceeded except in cases of organophosphate poisonings
Tachycardia
Hypertension

Side Effects: Palpitations and tachycardia
Headache, dizziness, and anxiety
Dry mouth, papillary dilation, and blurred vision
Urinary retention (especially older males)

Dosages: Bradycardia – 0.5 mg every 5 minutes to maximum of .04 mg/kg
Asystole – 1 mg
Organophosphate poisoning – 2-5 mg

Route: IV, endotracheal

Pediatric Dosage: Bradycardia – (min dose 0.1 mg) 0.02 mg/kg
Organophosphate poisoning – 0.05 mg/kg

Physician Order: For use in treatment of organophosphate poisoning

CALCIUM CHLORIDE

Class: Electrolyte

Action: Increases cardiac contractility

Indications: Hyperkalemia, hypocalcemia
Calcium channel blocker overdose (Verapamil, Nifedipine)
Abdominal muscle cramping associated with spider bite
Antidote for magnesium sulfate

Contraindications: Patients on digitalis

Precautions: IV line should be flushed between calcium chloride and sodium bicarbonate administration

Side Effects: Arrhythmias (bradycardia and asystole), hypotension

Dosage: 2-4 mg/kg IVP of 10% solution, may repeat after 10 minutes

Route: IV over 2 minutes

Pediatric Dosage: 5-7 mg/kg of a 10% solution

Physician Order: Yes

50% DEXTROSE

Class: Carbohydrate

Action: Elevates blood glucose level rapidly

Indications: Hypoglycemia as indicated by glucometry
Coma of unknown origin

Contraindications: None in the emergency setting

Precautions: A blood sample should be drawn before administering 50% dextrose
Should be preceded by 100mg of thiamine in the patient with alcohol abuse or possible malnutrition

Side Effects: Local venous irritation

Dosage: 25 grams (50 ml)

Route: IV

Pediatric Dosage: 0.5 – 1 g/kg slow IV
Should be diluted 1:1 with sterile water to form a 25% solution
Mix 10ml of D-50 to 40ml of NS to form 10% solution

Physician Order: No

DIAZEPAM (VALIUMβ)

Class: Tranquilizer

Action:
Anticonvulsant
Skeletal muscle relaxant
Sedative

Indications:
Generalized seizures
Status epilepticus
Premedication before cardioversion
Skeletal muscle relaxant
Acute anxiety states

Contraindications: Patients with a history of hypersensitivity to the drug

Precautions:
Can cause local venous irritation
Has short duration of effect
Do not mix with other drugs because of possible precipitation problems

Side Effects:
Drowsiness
Hypotension
Respiratory depression, apnea

Dosage:
Status epilepticus – 5–10 mg slow IV
Acute anxiety – 2-5mg Intramuscular or IV
Premedication before cardioversion – 5-15mg IV

Route:
IV (care must be taken not to administer faster than 1 ml/ min)
Intramuscular
Rectal

Pediatric Dosage: Status epilepticus – 0.1-0.2 mg/kg

Physician Order: Only when for sedation

DILTAIZEM (CARDISEMβ)

Action: Slows conduction through the AV node

Indications: PSVT
Atrial Fibrillation with rapid response
Atrial flutter with rapid response

Contraindications: Heart blocks
Conduction disturbances
WPW

Precautions: Hypotension
Should not be used in patients receiving IV B-blockers

Side Effects: Nausea, vomiting, hypotension, dizziness

Dosage: 0.25mg/kg IV over 2 minutes
May repeat at 0.35mg/kg after 15 minutes

Route: IV over 2 minutes

Physician Order: No

DIPHENHYDRAMINE (BENEDRYLβ)

Class: Antihistamine

Action: Blocks histamine receptors
Has some sedative effects

Indications: Anaphylaxis
Allergic reactions
Dystonic reactions due to phenothiazines

Contraindications: Asthma
Nursing mothers

Precautions: Hypotension

Side Effects: Sedation
Dries bronchial secretions
Blurred vision
Headache
Palpitations

Dosage: 25-50 mg

Route: Slow IV push
Deep intramuscular

Pediatric Dosage: 1.25 mg/kg

Physician Order: No

DOPAMINE (INTROPINβ)

Class: Sympathomimetic

Action: Increases cardiac contractility
Causes peripheral vasoconstriction

Indications: Cardiogenic shock
Hypovolemic shock (only after complete fluid resuscitation)

Contraindications: Hypovolemic shock where complete fluid resuscitation has not occurred

Precautions: Should not be administered in the presence of severe tachyarrhythmia
Should not be administered in the presence of ventricular fibrillation
Ventricular irritability

Side Effects: Ventricular tachyarrhythmia
Hypertension

Dosage: 5-20 mcg/kg/minute, increase as needed
5-10 mcg/kg/min = beta effects (increased rate, contractility)
Above 10 mcg/kg/min = alpha effects (vasoconstriction)

Route: IV drip only

Pediatric Dosage: 5-20 mcg/kg/minute
Mix 6 mg/kg with enough D5W to make 100 ml

Physician Order: No

EPINEPHRINE 1:1000

Class: Sympathomimetic

Action: Bronchodilation

Indications: Bronchial asthma
Exacerbation of COPD
Allergic reactions

Contraindications: Patients with underlying cardiovascular disease
Hypertension
Pregnancy
Patients with tachyarrhythmia

Precautions: Should be protected from light
Blood pressure, pulse, and EKG must be constantly monitored

Side Effects: Palpitations and tachycardia
Anxiousness
Headache
Tremor
Myocardial ischemia in older patients

Dosage: 0.3-0.5 mg SC

Route: Subcutaneous

Pediatric Dosage: 0.1 mg/kg ETT, 0.01 mg/kg sq (max 0.3-0.5 mg)

Multi-Dose Vial: Mix 1mg (1ml) epinephrine with 9ml of dilutant (normal saline) **prior** to IV 30mg/30ml administration.
Recommended to use 30ml or 50ml syringe for high dose or escalating dose administration. 30ml = 3mg, 50ml = 5 mg

Physician Order: No

EPINEPHRINE 1:10,000

Class:	Sympathomimetic
Action:	Increases heart rate Increases cardiac contractility Causes bronchodilation
Indications:	Cardiac arrest Anaphylactic shock
Contraindications:	None when used in the situation listed earlier
Precautions:	Should be protected from light Can be deactivated by alkaline solutions
Side Effects:	Tachyarrhythmia Palpitations
Dosage:	Cardiac arrest – 0.5-1.0 mg repeated every 5 minutes Severe anaphylaxis – 0.3-0.5mg (3-5 ml)
Route:	IV Endotracheal
Pediatric Dosage:	0.01 mg/kg repeated every 5 minutes
Physician Order:	No

ETOMIDATE

Class:	Sedative, Non-barbiturate hypnotic
Action:	No analgesic effects Has few cardiovascular or respiratory effects Cerebro-Protective decreases ICP, IOP
Indications:	Sedation prior to intubation (RSI)
Contraindications:	Hypersensitivity to drug
Precautions:	Single dose only Marked hypotension Severe asthma
Side Effects:	Myoclonic skeletal muscle movements Apnea Hypertension, Hypotension, Dysrhythmias Nausea/Vomiting, hiccups, snoring
Dosage:	0.3 mg/kg
Route:	IV
Pediatric Dosage:	Same as adult
Physician Order:	Not when used for RSI

FENTANYL

Class: Narcotic analgesic

Action: Analgesia and sedation
Central nervous system depressant
Decreased sensitivity to pain

Indications: Severe pain

Contraindications: Hypersensitivity

Precautions: Respiratory depression may last longer than the analgesia (Narcan should be available)
Give slowly; rapid injection could cause rigid chest syndrome

Side Effects: Bradycardia, respiratory depression, euphoria

Dosage: 50-100 mcg slow IVP q 5-20 minutes PRN pain
Total 200 mcg

Route: IV or deep IM

Pediatric Dosage: 2-3 mcg/kg

Physician Order: No

FUROSEMIDE (LASIXβ)

Class:	Potent diuretic
Action:	Inhibits reabsorption of sodium chloride Promotes prompt diuresis Vasodilation
Indications:	Congestive heart failure Pulmonary edema
Contraindications:	Pregnancy Dehydration
Precautions:	Should be protected from light Dehydration
Side Effects:	Few in emergency usage
Dosage:	40 mg (80 mg for patients on oral diuretics) Contact medical control for higher dosages
Route:	IV
Pediatric Dosage:	1 mg/kg
Physician Order:	No

GLUCAGON

Class: Other endocrine / metabolism

Action: Converts hepatic glycogen to glucose

Indications: Severe hypoglycemia
Unable to establish venous access

Precautions: Hypersensitivity to drug or class

Side Effects: Hyperglycemia (can be severe)
Hypotension
Nausea/vomiting
Uticaria
Respiratory distress

Dosage: 1 mg, may be repeated x 1 @ 20 min

Route: IM

Pediatric Dosage: 0.025 to 0.1 mg/kg *(Max dose of 1 mg)*
May be repeated x 1 @ 20 min

Physician Order: No

GLUCOSE (INSTANT, ORAL)

Class: Carbohydrate

Action: Elevates blood sugar

Indications: Hypoglycemia as indicated by glucometry

Contraindications: Patients with altered level of consciousness that cannot protect airway

Precautions: If alcohol abuse is suspected then glucose should be given after 100 mg of Taimine is administered

Side Effects: None

Dosage: One tube (prepackaged 20-25g)

Route: PO (oral)

Pediatric Dosage: Same

Physician Order: No

HEPARIN

Class: Anticoagulant

Action: Inhibition of thrombin

Indications: New chest pain suggestive of an acute myocardial infarction
Supplement to thrombolytic therapy to prevent reclotting

Contraindications: Patient who was previously given **Low Molecular Weight Heparin**
- **Enoxaparin (Lovenox)**
- **Dalteparin (Frangmin)**

Dissecting thoracic aortic aneurysm
See thrombolytic therapy checklist

Precautions: Should not be given to patients already on oral anticoagulants
See thrombolytic therapy checklist

Side Effects: Bleeding

Dosage: Per physician orders (not to exceed 400 units when giving Retavase)

Route: Slow IV bolus

Physician Order: Yes

HYDRALAZINE (APRESOLINEβ)

Class: Antihypertensive (potent vasodilator)

Action: Relaxes vascular smooth muscle
Decreased arterial pressure
Increases cardiac output

Indications: Hypertensive emergency in which a prompt reduction in blood pressure is required
Hypertension accompanying pregnancy

Contraindications: Patients with a known history of coronary artery disease
Rheumatic heart disease involving the mitral valve
History of hypersensitivity to the drug
Suspected dissecting aortic aneurysm

Precautions: May induce angina
May cause EKG changes and cardiac ischemia
Blood pressure, pulse rate, and EKG should be constantly monitored

Side Effects: Headache, nausea, vomiting, tachycardia, palpitations, and diarrhea

Dosage: 20-40 mg given by slow IV bolus
May be repeated if required

Route: IV

Pediatric Dosage: Safety in children has not been established

Physician Order: Yes

HYDROXYZINE (VISTARILβ)

Class: Antihistamine

Action:
Antimetic
Antihistamine
Antianxiety
Potentiates analgesic effects of narcotics and related agents

Indications:
To potentiate the effects of narcotics and synthetic narcotics
Nausea and vomiting
Anxiety reactions

Contraindications: Patients with a history of hypersensitivity to the drug

Precautions:
Orthostatic hypotension
Analgesic dosages should be reduced when used with hydorxyzine
Urinary retention

Side Effects: Drowsiness

Dosage: 25-50 mg

Route: Deep intramuscular only

Pediatric Dosage: 1 mg/kg

Physician Order: Yes

IPRATROPRIUM (ATROVENT)

Class: Anticholinergic, bronchodilator

Action: Blocks bronchoconstriction secondary to parasympathetic tone

Indications: Bronchial asthma or COPD refractory to albuterol

Contraindications: As a first line medication
Hypersensitivity to atropine
Allergies to peanuts or soy products

Precautions: Pregnancy, enlarged prostate

Side Effects: Similar to atropine

Dosage: 0.5 mg (500mcg) in nebulizer diluted in 3cc n/s
Given with albuterol only after one albuterol treatment has been ineffective
Mix 0.5mg in the nebulizer with the second albuterol treatment

Route: SVN (small volume nebulizer)

Pediatric Dosage: 125-250 mcg in SVN

Physician Order: No

LABETALOL (NORMADYNE)

Class: Antihypertensive

Action: Alpha and beta blockade

Indications: Severe hypertension

Contraindications: Hypersensitivity to the drug
Bronchial asthma
Heart block
Cardiogenic shock
Bradyacardia
Hypotension

Precautions: Blood pressure should be constantly monitored
Cannot give at the same time with Lasix IV (incompatable)

Side Effects: Dizziness, flushing, nausea, headaches, and weakness
Postural hypotension

Dosage: 20 mg slow IVP over 2 minutes. Patient should be supine when administered.
Onset of action: 2-5 minutes, peak effect in 5-25 minutes after administration

Route: Slow IV over 2 minutes

Pediatric Dosage: N/A

Physician Order: Yes

LIDOCAINE (XYLOCAINEβ)

Class: Antiarrhythmic

Action:
Suppresses ventricular ectopic activity
Increases ventricular fibrillation threshold
Reduces velocity of electrical impulse through conductive system

Indications:
Refractory ventricular fibrillation
Refractory ventricular tachycardia
Malignant PVC's
Premedication for intubation to prevent increased ICP
Laryngotracheal anesthesia (4% topical solution)
RSI of patient with suspected increased ICP

Contraindications:
High-degree heart blocks (2nd degree type 2, 3rd degree, bifascicular block)
PVCs in conjunction with bradycardia

Precautions:
Maximum dosage is 3 mg/kg
Dosage should not exceed 300 mg/hr
Monitor for central nervous system toxicity
Dosage should be reduced by 50% inpatients older than 70 years of age or who have liver disease

Side Effects:
Anxiety, drowsiness, dizziness, and confusion
Nausea and vomiting
Convulsions
Widening of QRS

Dosage: Bolus -
Cardiac Arrest – 1.5 mg/kg
Arrhythmias (pulsed V-Tach, PVCs)
Initial bolus of 1 mg/kg; additional boluses of 0.5 mg/kg can be repeated at 8-10 minute intervals until the arrhythmia has been suppressed or until 3 mg/kg of the drug has been administered; Reduce dosage by 50% in patients older than 70 years of age
Intubation Prophylaxis – 1 mg/kg 2-3 minutes prior to attempt
Laryngotracheal Anesthesia – Spray amount as needed in the larynx

Drip -
After the arrhythmia has been suppressed, a 2-4 mg/minute infusion may be started to maintain adequate blood levels. Mix 2-g in 500cc giving a concentration of 4 mg/ml

Routes: IV bolus, IV drip, Laryngotracheal anesthesia (4%)

Physician Order: For treatment of PVCs

LORAZAPAM (ATIVAN)

Class: Tranquilizer

Action:
Anticonvulsant
Skeletal muscle relaxant
Sedative

Indications:
Where Valium is indicated and not available
Generalized seizures
Status epilepticus
Premedication before cardioversion
Skeletal muscle relaxant
Acute anxiety states

Contraindications:
Patients with a history of hypersensitivity to the drug
Pregnancy and nursing mothers

Precautions:
Acute narrow angle glaucoma
Primary depressive disorders or psychosis
Coma shock
Acute alcohol intoxication
Renal or hepatic impairment
Organic brain syndrome
Myasthenia gravis
Suicidal tendency
GI disorders
Elderly and debilitated patients
Limited pulmonary reserve

Side Effects:
Anterior grade amnesia, drowsiness, dizziness, weakness, disorientation, unsteadiness, depression, sleep disturbances, confusion, restlessness, hallucinations, hypertension, hypotension, blurred vision, diplopia, depressed hearing, N/V, abdominal discomfort, anorexia

Dosage:
Status epilepticus 4 mg slow IV over 2 minutes
Acute anxiety 2-4 mg intramuscular or IV
Premedication before cardioversion 2 mg IV
May be repeated once q 10-15 minutes

Route:
IV – do not exceed 2 mg/min
Intramuscular
Rectal

Pediatric Dosage:
Status epilepticus 0.1 mg/kg slow IV (max 4mg) (2 mg/min max)
Premedication before cardioversion 0.05 mg/kg (max 4 mg)

Physician Order: Only when for sedation due to anxiety

MAGNESIUM SULFATE

Class:	Anticonvulsant
Action:	Central nervous system depressant Anticonvulsant
Indications:	Eclampsia (toxemia of pregnancy) Refractory ventricular fibrillation Refractory pulseless ventricular tachycardia Patients who may be hypomagnesemic Alcoholic Torsades de Pointes
Contraindications:	Any patient with heart block or recent myocardial infarction
Precautions:	Caution should be used in patients receiving digitalis Hypotension Calcium chloride should be readily available as an antidote if respiratory depression ensues
Side Effects:	Respiratory depression Drowsiness
Dosage:	1-4 g
Routes:	IV Intramuscular
Pediatric Dosage:	Not indicated
Physician Order:	Yes except in cardiac arrest situation

MEPERIDINE (DEMEROLβ)

Class: Narcotic

Action: Central nervous system depressant
Decreases sensitivity to pain

Indications: Treatment of moderate to severe pain

Contraindications: Patients receiving monoamine oxidase inhibitors
Undiagnosed abdominal pain
Patients with history of hypersensitivity to the drug

Precautions: Respiratory depression (Narcan should be available)
Hypotension
Nausea

Side Effects: Dizziness
Altered level of consciousness

Dosage: IV – 25-50 mg
Intramuscular – 50-100 mg
May be mixed with Hydroxyine (Vistaril)

Route: IV
Intramuscular

Pediatric Dosage: 1 mg/kg

Physician Order: Yes

METHYLPREDNISOLONE (SOLU-MEDROLβ)

Class: Steroid

Action: Anti-inflammatory
Suppresses immune response (especially in allergic reactions)

Indications: Severe anaphylaxis
Possibly effective as an adjunctive agent in the management of spinal cord injury

Contraindications: None in the emergency setting

Precautions: Must be reconstituted and used promptly
Onset of action may be 2-6 hours and thus should not be expected to be of use in the critical first hour following an anaphylactic reaction

Side Effects: GI bleeding
Prolonged wound healing
Suppression of natural steroids

Dosage: 125-250 mg

Route: IV
Intramuscular

Spinal Cord Injury Dosage: MUST BE STRICTLY FOLLOWED
Loading dose: 30 mg/kg over 15 minutes
Dilute loading dose in 100cc of NS and drip in over 15 minutes
After 45 minutes, 5.4 mg/kg for 23 hours

Pediatric Dosage: 30 mg/kg

Physician Order: Yes when treating COPD or Asthma
Protocol for anaphylaxis

MIDAZOLAM (VERSEDβ)

Class: Benzodiazepine

Action: Sedative, anxiolytic, amnesic (3-4 x more potent than Valium)

Indications: Pre-medication prior to cardioversion or pacing
Endotracheal tube tolerance
Acute anxiety states
RSI

Contraindications: Known hypersensitivity
Shock (hypotension)
Pregnancy

Precautions: Can cause hypoventilation, respiratory depression, or arrest
Patients at risk include those with COPD, acute alcohol intoxication, or concomitant use of narcotics or barbiturates
Elderly or neonates

Side Effects: Respiratory depression or arrest
Hypotension
Laryngospasm

Dosage: 1-2.5 mg slow IV over 2 minutes (peak effects in 3-5 minutes). Titrate multiple small doses. Can be repeated up to a maximum dose of 5mg without medical control

Pediatric Dosage: Over age 6 – same as adult
Under 6 years - .15 to .40 mg/kg to a maximum dose of 5 mg.

Physician Order: No up to 5 mg

MORPHINE SULFATE

Class:	Narcotic
Action:	Central nervous system depressant Causes peripheral vasodilation Decreases sensitivity to pain
Indications:	Severe pain Pulmonary edema
Contraindications:	Head injury Volume depletion Undiagnosed abdominal pain Patients with history of hypersensitivity to the drug
Precautions:	Respiratory depression (Narcan should be available) Hypotension Nausea
Side Effects:	Dizziness Altered level of consciousness
Dosage:	IV – 2-5mg followed by 2 mg every few minutes until pain is relieved or until respiratory depression ensues Intramuscular - 5-15 mg based on patient's weight
Route:	IV Intramuscular
Pediatric Dosage:	0.1 – 0.2 mg/kg IV
Physician Order:	Yes except for conscious sedation, isolated injuries, or burns

NALOXONE (NARCANβ)

Class: Narcotic antagonist

Action: Reverses effects of narcotics

Indications: Narcotic overdoses including the following:

Morphine	Methadone
Dilaudid	Heroin
Fentanyl	Percodan
Demerol	Tylox
Paregoric	Tylenol #3

Synthetic analgesic overdoses including the following:

Nubain	Talwin
Stadol	Darvon

Contraindications: Patients with a history of hypersensitivity to the drug

Precautions: Should be administered with caution to patients dependent on narcotics as it may cause withdrawal effects
Short-acting, should be augmented every 5 minutes

Side Effects: None

Dosage: 2 mg in 0.4 mg titrated dosages to respirations

Route: IV
Intramuscular
Endotracheal

Pediatric Dosage: 0.01 – 0.1 mg/kg

Physician Order: No

NITROGLYCERIN (NITROSTATβ) (NITROLINGUALβ)

Class: Antianginal

Action: Smooth-muscle relaxant
Reduces cardiac work
Dilates coronary arteries
Dilates systemic arteries

Indications: Angina pectoris
Chest pain associated with myocardial infarction

Contraindications: Children younger than 12 years of age
Hypotension

Precautions: Must have IV established prior to administration
Constantly monitor blood pressure
Syncope
Drug must be protected from light
Expires quickly once bottle is opened

Side Effects: Headache
Dizziness
Hypotension

Dosage: 1 tablet (.4mg) or 1 spray repeated every 5 minutes up to 3 times

Route: Sublingual tablet or spray

Pediatric Dosage: Not indicated

Physician Order: No

NITROGLYCERIN INFUSION (TRIDIL)

Indications: Unstable angina
Acute CHF secondary to AMI

Special: Delivery by infusion pump only. Must have glass bottle and non-PVC tubing.

Dosage: Start at 5 mcg/min and increase by 5 mcg/min every 3-5 minutes. If no response after 20 mcg/min, increase dosing in 10 mcg/min intervals until desired effect.

Contraindications: Same as above

Precautions: Patients with inferior wall MI and right ventricular involvement may have more pronounced hemodynamic response.

Physician Order: Yes

Mixture Table:

D5W Volume	Nitroglycerine Added	Concentration in Bottle
250 ml	25 mg	100 mcg/ml
250 ml	50 mg	200 mcg/ml
250 ml	100 ml	400 mcg/ml

Dosage Table:

Concentration (mcg/ml)	100	200	400
Desired Dose	**Flow**	**Rates**	**ml/hr**
5	3	-	-
10	6	3	-
15	9	-	-
20	12	6	3
30	18	9	-
40	24	12	6
60	36	18	9
80	48	24	12
120	72	26	18
160	96	48	24
240	-	72	36

OXYGEN

Class: Gas

Action: Necessary for cellular metabolism

Indications: Hypoxia

Contraindications: None

Precautions: Use cautiously in patients with COPD

Side Effects: Drying of mucous membranes

Dosage: Cardiac arrest, trauma, or medical protocols

Route: Inhalation

Pediatric Dosage: 24-100% as required

Physician Order: No

OXYTOCINβ (PITOCIN)

Class: Hormone (oxytocic)

Action: Causes uterine contraction
Causes lactation
Slows postpartum vaginal bleeding

Indications: Postpartum vaginal bleeding

Contraindications: Any condition other than postpartum bleeding
Cesarean section

Precautions: Essential to assure the placenta has delivered and there is not another fetus present before administering oxytocin
Over dosage can cause uterine rupture
Hypertension

Side Effects: Anaphylaxis
Cardiac arrhythmias

Dosage: 10-20 units in 1000ml of LR administered according to uterine response

Route: IV drip

Pediatric Dosage: Not indicated

Physician Order: Yes

PEDIAPROFEN (IBUPROFEN)

Class:	NSAIDs
Action:	Inhibits cyclooxygenase and lipoxygenase and reduced prostaglandin synthesis
Indications:	Fever > 102^0 (Oral or rectal) Tylenol has been ineffective and/or administered within last 4 hours
Contraindications:	Hypersensitivity to drug or class ASA/NSAID-induced asthma History GI bleed
Precautions:	Caution in hypertension Caution in CHF
Side Effects:	Anaphylaxis Abdominal pain Nausea Headache Dizziness Rash
Dosage:	N/A
Route:	PO
Pediatric Dosage:	10 mg/kg orally – if not administered within last 6 hours
Physician Order:	No

PHENERGANβ (PROMETHAZINE)

Class: Antihistamine

Action: Antiemetic, potentiates narcotics

Indications: Nausea and vomiting, motion sickness

Contraindications: Comatose state
Patients who have received a large amount of depressants (including alcohol)
Hypersensitivity to the drug

Precautions: Possible EPS (dystonic reaction) have been reported
Have benedryl ready in case of EPS
Physician may order benedryl 50 mg IV prior to administration

Side Effects: May impair mental and physical ability
Drowsiness

Dosage: 12.5-25 mg

Route: IM, slow IVP (each dose should be diluted in 10cc of NS)

Pediatric Dosage: Ages 2-12: 1 mg/kg up to a max dose of 12.5 mg

Physician Order: Yes

PHENYLEPHRINE (NEO-SYNEPHRINEβ)

Class: Vasoconstrictor (alpha agent)

Action: Topical vasoconstriction

Indications: Premedication for nasal intubation to prevent epistaxis

Contraindications: Hypertension
Thyroid Disease
Hypersensitivity to the drug

Precautions: Enlarged prostate with dysuria

Side Effects: Nasal burning, stinging, sneezing, or increase in nasal discharge

Dosage: Two (2) sprays in each nare 1-2 minutes prior to intubation attempt

Physician Order: No

PROCAINAMIDE (PRONESTYLβ)

Class: Antiarrhythmic

Action: Slows conduction through myocardium
Elevates ventricular fibrillation threshold
Suppresses ventricular ectopic activity

Indications: Wide complex tachycardia, VT/VF

Contraindications: High degree heart blocks
PVCs in conjunction with bradycardia

Precautions: Dosage should not exceed 17 mg/kg
Monitor for central nervous system toxicity

Side Effects: Anxiety
Nausea
Convulsions
Widening of QRS

Dosage: Initial 20 mg/minute until
Arrhythmia abolished
Hypotension ensues
QRS widened by 50% of original width
Total of 17 mg/kg has been given
Mix 1g in 100 ml of D5W or NS to give a concentration of 10 mg/ml
Maxidrip (15gtt tubing) 30 gtt/min = 20 mg/min

Maintenance drip: 1-4 mg/minute
Mix 2g in 500cc D5W to yield concentration of 4 mg/ml

Route: Slow IV “drip” bolus
IV drip

Pediatric Dosage: Rarely used

Physician Order: No

PROCHLORPERAZINE (COMPAZINEβ)

Class: Phenothyazine anti-emetic

Action: Anti-emetic

Indications: Nausea and vomiting

Contraindications: Comatose patients who have received a large amount of depressants (including alcohol)
Hypersensitivity to the drug

Precautions: Possible EPS (dystonic reactions) have been reported
Have benadryl ready in cases of EPS
Physician may order benadryl 50 mg IV prior to administration

Side Effects: May impair mental and physical ability
Drowsiness

Dosage: 5 – 10 mg

Route: Slow IV (over 2 minutes)
Each 5 mg must be diluted in 10cc of NS

Pediatric Dosage: Peds only

Physician Order:

RACEMIC EPINEPHRINE (MICRONEFRIN) (VAPONEFRIN)

Class: β & β agonist

Action: Nonselective β & β agonist
Arteriole constriction
Positive inotropic effects
Positive chronotropic
Broncial smooth muscle relaxant
Blocks histamine release
Inhibits insulin secretion
Relaxes GI smooth muscle

Indications: Croup with moderate to severe respiratory distress

Contraindications: Hypersensitivity

Precautions: Avoid too frequent use due to tachyphylaxis
Observe 2-4 hours after administration

Side Effects: Palpitations
Anxiety
Headache
Hypertension
Nausea/Vomiting
Arrhythmias
Rebound edema

Dosage: 0.5 ml mixed with 3.0ml of saline

Route: Inhalation via nebulizer

Pediatric Dosage: For repeated doses

Physician Order:

RETAVASE (RETEPLASE)

Class: Anticoagulant/Thrombolytic

Action: Converts plasminogen to plasmin promoting fibrinolysis

Indications: Acute myocardial infarction

Contraindications:
Hypersensitivity to drug
Active internal bleeding
CVA or brain surgery within last 2 months
Brain tumor, aneurysm, AV malformation
Known bleeding disorder, coumadin or warfarin within 3 days
Severe, uncontrolled hypertension (>180/110)
Known pericarditis or endocarditis
High index of suspicion for dissecting aneurysm, tearing pain in back, hypertension, unequal pulse of B/P in arms
Currently pregnant

Precautions:
Recent surgery within 10 days
CPR (traumatic)
Recent trauma
History of hypertension (controlled with meds)
GI/GU bleeding within last 10 days
History of CVA (2 to 6 months)
Intracranial surgery or trauma (2 to 6 months)

Side Effects:
Intracranial hemorrhage
Arrhythmias
Cholesterol embolism
Hemorrhage
Pulmonary edema
Nausea/vomiting

Dosage:
10u IV slow over 2 minutes
Repeat once at 30 minutes

Route: IV slow (over 2 minutes)

Pediatric Dosage: Not indicated

Physician Order: Yes

SODIUM BICARBONATE

Class: Alkalinizing agent

Action: Combines with excessive acids to form a weak volatile acid
Increases pH

Indications: Late in the management of cardiac arrest, if at all
Tyicyclic antidepressant overdose
Severe acidosis refractory to hyperventilation

Contraindications: Alkalotic states

Precautions: Correct dosage is essential to avoid overcompensations of pH
Can deactivate catecholamines
Can precipitate with calcium
Delivers large sodium load
Can worsen acidosis in the patient who is not intubated and adequately ventilated

Side Effects: Alkalosis

Dosage: 1mEq/kg initially followed by ½ mEq/kg every 10 minutes as indicated by blood gas studies

Route: IV

Pediatric Dosage: 1 mEq/kg initially followed by ½ mEq/kg

Physician Order: No

SUCCINYLCHOLINE

Class: Depolarizing neuromuscular blocker
Ultra-short acting

Action: Causes initial transient contractions and fasciculations followed by sustained flaccid skeletal muscle paralysis
May increase vagal tone especially in children

Indications: To achieve paralysis for endotracheal intubation

Contraindications: Hypersensitivity to drug
Family history of malignant hyperthermia
Penetrating eye injuries or narrow-angle glaucoma
Severe burns or crush injuries more than 48 hours old
CVA more than 3 days old
Rhabdomyolysis (muscle breakdown leading to renal failure)

Precautions: Electrolyte imbalances
Renal, Hepatic, pulmonary, metabolic or cardiovascular disorders, fractures, spinal cord injuries, severe anemia, dehydration, collagen disorders, porphyria.

Side Effects: Muscle fasciculation's, profound
Apnea
Hypertension, hypotension, dysrhythmias
Nausea/vomiting, hiccups, snoring

Dosage: 1.5 mg/kg

Route: IV

Pediatric Dosage: 2.0 mg/kg

Physician Order: Not when used for RSI

SYRUP OF IPECAC

No longer carried

TERBUTALINE (BREATHINEβ)

Class: Sympathomimetic

Action: Bronchodilator
Increase heart rate

Indications: Bronchial asthma
Reversible bronchospasm associated with COPD

Contraindications: Patients with known hypersensitivity to the drug

Precautions: Blood pressure, pulse, and EKG must be constantly monitored

Side Effects: Palpitations, tachycardia, and PVCs
Anxiety, tremor, and headache

Dosage: Subcutaneous injection 0.25 mg, may be repeated in 15-30 minutes

Route: Subcutaneous injection

Pediatric Dosage: 0.01 mg/kg subcutaneously

Physician Order: Yes

TETRACAINE

Class: Anesthetic

Action: Local anesthesia

Indications: Need for eye irrigation

Contraindications: Hypersensitivity

Precautions: Patient will be unaware of objects touching their eye. Be careful to protect the eye from foreign debris and from the patient rubbing eyes.

Side Effects: Burning and conjunctival redness, photophobia, lacrimation

Dosage: 1-2 drops per eye

Route: Topical

Pediatric Dosage: 1-2 drops per eye

Physician Order: No

THIAMINE (VITAMIN B1)

Class: Vitamin

Action: Allows normal breakdown of glucose

Indications: Coma of unknown origin
Alcoholism
Delirium tremens
Precedes D50W administration in the patient with suspected alcohol abuse or malnutrition

Contraindications: None in the emergency setting

Precautions: Rare anaphylactic reactions have been reported

Side Effects: Rare, if any

Dosage: 100 mg

Route: IV
Intramuscular

Pediatric Dosage: Rarely indicated

Physician Order: No

TNKase (TENECTEPLASE)

Class: Anticoagulant/Thrombolytic

Action: Converts plasminogen to plasmin promoting fibrinolysis

Indications: Acute myocardial function

Contraindications:
Hypersensitivity to the drug
Active internal bleeding
CVA
Intracranial surgery or trauma
Intraspinal surgery or trauma
Brain tumor, aneurysm, AV Malformation
Known bleeding disorder, coumadin, or warfarin within 3 days
Severe, uncontrolled hypertension (>180/110)
Known pericarditis or endocarditis
High index of suspicion for dissecting aneurysm, tearing pain in back, hypertension, unequal pulse of B/P in arms
Currently pregnant

Precautions:
Recent surgery within 10 days
CPR (Traumatic)
Recent trauma
History of hypertension (controlled with meds)
GI/GU bleeding within last 10 days
History of CVA (2 to 6 months)
Intracranial surgery or trauma (2 to 6 months)

Side Effects:
Intracranial hemorrhage/CVA
Arrhythmias
Hemorrhage
Anaphylaxis (Rare)
Angioedema (Rare)

Dosage: Is weight dependent

Route: IV push (over 5 seconds)

Pediatric Dosage: Not indicated

Weight kg	Dose IV x 1	Max
< 60	30 mg	50 mg
60-69	35 mg	50 mg
70-79	40 mg	50 mg
80-89	45 mg	50 mg
> 90	50 mg	50 mg

Physician Order: Yes

TYLENOL (ACETAMINOPHEN)

Class:	Other/analgesics
Action:	Analgesic mechanism is unknown Antipyretic is through direct action on hypothalamus
Indication:	Fever > 102^0 (Oral or rectal) Pediprofen has been ineffective or administered within last 6 hours
Contraindications:	Hypersensitivity to drug
Precautions:	Impaired liver function Chronic alcohol use Impaired renal function PKU
Side Effects:	Rash Uticara Nausea
Dosage:	N/A
Route:	Oral
Pediatric Dosage:	15 mg/kg if not administered with last 4 hours
Physician Order:	No

VASOPRESSIN

Class: Antidiuretic hormone (at higher doses it acts as a non-adrenergic peripheral vasoconstrictor)

Action: Potent vasoconstrictor without Beta-adrenergic effects (<Myocardial oxygen consumption than epinephrine)

Indications: VF/Pulseless VT, Asystole

Contraindications: None in full arrest situations

Precautions: Potent vasoconstrictor, increased peripheral vascular resistance
Should not be used in responsive patients with coronary artery disease

Side Effects: Tachyarrhythmias

Dosage: 40 units one time only

Route: IVP, IO

Pediatric Dosage: Not indicated

Physician Order: No

VECURONIUM (NORCURON)

Class: Non-depolarizing neuromuscular blocker

Action: When used at 1/10th dose, blocks fasciculations caused by use of succinylcholine
When given at normal dose causes total paralysis of skeletal muscles
Dose does not have any analgesic or sedative effects. Sedation must accompany paralysis

Indications: To achieve paralysis for endotracheal intubation
To maintain paralysis after intubation

Contraindications: Hypersensitivity to drug

Precautions: Impaired liver function
Bronchospasm
Hypertension, hypotension

Side Effects: Arrhythmias
Bronchospasm
Hypertension, hypotension

Dosage: 0.1 mg/kg for maintenance of paralysis
0.1 mg/kg for paralysis for RSI

Route: IV

Pediatric Dosage: Not indicated

Physician Order: Is required to maintain paralysis after intubation
Not when used for RSI

Emergency Medical Service Procedures

AUTOMATIC EXTERNAL DEFIBRILLATION (AED)

BLS PROCEDURE

INDICATIONS

Patient in Cardiopulmonary Arrest

PRECAUTIONS

Do not apply to patient with spontaneous pulses.
Do not apply to patients in water or wet environment.
Do not apply directly over an internal pacemaker
Remove transdermal medication patch
Do not use AED in Pediatric Cardiac Arrest unless the AED is equipped for and approved by the FDA for use in children less than 8 years of age.

PROCEDURE

1. Confirm unresponsiveness
2. Confirm breathlessness and give 2 breaths
3. Confirm pulselessness
4. CPR for 2 minutes
5. Power on AED
6. Place AED pads and connect to AED
7. Press Analyze (“Clear Patient”)
8. While charging CPR should continue, Compressor is last to clear before SHOCK
9. If shock is indicated (“Clear Patient”)
10. Deliver Shock if indicated
11. CPR begins immediately following shock, perform CPR for 2 minutes, and then reanalyze.

*If “No shock indicated”
Check for return of pulse and breathing
If pulses return, supportive care
If no pulses return, secure airway and continue

Repeat steps #6 through #11 as necessary until return of pulses or care relinquished.

ESOPHAGEAL TRACHEAL AIRWAY (Combi-Tube)

INDICATIONS

Respiratory arrest
Cardiac arrest
Unresponsive patients without Gag Reflex

BLS PROCEDURE

CONTRAINDICATIONS

Under age 16
Under 5' tall (4' for SA)
Known esophageal disease
Caustic substance ingestion
Gag reflex

PROCEDURE

1. Universal precautions
2. Assure patient is being ventilated with BVM and OPA
3. Assemble and check equipment
4. Hyper-oxygenate the patient prior to insertion
5. Place the head in a neutral position; maintain C-Spine control on all trauma patients.
6. Grasp the tongue and jaw and lift up.
7. Insert the tube into hypo-pharynx until the teeth are between the black lines.
8. Inflate the #1 hypo-pharynx cuff with 100cc of air using the blue port.
9. Inflate the #2 esophageal cuff with 15cc of air using the white port.
10. Attach BVM at the #1 esophageal (blue) tube and ventilate the patient, looking for chest rise.
11. Ascultate for lung sounds and epigastric sounds.
12. If no lung sounds are heard but epigastric sounds are present, ventilate through the #2 (clear) tracheal tube.
13. Reassess lung sounds and epigastric sounds. Confirm with capnography.
14. Continue BVD ventilation, head tilt, chin lift should be maintained unless contraindicated (C-spine).

REMOVAL PROCESS

15. Have suction ready with a large bore catheter
16. Deflate the hypo-pharynx cuff, move tube to left side of oral pharynx.
17. Intubate patient and confirm placement per intubation procedure with appropriate devices and capnography.
18. Deflate esophageal cuff. Be prepared to suction immediately.
19. Remove Combi-tube
20. Continue ventilation via ETT and reconfirm placement.

CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

ALS PROCEDURE

INDICATIONS

Short-term management of acute respiratory failure in an awake, cooperative patient
Near drowning patient (awake and cooperative)
CPAP is not indicated when patient is unable to protect their airway

CONTRAINDICATIONS

Need for immediate intubation
Unstable respiratory drive (inability to maintain their own airway)
Ventilatory failure
Gastric distention
Claustrophobia

PRECAUTIONS

1. Requires patient cooperation (The major complication is the inability to tolerate the mask; in which case the mask should be removed and an alternate airway should be instituted.)
2. If patient complains of nausea, remove mask. The mask may be held in place manually. (Vomiting with the mask in place virtually guarantees aspiration.)
3. Adequate supply of oxygen is required.

PROCEDURE

1. Inform patient of procedure
2. Prepare equipment
3. Hold the mask firmly against the patient. Do not attach the straps yet.
4. Turn on the oxygen and instruct the patient to take slow deep breaths, relaxing and allowing the machine to help.
5. After the patient has tolerated the mask, straps may be attached.
6. Monitor the patient for comfort, anxiety, and nausea.
7. **THE MASK MUST BE UNSTRAPPED IF ANY NAUSEA DEVELOPS. MAY BE HELD IN PLACE.**

LARYNGO-TRACHEAL ANESTHESIA (LTA)

ALS PROCEDURE

INDICATIONS

To facilitate intubations in the patient with laryngospasm
To reduce the risks of laryngospasm in the breathing patient

PRECAUTIONS

Should be done under direct visualization
Cricoid pressure should be applied until the endotracheal tube is secured in place
Dosage of lidocaine used not to exceed 3mg/kg.

CONTRAINDICATIONS

Known allergy to lidocaine
Heart blocks

PROCEDURE

1. Uniform precautions
2. Have an assistant standing by to help
3. Hyperventilate the patient for 2 minutes
4. Assemble LTA catheter to the bristoject
5. Under direct visualization, advance the LTA catheter through the vocal cords until the black line on the catheter is at the glottis opening.
6. Administer **Lidocaine 4% topical solution** through the catheter to spray the entire glottis and subglottic area.
7. Have an assistant apply cricoid pressure while the patient is hyperventilated for 2 minutes.
8. Perform the intubation procedure
9. Assess tube placement and secure tube.
10. Release cricoid pressure and continue ventilation.
11. Complete intubation procedure report.

OROPHARYNGEAL AIRWAY

INDICATIONS
Unconscious, unresponsive patients

CONTRAINDICATIONS
Gag reflex present

BLS PROCEDURE

PROCEDURE
1. Universal precautions
2. Pre-oxygenate patient if possible
3. Measure airway from corner of mouth to earlobe
4. Grasp the tongue and jaw, lifting anterior
5. Insert airway inverted and rotate 180 into place. A tongue depressor may also be used
6. Ventilate patient and listen for lung sounds

NASOPHARYNGEAL AIRWAY

INDICATIONS
Conscious or semiconscious patients unable to control their airway
Clinched jaws
Altered LOC with a gag reflex.

CONTRAINDICATIONS
Fluid or blood from ears or nose, basilar skull fx

BLS PROCEDURE

PROCEDURE
1. Universal precautions
2. Pre-oxygenate patient if possible
3. Measure the tube from the tip of the nose to earlobe
4. Lube the airway with water soluble jelly (KY, surgi-lube, or lidocaine).
5. Insert tube (right nare first) with bevel of tube towards the septum, angling towards the base floor of the nasopharynx. Reassess the airway.
6. If patient needs ventilatory support, a 7.5 mm ET adapter can be inserted into the airway and used with a BVM.

NASOTRACHEAL INTUBATION

ALS PROCEDURE

INDICATIONS

Need for definitive airway
Awake patients or those not tolerating oral attempts
Need to assist ventilations
Nasal intubation is performed on breathing patients

CONTRAINDICATIONS

Basal skull fracture
Bleeding of fluids from nose or ears

PRECAUTIONS

High risk of nosebleeds could cause aspiration
Risk of sinus infection with diabetic patients

PROCEDURE

1. Take universal precautions. Have suction unit ready.
2. Hyper-oxygenate patient with BVM for 2 minutes.
3. Assemble, check and prepare all equipment.
4. Pre-medicate nares with 1-2 sprays of **neo-synephrine (.5%)** in each nare. Wait 1 - 2 minutes for effect (time permitting).
5. Lube a nasopharyngeal airway with **2% lidocaine jelly** and insert per NPA procedure. Wait 1-2 minutes for effect (time permitting).
6. Remove the NPA and insert lubed ET tube with the bevel towards the nasal septum.
7. Advance tube aiming the tip down along the nasal floor.
8. Stand to the patient's side with one hand on the tube while the thumb and index fingers of the other hand palpate the larynx.
9. Gently advance the tube along the airway while rotating it medially slightly until the best airflow is heard through the tube. Use of the BAAM device or other method to aid hearing airflow is recommended.
10. Gently and swiftly advance the tube during early inspiration. Patient will cough as tube passes through the cords.
11. Inflate the cuff with 5 – 10 ml of air. Ventilate the patient. Observe for chest rise, auscultate lung sounds and epigastric sounds. If available, utilize ETCO2 monitors. Secure tube.
12. Complete intubation procedure report.

VISUALIZED OROTRACHEAL INTUBATION

INDICATIONS

Cardiopulmonary arrest
Need for definitive airway
Possible positive pressure ventilation
Aid for assisting ventilations

ALS PROCEDURE

PRECAUTIONS

Can induce hypertension and increase ICP in head-injured patients
Can induce vagal response and bradycardia
Can also induce hypoxia-related arrhythmias

PROCEDURE

1. Take universal precautions
2. Hyperventilate patient with a BVM and basic adjunct
3. Assemble, check, and prepare all equipment
4. Place head in sniffing position (elevate head 2" – 4"). Maintain C-spine stabilization on trauma patients.
5. Hyperextend neck slightly
6. Insert laryngoscope blade. Avoid pinching the bottom lip.
7. Sweep tongue to left and place blade in proper position.
8. Lift the laryngoscope forward to displace the jaw
9. Advance tube past the vocal cords until the cuff disappears
10. Check tube placement with esophageal detection device
11. Inflate the cuff with 7 – 10 cc of air
12. Ventilate patient. Observe for chest rise, auscultate lung sounds and over the epigastrium.
13. Confirm ET placement with ETCO2 and record reading.
14. Secure the tube noting the marking on the tube.
15. Insert an OPA as a bite block.
16. Continue ventilation with 100% O2. Reassess tube placement often.
17. Complete intubation procedure report.

PERCUTANEOUS TRANSTRACHEAL JET INSUFFLATION

ALS PROCEDURE

INDICATIONS

Patients needing emergency airway access that are unable to be ventilated adequately or intubated due to trauma or airway edema

This is a temporary last resort measure to oxygenate the patient.

This procedure may also be performed quickly prior to a surgical cricothyrotomy to assure landmarks and pre-oxygenate prior to attempts.

PRECAUTIONS

Risk of false passage, esophageal perforation, bleeding.

Patients with total airway obstructions may have difficulty in exhalation that could cause a pheumothorax.

PROCEDURE

1. Take universal precautions
2. Goggles and mask
3. Have suction equipment ready
4. Place patient supine
5. Maintain spinal motion restriction if indicated
6. Clean anterior neck with an antiseptic solution
7. Stabilize the larynx using thumb and middle finger of one hand
8. Palpate the cricothyroid membrane
9. Insert a 14g 1-1/4” angiocath attached to a syringe down through the midline of the membrane at a 45 – 60 degree angle inferiorly
10. Apply negative pressure to the syringe during insertion until air is aspirated.
11. Advance the catheter over the needle towards the carina.
12. Remove the needle and syringe. Hold catheter still.
13. Connect the Jet device (Y adapter and O2 tubing) to the catheter hub. Turn Oxygen flow to flush or 15 lpm.
14. Occlude the open end of “Y” and ventilate for 1 – 1.5 seconds, observing for evidence of lung expansion.
15. Release the open end of the Y allowing for exhalation time of at least 4 seconds. It may be necessary to insert another 14 g catheter to facilitate better exhalation.
16. Secure the IV catheter with airtight occlusive dressing.

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RAPID SEQUENCE INTUBATION

INDICATIONS

1. A critical need for airway control exist such as:
   - Persons with impending respiratory failure
   - Combative patients with compromised airway
   - Patients with depressed LOC. GCS $\leq$ 8
   - Patient with hypoxia refractory to oxygen
   - Multiple trauma patients who require an airway
2. Any time risk of potential / actual airway compromise is suspected.

RELATIVE CONTRAINDICATIONS

Benefit of airway control must be weighed against risk.

1. Hypersensitivity to drugs

ABSOLUTE CONTRAINDICATIONS

1. Patients in whom cricothyrotomy would be difficult or impossible.
2. Massive neck trauma / swelling.
3. Patients who would be impossible to intubate or ventilate after paralysis.
4. Acute epiglottitis
5. Upper airway obstruction

PROCEDURE

1. Assemble necessary equipment and personnel
2. Position patient properly
3. Assure at least 1 secure well running IV line
4. Pulse Oximeter and Cardiac Monitor attached
5. Assign specific duties (bagging patient, application of cricoid pressure, pushing of medications).
6. Allow patient to breath 100% oxygen for 4-5 minutes if possible –or – Ventilate patient with BVM at 100% for 1-2 minutes (4 vital capacity breaths)
7. Premedicate patient as indicated:
   - **Lidocaine 1.5mg/kg** in patients with head injury or increased ICP
   - **Atropine 0.5 mg** for bradycardic patients
   - **Atropine 0.02 mg/kg** for pediatrics (min 0.1 mg)
   - **Etomidate 0.3 mg/kg** for sedation
   - **Succinycholine 1 – 1.5 mg/kg** adult, **2.0 mg/kg** pediatric
   - **Vecuronium 0.1mg/kg -** No med control is needed if used for primary paralytic. Succs must be contraindicated.
8. Perform intubation and confirm placement while monitoring SPO2, cardiac rate, and rhythm
9. Cricoid pressure should be maintained from time of sedation until ETT is secured.
10. **Versed 2.5 mg** for continued sedation. May be repeated one time.
11. **Vecuronium 0.1 mg/kg** for continued paralization, make sure patient is also sedated (watch heart rate). **Med control is required!**

When utilizing RSI, even with adequate sedation, the patient may still be aware of the situation. Please inform the patient of any procedures you will be performing just as you would if patient is awake.

ALS PROCEDURE

REQUIRED EQUIPMENT

- Suction unit and catheter
- BVM w/correct mask
- Appropriate size ET tubes
- Working laryngoscope
- Appropriate drugs (drawn in syringes)
- Pulse oximeter
- ETCO2 monitor (if available)
- Cardiac monitor
- Cricothyrotomy equipment
- Alternate Airways

FAILED AIRWAY

In the event that the patient cannot be intubated after paralysis is achieved.

1. Place OPA, NPA, Combitube, or other airway
2. Assist ventilations with BMV
3. If unable to ventilate patient, place Quick Trach.

SURGICAL CRICOTHYROTOMY

ALS PROCEDURE

INDICATIONS

Patients needing emergency airway access and control when they are unable to be adequately ventilated adequately or intubated due to trauma or other causes.

This procedure is a last resort airway technique when all attempts at ventilating the patient have failed.

PRECAUTIONS

Complications include hemorrhage from great vessel lacerations, damage to surrounding structures.

PROCEDURE

1. Take universal precautions (gloves, goggles, mask)
2. Have suction equipment ready
3. Place patient supine
4. Maintain spinal motion restriction if indicated
5. Clean anterior neck with an antiseptic solution
6. Stabilize the larynx using thumb and middle finger of one hand
7. Palpate the cricothyroid membrane
8. Pull the skin taut.
9. Make a **2 cm** horizontal incision at the cricothyroid membrane.
10. Insert Nasal speculum (or other device) to maintain the access.
11. Place an endotracheal tube into the incision, caudally
12. Inflate the cuff and secure the tube.
13. Ventilate the patient with a BVM and 100% O2.
14. Observe lung expansion
15. Auscultate lung sounds
16. Cover the incision site with an occlusive dressing.
17. Complete intubation procedure report

EMERGENCY CHILDBIRTH

INDICATIONS

Crowning patient in labor (Imminent Delivery)

BLS PROCEDURE

PROCEDURE (Preparation)

1. PPE including gloves, gown, mask and goggles
2. Pull the ambulance over or prepare on scene
3. General medical protocol, apply oxygen
4. General assessment per antepartum emergency protocols
5. Place mother supine, drape if time allows
6. Prepare OB and Neonate equipment
7. Don sterile gloves just prior to delivery

DELIVERY PROCEDURE

1. As the head crowns, control it with gentle pressure
2. If amniotic sac is intact, carefully puncture it before head delivers.
3. Slip umbilical cord from around baby's neck if necessary. If cord is too tight, clamp twice and cut between clamps.
4. After baby's head delivers, suction mouth and nose with bulb syringe.
5. With next contraction, guide the baby's head downward to allow top shoulder to deliver.
6. Guide the head upward to deliver the lower shoulder.
7. Keep the baby level with the vagina to prevent over or under transfusion.
8. Place an umbilical clamp about 6" from the baby and another about 2" towards the mother. Cut between the cords with sterile scalpel provided in the OB kit.
9. Dry, warm, suction, and stimulate infant to breathe.
10. In the event of neonatal problems, refer to pediatric protocol on neonatal resuscitation.
11. Wrap the baby in a blanket making sure to cover the head. Allow the mother to hold the infant. This will facilitate warming.
12. Note time of delivery, 1 and 5 minute APGAR scores
13. If placenta delivers before arrival, save it in the bag provided.

EMERGENCY CHILDBIRTH

BLS PROCEDURE

POSTPARTUM HEMORRHAGE
Greater than 500 CC

1. Massage the fundus
2. Put the baby to breast
3. Rapidly infuse IV fluids, treat for shock
4. Consider **Pitocin** (Oxytocin) IV drip (dosing per medical control) if ALS

BREECH PRESENTATION

1. Rapid transport is indicated
2. If baby's body delivers, place two fingers into the vagina in a "V" shape on each side of the baby's nose to create an airway.
3. Continue throughout transport
4. Notify medical control and advise

PROLAPSED CORD

1. Rapid transport is indicated
2. If cord presents first in vagina, insert two fingers in the vagina to raise the presenting part off of the umbilical cord.
3. Check for pulsations in the cord.
4. Place mother in trendelenberg position with knees drawn to chest
5. Do not attempt to push the cord back into the vagina
6. Contact medical control and advise.

BLOOD OR BLOOD PRODUCT ADMINISTRATION / MONITORING

ALS PROCEDURE

INDICATIONS

Patients with Hemorrhagic Shock
Other conditions as directed by physician

CONTRAINDICATIONS

Untyped blood recipient except those receiving O negative

KEY INFORMATION

DO NOT ADD MEDICATION TO BLOOD
Blood must not hang for more than 4 hours

PROCEDURE

1. Universal precautions
2. Obtain baseline set of vital signs. Monitor patient temperature.
3. Must have physician orders.
4. IV established with catheter, 18g or larger
5. Blood administration set setup:
   - Hang 1,000ml 0.9% NaCl (Normal Saline) on one of the Y adapters.
   - Flush tubing with normal saline being sure to fill the filter chamber.
   - Recheck contraindications
   - Spike the blood bag on the other part of the Y.
   - Close the clamp to the Normal Saline side
   - Open the clamp to the blood, starting infusion
   - Set flow rate to prescribed rate
   - Blood tubing is rated at 10gtt/ml
   - Whole blood is run at least 50gtt/min
   - Packed cells are administered at least 30 gtt/min.
6. Reassess vital signs 10 minutes after start of infusion and repeatedly thereafter in accordance with the patient's condition (not to exceed 30 minutes).
7. Stay with the patient.
8. Observe for S/S of transfusion reaction:
   Fever, chills, hives, skin flushing, headaches, backaches, nausea, hypotension, tachycardia, loss of consciousness

BLOOD OR BLOOD PRODUCT ADMINISTRATION / MONITORING

ALS PROCEDURE

PROCEDURE (Continued)

9. If any of the above s/s occur:
   - Stop the infusion immediately
   - Replace the blood with normal saline
   - Conduct a rapid primary assessment
   - Administer high flow O2
   - Contact medical control
   - Consider use of diuretics or Benadryl with medical control approval to maintain renal function
10. If monitoring blood on a transport, watch for s/s of transfusion reaction and for signs of fluid overload including:
    - Increased dyspnea
    - Pulmonary congestion
    - Edema
    - Altered mental status
11. In case these signs/symptoms occur:
    - Stop infusion immediately
    - Administer normal saline at KVO rate
    - Contact medical control
    - Document all vital signs, any reactions, or complications
    - Document the specific unit of blood using the tags on the blood IV bags

VENOUS BLOOD DRAW

ALS PROCEDURE

INDICATIONS

Cardiac patients
Suspected stroke patients
ALS Trauma patients

PRECAUTIONS

Avoid venipuncture in arms with dialysis shunts, or injuries proximal to the insertion site

SITE SELECTION

Paramedics should choose a site that is appropriate to the therapy needed.

EQUIPMENT

Paramedics should choose the appropriate sized catheter (at least 20g in adults; 18g or larger recommended) equipment for the situation.

PROCEDURE

1. Inform patient of the procedure
2. Universal precautions
3. Apply tourniquet
4. Select and cleans site with hospital-approved antiseptic (Chloraprep) or 70% isopropyl alcohol. Betadine swabs are used for trauma patients.
5. Stabilize the vein with distal traction on the vein and skin.

IV Catheter method

6. Pass the needle into the vein with bevel up noting blood return.
7. Advance the needle 2mm more into vein.
8. Slide catheter over the needle and into the vein.
9. Remove needle and attach vacutainer hub with luer adapter.
10. Insert vacutainer into the hub, puncturing the top
11. Vacutainer will draw blood until it is full
12. If vacutainer fails to draw, check positioning of catheter or arm for obstruction due to bending. Pulling back slightly on catheter or needle may allow blood flow.
13. If vacutainer fails even after positioning, discard and try another tube.
14. If vacutainer fails to draw full when required, draw blood in a syringe and add to fill tube.
15. Remove full blood tube and repeat with another color tube if needed.

VENOUS BLOOD DRAW

ALS PROCEDURE

PROCEDURE (continued)

16. Draw the following tubes in order
    Red top – Do not rock, clotting is expected
    Blue Top – Coagulation studies, tube must be filled
    Green Top – Chemistry
    Lavender Top - CBC
17. A syringe may be used to draw blood from the IV catheter. If a syringe is used, draw blood slowly and smoothly to prevent hemolysis. Blood must be transferred from the syringe to the vacutainer tube.

Direct Venipuncture Method

18. Assemble vacutainer device (attach needle to hub)
19. Pass the needle into the vein, bevel up
20. Insert vacutainer into hub, puncturing top
21. Vacutainer will draw blood until it is full
22. Remove blood tube and draw another color of tube if needed
23. Label all blood tubes with the following information:
    - Patient name
    - MARF #
    - Date of birth
    - Date and time drawn
    - Initials of personnel drawing the blood
24. Filled and completed labels and tubes should be handed to the nurse receiving the report.

CAPNOGRAPHY (ETCO2)

INDICATIONS

All intubated patients
Patients with respiratory problems or complaints
Sedated patients

BLS PROCEDURE

PROCEDURE

1. Turn on Cardiac Monitor
2. On the intubated patient, disconnect the BVM or HARV from the ET tube.
3. Place the ET tube sensor on the top of the ET tube and reconnect BVM or HARV to the top of the adapter.
4. Resume ventilation and record Capnography reading
5. Normal ETCO2 range is 35-45 mm/hg
6. In cases of cardiac arrest or other poor perfusion states, the ETCO2 reading could be very low. In these cases, the presence of ETCO2 changing with each ventilation confirms ETCO2.
7. For non-intubated patients utilize nasal cannula device or place the ET tube sensor between BVD and mask.

CARDIAC MONITORING

ALS PROCEDURE

INDICATIONS

Activation of any ALS protocol
Respiratory distress
Chest pathology of any type

CONTRAINDICATIONS

None

PROCEDURE

1. Connect electrodes to the patient as follows:
   - RA (white electrode) attach to right arm
   - LA (black electrode) attach to left arm
   - LL (red electrode) attach to left leg
   - RL (green electrode) attach to right leg
2. Have patient remain still and record baseline rhythm strips.
3. If desired, precordial leads can be placed and the patient monitored in Lead V_1
4. After the call, mount the acquired rhythm strips on an ECG mounting sheet.

MULTI-LEAD (12 Lead, 15 Lead) ECG ACQUISITION

ALS PROCEDURE

INDICATIONS

Patients with suspected myocardial infarction
Patients with unexplained dyspnea
Elderly or diabetic patients with non-specific complaints
Syncope in all patients > 40 years old
Serial 12 leads are indicated in patients with continuing chest discomfort, a change in discomfort (better or worse), or a change in heart rhythm
Patients refusing transport – Contact Medical Control before performing a 12 lead.

PROCEDURE

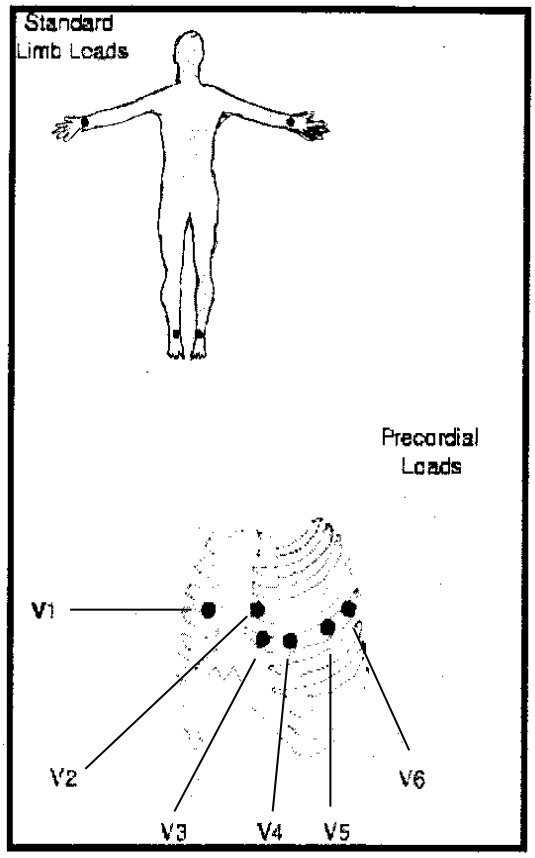
1. Limb leads are placed on the limbs:
   - RA - right arm
   - LA - left arm
   - LL - left leg
   - RL - right leg
2. Precordial lead placement should be as indicated on page 2.
3. After 12 lead has been acquired, leave electrode pads attached to patient in case serial ECGs are needed.
4. Mount 12 lead on approved sheet and complete interpretation
5. 15 lead ECGs may be appropriate on a patient with:
   - A non-diagnostic 12 lead
   - Evidence of acute inferior wall injury

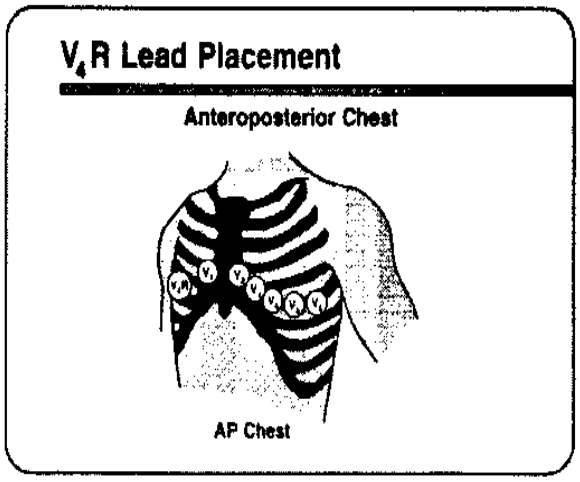
TRANSMISSION

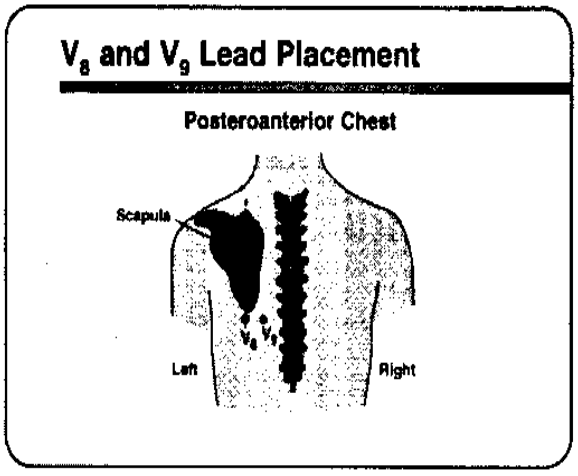
All 12 leads acquired in the field must be transmitted to the receiving hospital regardless of ETA EXCEPT for Serial EKG without change.

MULTI-LEAD (12 Lead, 15 Lead) ECG ACQUISITION

Lead placement diagrams:







CARDIOVERSION/DEFIBRILLATION

ALS PROCEDURE

INDICATIONS

Ventricular Fibrillation
Ventricular Tachycardia
Unstable tachydysrhythmias

CONTRAINDICATIONS

None in cardiac arrest

PRECAUTIONS

Exercise safety precautions at all times
Cardiovert with extreme caution in patients on digitalis preparations, beta-blockers, and calcium channel blockers

PROCEDURE - DEFIBRILLATION

1. Verify patient is in cardio-pulmonary arrest
2. Identify and record pre-shock rhythm by leads or with a quick look paddles or multifunction electrodes
3. Apply defib pads on patient
4. Quick Combo electrodes are placed in the anterior posterior position
5. Clear the patient and charge defibrillator to desired energy setting – **200J** in adults, **2J/Kg** in children (2nd charge **4J/Kg**)
6. Call "Clear!" and look up and down patient to assure the patient is clear.
7. Simultaneously press both discharge buttons until discharge is observed.

PROCEDURE – SYNCHRONIZED CARDIOVERSION

8. If conscious, explain procedure to patient
9. If time permits, contact medical control for orders to sedate
10. Attach ECG electrodes and record baseline rhythm strip(s)
11. Select lead that displays the tallest R wave
12. Apply conductive gel or attach multi-function pads
13. Select appropriate energy setting – **120J** for adults, **0.5-1J/Kg** for pediatric
14. Activate synchronized mode. Observe synchronize markers on screen.
15. Charge defibrillator and clear the patient.
16. Call "Clear!" and look up and down patient to assure the patient is clear.
17. Simultaneously press both discharge buttons until discharge is observed.
18. Reassess the patient and rhythm and repeat procedure if indicated.

EYE IRRIGATION (MORGAN LENS)

INDICATIONS

Chemical burns to face
Foreign object in eye

INSERTION

1. Instill topical anesthetic (Tetracaine)
2. Attach to IV set (NS)
3. Begin flow
4. Have patient look down, insert lens under upper lid. Have patient look up, retract lower lid, drop lens into place.

FLUSH

- Deliver at least ½ liter in affected eye
- Absorb run0off with towel rolls
- If chemical is unknown or is an alkali (base) flush for at least 20 minutes

REMOVAL

1. Have patient look up, retract lower lid
2. Slide lens out.

ALS PROCEDURE

BLS PROCEDURE

GLUCOMETRY (Sure Step Glucose Monitoring System)

INDICATIONS

Any patient that presents with an altered level of consciousness

Any diabetic patient

BLS PROCEDURE

CONTRAINDICATIONS

None

PROCEDURE

1. Universal precautions
2. Turn on the meter
3. Make sure code numbers match on the bottle and the meter. If code numbers do not match, press the "C" button until code numbers match.
4. Obtain drop of blood by:
   - Finger stick with lancet (wipe site with alcohol and allow to dry) - or –
   - From IV needle - or –
   - From IV site by drawing with syringe
5. Place drop of blood on the pink test square on the front of the strip.
6. Check the confirmation dot on the back of the strip. If it is completely blue, you have applied an adequate amount of blood.
7. Insert the test strip within 2 minutes after applying blood. Firmly push strip until it stops.
8. The result appears in approximately 30 seconds
9. Remove test strip and discard in sharps container.
10. If finger stick was used, cover the puncture site with a dry sterile adhesive strip.
11. Record the reading on the MARF. Glucose readings are expressed in mg/dL.
12. Normal ranges for glucose are from 70 to 110 mg/dL.

INTRAOSSEOUS INFUSION

ALS PROCEDURE

INDICATIONS

All patients who **need** IV fluids or medications, and a peripheral IV cannot be established in 2 attempts *AND* exhibits 1 or more of the following:

- An altered mental status (GCS of 8 or less)
- Hemodynamic instability
- Extreme respiratory compromise
- Full arrest

CONTRAINDICATIONS

Fracture above the tibia
Previous orthopedic procedure (IO within 24 hours, knee replacement)
Infection at insertion site
Pre-existing medical condition (Tumor near site, peripheral vascular disease)
Inability to locate landmark (Significant edema, obesity)

PROCEDURE

1. Universal precautions
2. Prepare equipment
3. Identify landmark – Antero-medial aspect of the proximal tibia, about 2 cm medial to the tibial tuberosity (Humeral head into the greater tubrical)
4. Cleanse the puncture site
5. Stabilize the leg and skin over the insertion site
6. Position driver at the insertion site with the needle set perpendicular (90 degrees) to the bone surface
7. Insert needle set through the skin until resistance is met – Check to see that there is at least 5 mm of catheter still visible by the gauge on the needle set. If there is not at least 5 mm, there is too much tissue and the IO is contraindicated.
8. Penetrate the bone cortex by powering the drill while applying firm, steady pressure.
9. Release the trigger then the needle flange is resting on the skin surface or when a sudden "give" is felt while inserting the needle.
10. Conscious patients should receive **20-50mg 2% Lidocaine IO**, Pediatric dose is **0.5mg/kg**
11. Flush or bolus the IO with **5-10 ml normal saline**
12. Confirm placement (look for infiltration)
13. Connect tubing and apply a pressure bag to infusing solution, if needed
14. Apply dressing.

Make sure you can control patient's leg prior to insertion attempt (Seizure, uncooperative, or combative patients)

During insertion, apply firm, steady pressure (Pediatrics - use only light pressure, let the drill do the work.) Do NOT force the driver. Allow driver to provide the power to penetrate the bone.

If needle set insertion cannot be properly completed, remove the needle-set and use opposite leg.

The driver should never be used to withdraw the needle.

IV CATHETER INSERTION

ALS PROCEDURE

INDICATIONS

Per protocol criteria

PRECAUTIONS

Avoid venipuncture in arms with dialysis shunts, or injuries proximal to the insertion site

SITE SELECTION

Paramedics should choose a site that is appropriate to the therapy needed.
IV's near joints should be avoided if possible.
Site selection is limited to peripheral veins.
Recommended sites:

Dorsum of the hand	Forearm
Antecubital fossa	External Jugular

EQUIPMENT

Paramedics should choose the appropriate sized catheter and equipment for the situation.

COMPLICATIONS

Infiltration, hematoma, arterial puncture, infection

PROCEDURE

1. Inform the patient of the procedure.
2. Universal precautions.
3. Apply tourniquet.
4. Select and clean site with hospital approved antiseptic (Chlorhexadine prep or equivalent)
5. Stabilize the vein with distal traction of the vein and skin.
6. Pass the needle into the vein with bevel up noting blood return.
7. Advance the needle 2 mm more into vein.
8. Slide catheter over the needle and into the vein
9. Remove needle and draw blood if needed with luer adapter or syringe.
10. Attach tubing to catheter and release tourniquet.
11. Infuse about 10-20cc to assure patency. Watch for signs of infiltration.
12. Secure IV with appropriate device per hospital policy.
13. Begin infusion at prescribed rate.

KENDRICK EXTRICATION DEVICE (KED)

INDICATIONS

Patients that do not meet criteria for Rapid Extrication

Seated patients meeting Spinal Motion Restriction criteria

May also be useful in long extrications with critical patients

BLS PROCEDURE

CONTRAINDICATIONS

Patients with easy access requiring rapid extrication

PROCEDURE

1. Maintain in-line stabilization of C-Spine
2. Assess distal pulses, sensation, and motor function
3. Apply appropriately sized C-collar
4. Position device behind the seated patient
5. Pull the device up until it fits snugly in the armpits
6. Apply chest straps and tighten. Avoid over tightening that restricts breathing efforts.
7. Apply leg straps and tighten snugly. Avoid catching male genitals in the straps.
8. Apply proper amount of padding between head and back of the KED to keep head in a neutral position. (Note: The long green pad is usually too much, a couple of washcloths, a folded towel, or multi-trauma dressing work best)
9. Fold the sides of the KED headpiece around so that they cradle the head. For most patients, properly fitted, a KED will reach or cover the ears. If it does not reach ears, it is possible there is too much padding. (Note: Before applying head padding, be sure patient is upright, inline, and with the plane of the KED)
10. Secure head to the device with Kerlex, tape, or coban. (The foam straps do not work very well)
11. Turn the patient and device as a unit and then lower onto a LSB. Release leg straps so that the patient's legs can be easily extended. Secure the device and patient to LSB.
12. After the patient is secured to the LSB, the chest straps may be loosened for patient comfort or for reassessment of the chest.
13. Reassess distal pulses, motor function, and sensation.

MEDICATION ADMINISTRATION

ALS PROCEDURE

INDICATIONS

Per appropriate protocol

SPECIAL NOTATION

All medication administration must be carefully documented including times, route, dosage, site, and effects

CONTRAINDICATIONS

Drug specific (see drug index)

PROCEDURE A: IV PUSH

IV push means a rapid bolus is indicated
Slow IV push means titrated to effects or over a 2 minute time period as indicated by the specific drug

1. Select correct medication.
2. Confirm orders, check dosage and expiration date
3. Check drug for cloudiness or particulates
4. Check patient allergies
5. Clean the injection port closest to the injection site
6. Puncture the injection port with needle
7. Pinch off tubing above injection port
8. Inject drug at appropriate rate
9. Flush medication with IV fluid, resume IV flow rate
10. Evaluate patient's response to medication
11. Document time, dose, route, site, and response to drug on the MARF.

PROCEDURE B: DRIP (PIGGYBACK)

1. Select correct medication.
2. Confirm orders, check dosage, concentration, and expiration date
3. Check solution for cloudiness or particulates
4. Check patient allergies
5. Calculate appropriate flow rate
6. Use microdrip tubing. Spike bag with tubing and flush tubing with drug solution
7. Attach straight needle (18-20g) on the end of tubing and insert into a site proximal to the IV site. Secure and label with tape.
8. Lower primary infusion bag below the secondary line of medication being infused
9. Open piggyback line and set rate. Stop flow from primary line.
10. Observe patient for effects.

MEDICATION ADMINISTRATION

ALS PROCEDURE

PROCEDURE C: INTRAMUSCULAR INJECTION (IM)

1. Select correct medication.
2. Confirm orders, check dosage and expiration date
3. Check drug for cloudiness or particulates
4. Check patient allergies
5. Assemble appropriate sized equipment
   - Syringe of sufficient size to hold medication (3-5cc)
   - Needle – 21-25g, ¾" to 1" in length
6. Select appropriate site
   - Maximum 1 ml into deltoid
   - Maximum 10 ml into gluteus
7. Cleanse site with alcohol wipe
8. Stretch skin taut and press down to facilitate entry into muscle
9. Enter skin at a 90 degree angle
10. Aspirate the syringe to assure you are not in a vein. If blood return is seen, withdraw and try at another site.
11. Inject medication slowly.
12. Remove syringe and dispose in sharps.
13. Cover injection site with an adhesive strip
14. Observe patient for effects.

CONTRAINDICATIONS

- Shock or cases of decreased perfusion
- Severe burns
- Patients with cardiac complaints

PROCEDURE D: SUBCUTANEOUS INJECTION (SC)

1. Select correct medication.
2. Confirm orders, check dosage and expiration date
3. Check drug for cloudiness or particulates
4. Check patient allergies
5. Assemble appropriate sized equipment
   - 1cc tuberculin syringe
   - 25g 5/8" needle
6. Select appropriate site – fold of skin at the back of upper arm anywhere a fold of skin can be drawn
7. Cleanse site with alcohol wipe
8. Pinch a fold of skin and pull up or down
9. Insert needle at a 45 degree angle into the fold of skin
10. Aspirate the syringe to assure you are not in a vein. If blood return is seen, withdraw and try at a different site.
11. Inject medication slowly.
12. Remove syringe and place in sharps.
13. Cover injection site with an adhesive strip
14. Observe effects.

ALS PROCEDURE

PROCEDURE E: ENDOTRACHEAL ADMINISTRATION

INDICATIONS

Cardiac arrest or times where IV access cannot be achieved

APPLICABLE DRUGS

Epinephrine, Atropine, Narcan, and Lidocaine

SPECIAL NOTATION

Dose should be 2-2.5 times the IV dose. However, counts as a single dose in terms of maximum dose calculation.

1. Select correct medication.
2. Confirm orders, check dosage and expiration date
3. Check drug for cloudiness or particulates
4. Check patient allergies
5. Hyperventilate patient before administering drug
6. Remove bag valve device and administer drug
7. If CPR is in progress, stop compressions during drug administration
8. Spray medication directly into endotracheal tube
9. Insert a suction catheter down the ET tube and administer drug via suction catheter.
10. Reattach bag valve mask device and hyperventilate patient
11. Document effects

PROCEDURE F: INHALATION – SMALL VOLUME NEBULIZER

INDICATIONS

Bronchodilator therapy as indicated by protocol

APPLICABLE DRUGS

Atrovent, Albuterol

SPECIAL NOTATION

Atrovent and Albuterol may be mixed in same nebulizer and administered together if ordered.

1. Select correct medication.
2. Confirm orders, check dosage and expiration date
3. Check drug for cloudiness or particulates
4. Check patient allergies
5. Add medication to reservoir of nebulizer. Add saline solution if necessary to equal 3cc total volume. Premixed **Albuterol** medication vials do not need saline added.
6. Connect oxygen tubing to nebulizer and set O2 flow rate at 6-8 lpm
7. Have patient take deep breaths, holding for a second, and then exhale through tube.
8. If patient is unable to hold nebulizer, use nebulizer mask
9. Medication is delivered in 5 to 10 minutes
10. Observe patient for effects.

PNEUMATIC ANTI-SHOCK GARMENT / MAST

INDICATIONS

Splint for pelvic fracture or lower extremity splint

BLS PROCEDURE

CONTRAINDICATIONS

Pulmonary edema
Uncontrolled bleeding above the abdomen
Late term pregnancy (legs may be inflated)
Impaled objects
Evisceration of bowel (legs may be inflated)

PROCEDURE

1. Universal precautions
2. Remove clothing from lower extremities and abdomen
3. Perform a rapid inspection/palpation of abdomen, pelvis, and legs noting any injuries or deformities
4. Assess vital signs and lung sounds
5. Apply the garment using one of the methods listed below and secure Velcro straps making sure the top of the abdominal section is below the last rib:
   - **LOG ROLL METHOD** – Log roll the patient onto a backboard with the garment in place on the backboard. This method is contraindicated in patients with suspected pelvic fracture.
   - **TROUSER METHOD** – Grasp the tops of the patient's feet, elevating legs slightly, and slide the garment up the legs as if applying a pair of pants.
   - **SCOOP METHOD** – Use a scoop stretcher to lift the patient and place them on a long spine board with the garment in place.
6. Connect inflation tubing to all compartments
7. Open valves to both leg compartments
8. Inflate legs simultaneously to 90 mm/hg.
9. Close valves to leg compartments
10. Check vital signs and lung sounds.
11. If B/P is less than 80mm/hg, then inflate abdominal compartment
12. If lung sounds are suggestive of pulmonary edema or B/P is above 80mm/hg, do not inflate the abdominal compartment. Contact medical control.
13. Open valves to abdominal compartment
14. Inflate to 90mm/hg and close valves.
15. Reassess vital signs and lung sounds
16. Monitor patient's blood pressure and pressure in anti-shock garment. Sudden changes in temperature and elevation may cause increases or decreases in garment pressure.

NASOGASTRIC TUBE INSERTION

INDICATIONS

Evacuation of air or fluids in the stomach
Dilution of ingested poisons
Intubated patients

ALS PROCEDURE

CONTRAINDICATIONS

Facial trauma
Basilar skull fracture
Epiglottitis or croup

PROCEDURE

1. Universal precautions
2. Assemble equipment
3. Explain procedure to the patient
4. If possible, have patient sitting up
5. Use a pad or towel to protect the patient's clothing.
6. Measure the tube from the nose, around the ear, and down to the Xiphoid process.
7. Mark the point at the Xiphoid process with a piece of adhesive tape.
8. Lubricate the distal end of the tube 6 to 8 inches with water-soluble lubricant.
9. Insert the tube in the nostril and gently advance it towards the posterior nasopharynx along the nasal floor.
10. When you feel the tube at the nasopharyngeal junction, rotate it inwards towards the other nostril.
11. As the tube enters the oropharynx, instruct the patient to swallow.
12. Pass the tube to the pre-measured point. If resistance is met back the tube up and try again. Do NOT force it.
13. Check placement of the tube by aspirating gastric contents or by auscultating air over the epigastric region while injecting 20-30 ml of air.
14. Tape the tube in place and connect to low suction if ordered.
15. Document procedure on the MARF including the time placed, size of tube used, and aspirated contents, if any.

OXYGEN ADMINISTRATION

INDICATIONS

Any patient with respiratory distress
Any patient with chest pain
All ALS patients
All patients with smoke exposure/inhalation
All other patients who may benefit from O2

BLS PROCEDURE

PRECAUTIONS

COPD patients should generally receive lower (FiO2) concentrations unless they have serious s/s of decompensation

PROCEDURE

1. Inform patient of procedure
2. Connect tubing of O2 port and flush
3. Administer O2
   - Nasal cannula 2-6 lpm
   - Non-rebreather mask 10-15 lpm
   - BVM 15 lpm
4. Monitor patient for effects

PULSE OXIMETRY SPO2

INDICATIONS

All ALS patients
Extremity fractures
Any patient with respiratory distress
Any patient with chest pain

BLS PROCEDURE

PRECAUTIONS

Accuracy is dependant upon adequate perfusion at probe site.
Can be affected by bright light, carbon monoxide poisoning, cyanide poisoning, nail polish, and polycythemia.

PROCEDURE

1. Find suitable location for probe (finger, earlobe, pediatric probe, bridge of nose, etc.)
2. Attach and record readings
3. May be used to monitor circulation distal to injuries.
4. If erratic reading, move probe to different site

RAPID EXTRICATION TECHNIQUE

BLS PROCEDURE

INDICATIONS

Unstable patients with immediate life threats
Compromised airway
Apnea or severe respiratory distress requiring assisted ventilations
Shock (no radial pulses) or uncontrollable bleeding
Altered level of consciousness
Dangerous, uncontrollable environments
Fire or immediate danger of fire
Danger of explosion
Rapidly rising water
Increasing toxic exposure

CONTRAINDICATIONS

Stable patients not meeting any of the above criteria

PROCEDURE

1. One rescuer must stabilize the C-spine in neutral position
2. Do a rapid primary survey
3. Apply the correctly sized C-collar
4. Slide long backboard onto seat and if possible, under patient's buttocks
5. Rescuer standing outside the open door takes control of C-spine stabilization
6. A rescuer positions themselves on the opposite side of the front seat ready to rotate the legs around
7. Another rescuer is positioned by the open door beside patient. By holding the upper torso, works together with the rescuer holding the legs to carefully turn the patient as a unit.
8. Patient is turned so that their back is towards backboard. Legs are lifted and back is lowered to the backboard. The neck and back are not allowed to bend during this procedure.
9. Carefully slide the patient to the full length of the backboard and straighten legs.
10. Move patient away from the hazard and secure as soon as possible to the backboard.

SPINAL MOTION RESTRICTION (IMMOBILIZATION)

BLS PROCEDURE

INDICATIONS

External trauma above the clavicles
Mechanism of rapid deceleration
Penetrating trauma to head, neck, chest, abdomen, or pelvis
Unconscious with unknown history of event
Patient presents with or has CNS complaints

PRECAUTIONS

Properly sized C-collar must be used
Appropriate amount of padding is needed under the occipital region to provide inline stabilization

PROCEDURE A: C-COLLAR SIZING

1. Bring patients head to eyes forward inline position
2. Maintain inline stabilization
3. Measure the "key dimension" (from trapezius muscle at base of the neck to bottom of chin) using your fingers as a measurement guide (one, two, three, or four fingers)
4. On an assembled *Stifneck*^{TM} extrication collar, the distance between the black sizing post on the side of the collar and the bottom of collar (hard plastic) is used for comparison with the "key dimension" measured by your fingers.
5. The size that matches is the correct size C-collar.

PROCEDURE B: C-COLLAR APPLICATION

1. Pre-form the collar to the estimated shape.
2. On a <u>supine</u> patient, slide the loop fastener end under the neck just far enough that it can be reached. On a <u>seated</u> patient, this step is not necessary.
3. Place both of your hands on the front side of the collar on either side of the tracheal opening.
4. Slide the collar up the chest wall and under the chin making sure the chin is flush with the end of the chin piece.
5. With the chin piece properly positioned, grasp the collar by the tracheal opening and the loop fastener end to tighten.
6. Tighten by pulling the loop fastener end parallel with the ground then up to meet the hook fastener on the collar.
7. The hand at the tracheal opening will prevent any counter rotational forces and allow proper tightening.
8. Inspect the chin piece to ensure the chin is properly positioned.
9. Adjust the collar if necessary.

SPINAL MOTION RESTRICTION (IMMOBILIZATION)

BLS PROCEDURE

PROCEDURE C: SECURING TO LONG SPINE BOARD

1. Maintain inline C-spine stabilization.
2. Assess and record distal pulses, motor function and sensation
3. Apply appropriate C-collar (see procedures A & B)
4. Place extra rescuers to control the thorax, pelvis, and legs
5. Place backboard beside the patient
6. Leave patient's arms by their side. Try to avoid rolling on injured arm.
7. The person holding the head makes the count, carefully roll the patient as one unit to their side.
8. Do a quick check of the back for injuries or deformities
9. Roll the patient onto the backboard
10. Secure with spider straps or other straps making sure the straps are in the following locations: Lower legs, legs (above knees), pelvis, thorax (over the shoulders with spider straps or under the arms on regular straps)
11. Secure straps tight enough to hold but not restrict breathing.
12. Sequence for strapping should be from the legs up with head being secured last.
13. Extra padding may be needed to fill the gaps between the straps and patient to ensure maximum spinal motion restriction.
14. Apply **cervical immobilization device** with appropriate amount occipital padding to insure inline position.
15. Secure the head with 2" tape from one side of the LSB across the forehead and across the eyebrows to the opposite side of the LSB. (NOTE: It is important to allow the tape to stick to all areas of the forehead and eyebrows to insure restriction of movement.)
16. Reassess distal pulses, sensation, and motor function.

SPLINTING

INDICATIONS

Isolated suspected extremity fractures
Sprains and strains, snakebite, or bleeding control

BLS PROCEDURE

CONTRAINDICATIONS

Extremity splinting can be time consuming and should not take priority over life threatening conditions.
In cases of multi-system trauma, the LSB can act as a full body splint.
In general, splinting a long bone fracture should immobilize the joint above and below the fracture site.
Joint injuries should immobilize the long bones above and below the fracture site.
Traction splints should NOT be applied if there is a proximal femur fracture, pelvic fracture, or a tib fib fracture.

PROCEDURE A: Long Bone (Femur)

1. Universal precautions
2. Stabilize the injured limb manually
3. Consider sedation or analgesia prior to moving extremity
4. Assess distal pulses, sensation, and motor function
5. If pulses are absent distal to injury, then apply inline traction to the leg to the return of pulses
6. Apply traction splint to patient comfort.
7. In unconscious patients, apply traction to the return of distal pulses. A pulse oximetry can help with pulse monitoring in these circumstances.
8. Reassess distal PMS after splinting and q 5 minutes thereafter.
9. In the event of bilateral femur fractures with shock, MAST pants can be used as a splint for both legs.
10. It may be necessary to splint some femur fractures in the position found if angulated.
11. In general, if pulses and sensation are present distal to the injury, field reduction should not be attempted. In the event this occurs, consult with medical control to discuss options.

PROCEDURE B: OTHER SPLINTING TECHNIQUES

The following splints are recommended for the following situations. As every situation is different, splints may have to be improvised to achieve the desired effect of immobilization.

Clavicle	Sling and swath
Radius/ulna	Ladder, board, or Sam splint
Tib/fib	Ladder, board, or Sam splint
Ankle	Pillow splint
Joints	In position found
Pelvis	MAST
Hand	In position of function
Hip	Scoop / pillow, inverted KED, LSB

Assess distal PMS before and after splinting, then periodically during transport.

THORACENTESIS

ALS PROCEDURE

INDICATIONS

Increased ventilatory pressure resulting in difficulty ventilating the patient (with an open airway)
Absent lung sounds on affected side JVD (may not be present with massive blood loss)
Hypotension (no radial pulses)
Increasing respiratory distress
Decreased SPO2
Traumatic cardiac arrest with chest pathology

CONTRAINDICATIONS

None in the presence of a tension pneumothorax

PROCEDURE

1. Universal precautions
2. Identify the second or third intercostals space, midclavicular line on affected side
3. Quickly prep the area with antiseptic

Procedure: 14 ga Jelco (Needle Decompression)

1. Insert Jelco into the skin over the 3rd rib just over superior border. An alternative site is the 5th intercostal space, mid-axillary line if other sites are unavailable.
2. Insert catheter through the parietal pleura until air escapes.
3. Air should exit under pressure.
4. Remove the needle and leave the plastic catheter in place.
5. Reassess frequently for redevelopment of condition
6. If tension pneumothorax returns, repeat procedure.

Procedure: Argyle Turkle Safety Thoracentesis Needle

1. Insert into the skin over the 3rd rib just over the superior border. An alternative site is the 5th intercostals space, mid-axillary line of other sites are unavailable.
2. Insert the catheter through the parietal pleura until air escapes.
3. During insertion the color band will show RED until through the parietal pleura then it goes to GREEN. Advance catheter off device.
4. Air should exit under pressure.
5. Reassess frequently for redevelopment of condition.
6. If tension pneumothorax returns, repeat procedure.

Procedure: 8fr Pediatric Chest Tube

1. Make puncture type incision into the skin over the 3rd rib just over superior border. An alternative site is the 5th intercostals space, mid-axillary line of other sites are unavailable.
2. Insert the trocar and catheter through the parietal pleura until air escapes.
3. Air should exit under pressure.
4. Advance chest tube off trocar into pleural cavity.
5. Secure chest tube in place.
6. Reassess frequently for redevelopment of condition.
7. If tension pneumothorax returns, repeat procedure.

THROMBOLYTIC THERAPY

INDICATIONS

Acute myocardial ischemia, injury, or acute infarction

ALS PROCEDURE

PROCEDURE: ADJUNCTIVE THERAPY

1. Administer 2 chewable aspirin if not allergic or contraindicated
2. Administer Heparin IV **60u/kg bolus (max 4,000u)** when giving Retavase.

RECONSTITUTION INSTRUCTIONS OF RETAVASE

1. Draw up 10ml of sterile water into the 10ml syringe.
2. Connect the dispensing pin to the syringe.
3. Transfer the 10ml of sterile water into the vial of **Retavase.**
4. Swirl the vial gently to dissolve the **Retavase.** DO NOT SHAKE.
5. Withdraw the reconstituted **Retavase** solution into the syringe.
6. Attach a 20g needle to the syringe and administer to the patient using the following guidelines.

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DOSING INSTRUCTIONS

1. Only give IV.
2. Establish a second IV line.
3. Each dose should be administered in an IV line where no other medication is being simultaneously injected or infused.
4. Administer as a 10 units + 10 units double bolus injection.
5. Administer each **10 unit** bolus over 2 minutes. Note the time of administration and transfer information to receiving personnel.
6. Before second bolus is given make a quick assessment for bleeding disorders to include:

Epistaxis?	*Yes or No*
GI bleeding?	*Yes or No*
Mental status change?	*Yes or No*
Pupils unequal?	*Yes or No*
Unequal movement of extremities?	*Yes or No*
Speech abnormal?	*Yes or No*

If the answer is YES to any of these, on-line medical control MUST be contacted before administration of second bolus.

THROMBOLYTIC THERAPY (continued)

ALS PROCEDURE

DOSING INSTRUCTIONS (continued)

7. Give the second bolus 30 minutes after initiation of the first bolus.
8. Give both boluses despite signs and symptoms of reperfusion.
9. If the 30-minute window for the second bolus is missed, the second bolus should be given with on-line medical control only.

OTHER CONSIDERATIONS

1. Fax ECG to the receiving cardiologist if possible (optional). Paramedics or flight crew team must discuss the situation with Medical Control.
2. The opened kit must stay with the patient.
3. Missed IV attempts should be reported to the accepting medic/nurse.

THROMBOLYTIC THERAPY CHECKLIST

INDICATIONS

Acute myocardial ischemia, injury, or acute infarction

ALS PROCEDURE

PROCEDURE

1. Complete form with attention to identifying any patient that should not receive thrombolytics.
2. Special attention should be made of recent body piercings.
3. Ensure patient understands terminology when interviewing for thrombolytic screen.
4. Document online physician and hospital contact and times of thrombolytic administration.
5. Document reassessment findings prior to second bolus.

TRANSCUTANEOUS PACING (TCP)

ALS PROCEDURE

INDICATIONS

Symptomatic bradydysrhythmias
Symptomatic heart blocks

CONTRAINDICATIONS

None in the emergency setting

PRECAUTIONS

Do not place the pacer electrodes directly over an implanted pacemaker generator or AICD device.

PROCEDURE

1. Explain procedure to patient.
2. Connect 3 basic leads in proper position. Record a rhythm strip prior to pacing.
3. Adjust ECG size if necessary or select the lead with the tallest R wave.
4. Apply pacing pads or **Quick Combo™** electrodes in the anterior/ posterior position as directed by the manufacturer.
5. Turn pacer unit on.* Do not activate pacer until pacer pads have been applied.
6. Set rate at 80 bpm.
7. *in Bradycardia, gradually increase energy (milliamps) until electrical capture is observed. (generally a wide bizarre QRS complex)
8. Check the pulse on the right arm for mechanical capture. If pulse is present, assess blood pressure. Record rhythm strip.
9. If mechanical capture is not achieved, continue to increase energy (milliamps) to maximum in an effort to achieve capture.
10. Continue to pace while CPR (if necessary) is in progress, even if capture is not obtained.
11. Administer **2.5 – 5 mg** of **Versed** for sedation if discomfort to patient is intolerable.

VITAL SIGNS

BLS PROCEDURE

DEFINITION

Pulse rate and quality
Auscultated Blood Pressure
Respiratory rate and depth
Skin color, temperature, and moisture

INDICATIONS

Any patient contact
Before and after medication administration
Every 5-10 minutes in critical patients or patients receiving vasoactive drugs
As needed on long transports of stable patients
Minimum of 2 sets required on all transported patients

CONTRAINDICATIONS

Do not attempt blood pressure on injured extremities
Arms on the side of previous mastectomies
Arms with dialysis shunts

PROCEDURE

1. Universal precautions
2. Choose appropriate sized cuff for the patient
3. Auscultated blood pressure is required as a baseline and before and after medication administration.
4. Record vital signs and the times taken on the MARF.

EMSystem Alert Criteria

1. Any incident with more than 5 patients (weather, motor vehicle crash, building collapse.)
2. Any incident involving hazardous materials i.e. explosion, tanker rollover etc. which are threatening a geographic area
3. Downed aircraft or potential aircraft emergency with more than 5 persons on board – i.e. emergency landing.

   It is also very important to be very specific in the location description i.e. address and city.

TRANSFER GUIDELINES:

CMH EMS considers patient transfers to be a significant and important portion of the services provided in its daily operation.

Response to emergency calls is the primary priority, transfers will be done as EMS crews and adequate coverage of the CMH response area is obtained.

Patient transfers will be covered in the most expedient manner possible, taking into account local resources and transport factors.

CMH EMS can require any crew or crew member to perform patient transfers while on duty. Transfers will be performed as assigned. Determination of unit and crew utilization will be made by Shift Supervisor and/or Director.

Patient transfers will be performed without warning lights or sirens unless patient condition warrants upgrade. All changes in transport code must be documented.

During transport standard CMH EMS treatment protocols will be used, unless other treatment is necessary- written physician orders.

Responding crew will take required items for transport and make contact with patient's caregiver for report. BOTH verbal (bedside) and written reports will be given to transport crew. Prior to leaving sending facility, transport crew will re-confirm destination with patient and nursing staff.

Upon arrival at destination- patient will be left in care of receiving facility staff with written and verbal report. The patient's personal belongings are to be left in the care of receiving staff and documented. These should be completed as quickly as possible to reduce the time crews are out of response area. Once transport crew reenters CMH response area they are to notify Polk County Central Dispatch of location and status.

A Physician Certification Statement (PCS) should be filled out for all inter-facility transfers or transports to the patient's residence. This form can be found on the CMH intranet. The completed PCS form is to be given to the transport crew.

EMERGENT TRANSFERS

Generally defined as- life threatening or potentially life threatening symptoms. These patients will be transported with a Paramedic providing care. If the Paramedic feels that additional resources are necessary, this will be made known to the nursing staff immediately.

Verbal and written report will be given to transport crew.

It will be the responsibility of the transport crew to make the determination if additional resources are needed. This includes understanding of current patient condition, treatments, and any equipment used during transport.

Crews will respond as if this is an emergency call. Utilization of resources will be at the discretion of the Shift Supervisor and/or Director-ie: using Hickory County crew to cover/post or to transport patient.

ALS (Advanced Life Support)

Generally defined as- NO immediate life threatening conditions exist, but the patient is undergoing treatments that require a Paramedic to provide care.

These include, but are **not** limited to: IV with fluids infusing- and ***must*** continue to infuse during transport, medications/blood infusing, cardiac monitoring, need for pain control, pregnancy greater than 20 weeks with active labor or pregnancy related issues, or possible deterioration in patient condition that would require invasive airway maneuvers.

Transport crews will respond within 10 minutes to transferring department, *if available.*

The nursing units are encouraged to notify EMS as soon as possible, this will allow for emergency coverage to be continued in the response area. When the patient is ready for transport, then the nursing units can notify Polk County Central Dispatch.

If there is no ambulance available in Polk County, dispatch will be able to contact either the Supervisor, or the crews to determine when another ambulance will be available. If the physician feels as if the patient cannot wait until an ambulance returns, consider dispatching Hickory County (this will be done through Polk County Central Dispatch). It is important to keep in mind that this may deplete emergency coverage for two counties.

BLS (BASIC LIFE SUPPORT)

Generally defined as- NO immediate life threatening symptoms exist OR there is no condition that requires a Paramedic provide care.

Examples include, but are NOT limited to: return to LTC, return to residence (and patient meets need for ambulance transport), psychiatric transfers.

Transport crew will contact transferring unit, obtain patient destination and inquire if patient is ready for transport. If there is an ambulance available immediately, and will not deplete emergency coverage, the transfer will take place. If there is not ambulance immediately available, dispatch will notify unit of estimated time when crew will be available.

BLS transfers will not take place to destinations greater than 90 miles (one way) if there is one ambulance available in Polk County. The exception will be if the physician determines that extraordinary circumstances exist. Caution should be used, as this will deplete Polk County of emergency coverage for an extended period of time.

SPECIAL CIRCUMSTANCES

During inclement weather, transport crew will notify either Shift Supervisor or Director and inform them of patient destination. The transfer may be put on hold until the safety of the patient and crew can be established. The route will be checked with Missouri State Highway Patrol and weather forecasts. The weather needs to be clear for both legs of transport- that being to destination and return to Bolivar.

If the transport crew requests that Security or a female rider accompany them, they should notify nursing staff immediately. (*SW09-01*)

Patients in the custody of law enforcement and restrained with handcuffs and /or leg irons will be transported by CMH EMS only if an officer from the arresting agency is present throughout EMS transport. Patients may not be handcuffed to cot.

If a patient requests to be let out of ambulance, transport crew should contact the receiving hospital and the on duty Emergency Room Physician at CMH immediately for

direction. In, extreme cases (need for patient/crew safety) Law Enforcement should also be contacted.