



Lawrence-Douglas County
Fire Medical
Treatment Protocols
And
Drug Formulary



AUTHORIZATION FOR PROTOCOLS

These EMS Policies, Medical and Trauma Protocols are issued under the authority of the department Medical Director as allowed under Kansas State Statute KS 65-6126 and KS 65-6112 (n).

These Protocols will be continuously reviewed. Based on significant recommended changes in drug therapies and/or procedures, the medical director may authorize interim protocol changes as deemed appropriate. These addendums will be incorporated into the next major protocol revision. All department members will receive new or revised protocols along with necessary training prior to implementation.

Approved:

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September 1, 2014
Date

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Legend

All **HIGHLIGHTED** medications are Paramedic Level

 Contact Medical Control Prior For Authorization

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General Principles of Medical Care

The following measures shall be applied to promote prompt and efficient emergency medical care to all patients:

1. The safety of EMS personnel is paramount. Each scene must be evaluated for hazards upon arrival, and throughout patient care. Assess the need for additional resources as soon as possible after arrival.
2. Proper personal protective equipment and body substance isolation must be utilized according to agency and industry standards.
3. A patient shall be considered any person who is requesting and/or in need of medical attention or medical assistance of any kind.
4. A patient encounter shall be considered any event when signs and symptoms, or a patient complaint, results in evaluation or treatment.
5. All patients in the care of EMS shall be offered transport by ambulance to the nearest appropriate hospital or other protocol based destination. In the event a patient refuses transport, a properly executed refusal process must be completed.
6. An EMS patient care report will be generated at the conclusion of each patient encounter when there is evidence of obvious injury or illness. A complete copy, or the approved abbreviated report, must be left with the receiving facility at the time of transport.
7. Crews must be prepared for immediate medical interventions, appropriate for the call level (e.g., defibrillation, airway management, etc.), upon initial patient contact.
8. Whenever possible, obtain verbal consent prior to initiating treatment; respect the patient's privacy and dignity.
9. Prior to the administration of any medication, assess for allergies. If any questions arise in reference to medication allergies, contact Medical Control prior to giving any medication.
10. The mini-SOAP format is preferred when time allows:
 - Subjective - document the patient's chief complaint (in their own words) and history of present illness (including history of events surrounding call)
 - Objective- document pertinent physical findings and initial patient presentation (how the patient was found, e.g. position)
 - Assessment – document the impression of the problem and/or working diagnosis. This can be the chief complaint, e.g. "chest pain"
 - Plan and prehospital course – document which protocols and treatments were administered and document pertinent events that occur prior to ED arrival, as well as the patient's response to treatments administered.
11. Expanded SOAP information will be provided to the receiving facility by the transporting agency. This more detailed note will include the first responder information, and shall be documented on a run report for every patient
12. When caring for pediatric patients, use a weight or length based system to determine medication dosages and equipment sizes.
13. Following training and successful competency assessment by their respective agencies, EMT-A's are authorized to apply pulse oximetry and capnography monitoring devices, perform blood glucose evaluations, perform bag-valve-mask ventilation, perform Combitube insertion and ventilation, perform bag-valve ventilation of paramedic inserted endotracheal tubes, and administer certain medications per department protocol.

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14. To perform as an EMT-A/Paramedic, personnel must be knowledgeable and proficient in the scope of practice described and taught in the curriculum, and maintain active State certification.
15. Perform all procedures as per the LDCFM Protocols and Procedures. If a procedure or protocol is not addressed, contact Medical Control or the receiving hospital physician for orders prior to proceeding.
16. If Medical Control gives orders to perform a procedure that is not covered in the LDCFM Protocols or Procedures, but is within the scope of practice of an EMT/Paramedic, perform the procedure in accordance with standards set for the level of certification.
17. For all cases where patients require parenteral narcotics or sedative agents, continuous cardiac, oxygen saturation and ETCO₂ monitoring shall be performed.
18. As time permits, the Regional Poison Control Center (800-222-1222) should be contacted when handling calls involving poisonous/hazardous material exposures, overdoses or suspected envenomation. In the event that the RPCC gives recommendations or orders that are not contained within these protocols, EMS providers are authorized to carry out the RPCC's instructions.
19. When using supplemental oxygen in accordance with adult or pediatric treatment protocols adhere to the following:
 - In patients who are noncritical, and have no evidence of respiratory distress use only the concentration of oxygen needed to achieve oxygen saturations over 95%. In most cases this can be accomplished using a nasal cannula.
 - For patients with serious respiratory symptoms, persistent hypoxia, or where otherwise specified in protocol, use 100% supplemental oxygen via nonrebreather mask or BVM.
20. Monitor/Defibrillators used under the scope of these protocols must be able to provide:
 - Escalating energy, biphasic defibrillation (includes AED's)
 - Continuous ECG waveform and ETCO₂ waveform simultaneously on the monitor screen
 - Medical Transport Destination- All patients should be transported to the hospital of their choice (when operationally feasible) unless the patient is unstable.
 - Unstable patients:
 - All patients whose condition is judged to be unstable will be transported to the closest appropriate receiving facility (see exceptions below)
 - If several hospitals are within the same approximate distance from the scene, allow the patient, and/or patient's family, to select the receiving facility of their choice
 - For transport destination of Cardiac Arrest-Post Resuscitation, STROKE, STEMI ALERT, TRAUMA or OB (>20 week) patients, refer to appropriate protocol

General Principles of Medical Care

Physician on Scene

Occasions will arise when a physician on the scene will attempt to direct or assist prehospital care.

The physician must be willing to accept the following conditions:

- Provide documentation of her/his status as a physician (copy of medical license)
- Assume responsibility for outcomes related to his/her oversight of patient care
- Agree to accompany the patient during transport if accompaniment is deemed necessary.
- The Medical Control physician must relinquish the responsibility of patient care to the physician on scene for the scene physician to take control.

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- All interactions with physicians on the scene must be well documented in the Patient Care Report, including the physicians name and contact information.

Orders provided by the physician should be followed unless, in the judgment of the paramedic, they endanger the patient. The paramedic may request the physician to attend the patient during transport if the suggested treatment varies significantly from standing orders.

If the physician's care is judged by the paramedic to be potentially harmful:

- Politely voice his or her concerns and immediately contact Medical Control
- If the conflict remains unresolved, follow the directives of the Medical Control Physician
- If the physician on scene continues to carry out the intervention in question, offer no assistance and enlist aid from law enforcement

Patient Care during Transport

The following situations shall require more than one attendant in the back of the ALS unit:

- Medical or trauma cardiac arrest or post-resuscitation care
- Patients requiring active airway assistance (e.g. endotracheal tube, Combitube, or bag valve mask (BVM))
- Imminent delivery of a fetus
- For scenarios not covered above:
- If the transporting agency request a 2nd attendant in the back of the ALS transporting unit, a 2nd attendant should accompany the patient
- A 2nd attendant is not required if there will be an unacceptable delay in transport
- A paramedic student or EMT can assist in attending ALS patients, but shall only be counted as the "second attendant" when determined appropriate by the primary paramedic attendant

Interfacility Transport

Interfacility transport requires unique skills and capabilities, both in clinical care and operational coordination. Adhere to the following standards for all interfacility transports:

- Interfacility transport decisions (including staffing, equipment and transport destination) should be made based on the patient's medical needs.
- Coordination between hospitals and interfacility transport agencies is essential before transports are initiated, to ensure that patient care requirements do not exceed the capabilities of the patient attendant
- If EMS crew members are not capable of managing devices or medications that must be continued during transport, an adequately trained care provider from the transferring facility must accompany the patient during transport.

Radio Report Format

For all EMS transported patients, radio or telephone contact should be made with the receiving center prior to arrival to provide general patient information and estimated time of arrival.

Begin each transmission with the following:

- Agency name and unit number
- Triage category and triage level (e.g. trauma red, STEMI alert, cardiac arrest)
- Estimated time of arrival
- After the receiving facility acknowledges the initial information, give a concise report, including repeat triage category/level, age and gender, chief complaint, vital signs,

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Glasgow Coma Score, treatment provided or under way, and any anticipated delay in transport (e.g. extrication)

Medical Control Base Station

Use on-line Medical Control for any additional orders needed to meet the patient's needs during on-scene care or transport.

- When preferred, medical orders can be obtained from the receiving ED

Triage Categories

Trauma Indicates a trauma patient

Medical Indicates a medical patient

Red- High acuity,

Yellow -Serious, but not critical

Green -Low acuity of illness

Trauma Alert Meets Trauma Alert criteria

STEMI Alert Meets STEMI Alert criteria

Stroke Alert Meets Stroke Alert criteria

HAZMAT Alert Suspected Hazardous Material exposure

Code Blue-Cardiopulmonary arrest

Transfer of Care at Hospitals

Once on hospital property, the receiving facility assumes responsibility for all further medical care delivered to EMS transported patients. LDCFM Personnel are not authorized to follow prehospital protocols after arrival at a hospital receiving facility. Exceptions to this should occur only in the following circumstances:

- Life threatening situations such as cardiac arrest, airway emergencies or imminent delivery of a fetus
- Continuation of treatments started prior to arrival (e.g. nebulizers, CPAP, IV fluids)
- When specifically instructed to continue care by the ED physician (when possible, document the physician's name and time verbal order was given)

To assure all pertinent information is conveyed to the hospital staff, crews should interface with the charge nurse or nurse assuming patient care upon arrival at the receiving facility. Transporting personnel shall provide the receiving facility with any available patient identification, as well as all pertinent incident and patient care information at the time of transfer

Important Considerations:

- The method of physical transfer should be safe, and not require the discontinuation of medically indicated immobilization procedures.
- Document the event well for quality review purposes
- Document the patient condition (including pain level when appropriate) at time of transfer

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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>Scene Size-up/BSI</u></p> <ul style="list-style-type: none"> • Assure that the scene is safe for you, other rescuers and the patient. It may be appropriate to withdraw from the scene in some situations until a safe environment can be obtained. It may be appropriate to rapidly extricate the patient from a dangerous situation • Apply personal protective equipment (PPE) as appropriate. • Identify the number of patients and other resources that may be needed <ul style="list-style-type: none"> ○ Assume command, transmit size-up, identify strategy and request additional resources as needed ○ Begin triage if appropriate <p><u>Primary Survey-</u> Search for immediate life threats by assessing the "ABCs" (airway, breathing or circulation problems) and treating the problems as they are found</p> <p><u>A- Assess Airway:</u> Note the patient's ability to speak, and any evidence of actual or potential airway obstruction including vomitus, bleeding, dentures, loose teeth or foreign bodies</p> <p>Secure Airway</p> <ul style="list-style-type: none"> • BLS maneuvers <ul style="list-style-type: none"> ○ Jaw thrust, head tilt-chin lift, Rescue position ○ Oral or nasal airway ○ Suction ○ Combitube • ALS Maneuvers <ul style="list-style-type: none"> ○ Oral endotracheal intubation ○ Nasal endotracheal intubation ○ Surgical cricothyroidotomy <p><u>B- Assess Breathing:</u> Note patient's ability to speak, rate, depth and quality of ventilations, abnormal noises/stridor, retractions, accessory muscle use, nasal flaring or cyanosis</p> <ul style="list-style-type: none"> • Administer oxygen to maintain oxygen saturation as follows: <p>95-100%- Saturation considered adequate. Apply supplement oxygen only as indicated by clinical signs of hemodynamic compromise (ie: shock, dysrhythmias, dyspnea, chest pain of cardiac origin, altered LOC, etc)</p>		

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<p>90-94%- Supplement oxygen indicated. Apply oxygen to establish and maintain the SpO2 at or above 95%</p> <p><90%- High flow oxygen indicated. Apply oxygen by non-rebreather mask, bag-valve ventilation and/or possible endotracheal intubation to establish and maintain the Spo2 at or above 95%</p> <p>90-92%- COPD, or suspected COPD patient’s ideal range. Administer oxygen to establish and maintain SpO2 in this range</p> <ul style="list-style-type: none"> • WARNING: Oximetry readings may be inaccurate for numerous reasons including acid-base imbalances, CO poisoning, hypothermia, low perfusion states, nail polish color (black, blue and green), methemoglobinemia, sensor location or movement. If sensor readings are of question, oxygen application should be based on the patient’s clinical presentation and/or chief complaint • Assist ventilation as required <ul style="list-style-type: none"> ○ Bag-valve mask ventilation ○ Bag to airway tube ventilation <p>C- Assess circulation: Note pulses, level of consciousness, skin abnormalities (color, temperature, capillary refill, moisture)</p> <ul style="list-style-type: none"> • Assist circulation as required: <ul style="list-style-type: none"> ○ If major bleeding is present, control with direct pressure, elevation, pressure points and tourniquets • If no pulse: <ul style="list-style-type: none"> ○ Initiate CPR and search for a “shockable rhythm” as indicated ○ Follow DOA or DNR protocol if indicated <p>D-Assess neurologic function (disability):</p> <ul style="list-style-type: none"> • Note level of consciousness • Glasgow Coma Scale • AVPU scale • Movement of each extremity • Cincinnati Pre-Hospital Stroke Scale <p>Secondary Survey- A systematic history and physical examination, focused on the patient’s complaints, searching for problems that may not be immediately life or limb threatening, but that may become so if not addressed appropriately</p>		
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<ul style="list-style-type: none"> • Obtain chief complaint • Obtain "SAMPLE" history <ul style="list-style-type: none"> ○ Signs and symptoms (pertinent positives and negatives) ○ Allergies ○ Medications ○ Past medical history ○ Last meal ○ Events/Environment leading to this episode • Obtain baseline vital signs <ul style="list-style-type: none"> ○ Blood pressure ○ SpO2 ○ Pulse ○ Skin ○ Respiration Rate • Perform focused physical examination • Consider application of cardiac monitor • Consider application of pulse oximeter • Consider obtaining rapid bedside glucose determination • Consider establishing IV access • Consider administering drug therapies (if indicated) <ul style="list-style-type: none"> ○ Right patient? ○ Right drug? ○ Right dose? ○ Right route? ○ Right time? ○ Right reason? ○ Right date? ○ Right documentation? ○ Allergies? • Consider other therapeutic modalities (if indicated) <p><u>Triage Categories-</u></p> <table border="1"> <thead> <tr> <th>Category</th> <th>Definition</th> </tr> </thead> <tbody> <tr> <td>Trauma</td> <td>Indicates a trauma patient</td> </tr> <tr> <td>Medical</td> <td>Indicates a medical patient</td> </tr> <tr> <td>Red</td> <td>High acuity, but does not meet alert criteria</td> </tr> </tbody> </table>	Category	Definition	Trauma	Indicates a trauma patient	Medical	Indicates a medical patient	Red	High acuity, but does not meet alert criteria		
Category	Definition									
Trauma	Indicates a trauma patient									
Medical	Indicates a medical patient									
Red	High acuity, but does not meet alert criteria									

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Yellow	Serious, but not critical		
Green	Low acuity of illness		
Blue	Cardio pulmonary Arrest		
Black	No attempt and/or after orders received to discontinue resuscitation		
Trauma Alert	Meets trauma alert criteria		
STEMI Alert	Meets STEMI alert criteria		
Stroke Alert	Meets Stroke alert criteria		
HAZMAT Alert	Suspected hazardous Materials exposure		
<p><u>Transport-</u></p> <ul style="list-style-type: none"> • Transport while monitoring vital signs and patient condition • Emergent or Opticom transport to the hospital may be indicated if the patient is physiologically unstable: <ul style="list-style-type: none"> ○ Unable to establish or maintain an airway ○ Unable to ventilate ○ Unremitting shock (including cardiac arrest) ○ As otherwise defined in appropriate protocols (including as determined with medical control contact) • Patient destination as determined by appropriate protocol • Contact medical control as determined by appropriate protocol • Patient destination as determined by transport officer in Mass Casualty incident. 			

Acute Abdomen		Pg. 14
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Secure airway • Administer oxygen and assist ventilation as required • Establish IV access/IO • Control any obvious hemorrhage • Pain above the umbilicus perform cardiac monitoring and 12 lead ECG • Administer Zofran • Administer Fentanyl 	<p><u>Zofran-</u> 4mg IV/IO slow push over 30 seconds or IM</p> <p><u>Fentanyl-</u> Up to 50mcg IV/IO, IM titrate to effect over 1-2 minute</p>	<p><u>Zofran-</u> 0.1mg/kg IV/IO slow push over 30 seconds or IM</p>

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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>General</u></p> <ul style="list-style-type: none"> • If initial assessment indicates possible Acute Coronary Syndrome (ACS), triage, "STEMI ALERT" to LMH medical Control • Obtain 12 lead EKG as soon as possible on any patient whom you suspect to have cardiac cause for their complaint unless doing so might cause significant delay in emergent intervention. This should include patients with cardiac dysrhythmias and prior to determination of cardiac medications • Ascertain symptom onset time and report to LMH medical control • IF ACS, proceed with the following • If pediatric patient presents with chest pain, contact medical control for further direction • Obtain bilateral BP's <p><u>Interventions:</u></p> <ul style="list-style-type: none"> • Secure Airway • Administer oxygen and assist ventilations as required • Establish IV access • Administer Aspirin • Administer Nitroglycerin <ul style="list-style-type: none"> ○ Paste can be used concurrently with spray • I.V. should be placed in left A/C if possible • If pain persists following Nitroglycerin therapy <ul style="list-style-type: none"> ○ Administer Morphine Sulfate ○ If allergic administer Fentanyl • Consider administering Zofran • Begin transport as soon as possible 	<p><u>Aspirin-</u> 324 mg P.O. chewable</p> <p><u>Nitroglycerin-</u> 0.4mg spray sublingual if SBP is above 100mmHg repeat Q 3-5 min.</p> <p><u>NTG paste-</u> 0.5-1.0 inch</p> <p><u>Morphine-</u> 2-4mg IV q 2-3 min to pain relief, MAX 10mg.</p> <p><u>Fentanyl-</u> 25-50mcg over 30 seconds-1min, additional doses 25mcg increments as needed MAX 100mcg IV/IO, IM, IN</p> <p><u>Zofran-</u> 4mg IV/IO, ODT tablets</p>	

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<ul style="list-style-type: none"> • Time permitting <ul style="list-style-type: none"> ○ Establish a 2nd IV, placed distal to 1st in the left arm ○ Transmit 12 lead EKG to LMH and notify receiving facility of results • If HTN (SBP >140 and or DBP >90) continues despite oxygen, nitrates, and/or Morphine/Fentanyl: <ul style="list-style-type: none"> ☞ Administer Metoprolol <p>Cardiogenic Shock: SBP<90, and pulmonary edema ☞ Administer IV fluid challenge with absence of pulmonary edema ☞ Administer Dopamine</p> <p>Notes: If decreased LOC or respiratory depression occurs after morphine administration: <ul style="list-style-type: none"> • Administer Nalaxone (Narcan) </p>	<p>Metoprolol- 5mg IV slow push, q 5min. MAX 15 mg.</p> <p>Dopamine- 400 mg/250cc NS infused at 2-20mcg/kg/minute as indicated titrate to effect. (SBP 80-100mmHg)</p> <p>Narcan- 2mg IV/IO, IM, IN</p>	<p>Narcan- 0.1 mg/kg <40kg or 5 y/o IV/IO, IM, IN or refer to Broslow tape</p>
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Airway Emergencies- Adult Dyspnea		Pg. 18
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<u>Basic Life Support</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Supplemental 100% oxygen <p><u>Advanced Life support</u></p> <ul style="list-style-type: none"> • Full ALS Assessment and Treatment • Observe for signs of impending respiratory failure; refer to Respiratory Failure section if needed <ul style="list-style-type: none"> ○ Hypoxia (SpO2 <90) not improved with 100% oxygen ○ Poor Ventilation effort (increasing ETCO2 not improved with treatment) ○ Altered mental status/ decreased level of consciousness ○ Inability to maintain patent airway • Begin CPAP if initial symptoms severe <ul style="list-style-type: none"> ○ Based on presentation, use manufacturer settings for asthma/COPD or CHF ○ Brief interruptions to administer medications are acceptable <p><u>Acute Bronchospasms (wheezing or history of asthma or COPD)</u></p> <ul style="list-style-type: none"> • Administer Albuterol and Ipratropium Bromide (Atrovent) • Repeat Albuterol and Ipratropium Bromide (Atrovent) X2 if wheezing persists • Administer Methylprednisolone (solumedrol) 	<p><u>Albuterol-</u> 2.5mg in 3cc N.S. repeat prn <u>Atrovent-</u> 0.5mg in 3cc NS repeat prn</p> <p><u>Solumedrol-</u> 125mg SIVP/IO or IM</p>	<p><u>Albuterol-</u> 2.5mg in 3cc N.S. repeat prn</p> <p><u>Solumedrol-</u> <40kg (>8 y/o) 2mg/kg SIVP/IO or IM max 60mg</p>

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<p>If Severe respiratory distress and wheezing persists after above:</p> <ul style="list-style-type: none"> Administer Epinephrine <p><u>Acute Pulmonary Edema (history of CHF, Pedal Edema, Elevated SBP)</u></p> <ul style="list-style-type: none"> Administer Nitroglycerin Administer Albuterol for wheezing associated with Pulmonary Edema Administer Dopamine for Hypotension Apply CPAP <p><u>Drowning</u></p> <ul style="list-style-type: none"> Spinal immobilization if indicated Consider CPAP for patients with significant dyspnea or hypoxia Protect from heat loss Patients may develop delayed onset respiratory symptoms Refer to appropriate protocol if cardiac arrest presents <p><u>Capnography/ ETCO2 Monitoring</u></p> <ul style="list-style-type: none"> Digital capnography (waveform) is the system standard for ETCO2 monitoring and continuous ETCO2 monitoring is a mandatory component of invasive airway management Immediately after placing an ETT or combitube capnography shall be applied to confirm proper placement <ul style="list-style-type: none"> Proper placement is indicated by 	<p><u>Epinephrine-</u> 0.3mg SQ</p> <p><u>Nitroglycerin-</u> 0.4mg spray or 1 inch paste</p> <p><u>Albuterol-</u> 2.5mg in 3cc repeat prn</p> <p><u>Dopamine-</u> 5-20mcg/kg/min titrate to maintain SBP >90 mmHg</p> <p><u>CPAP-</u> Initial dose 0-2cm/H20 increase until effective</p>	<p><u>Epinephrine-</u> <40kg (>8y/o) 0.01mg/kg, Max 0.3mg</p> <p><u>Albuterol-</u> 2.5mg in 3cc repeat prn</p>
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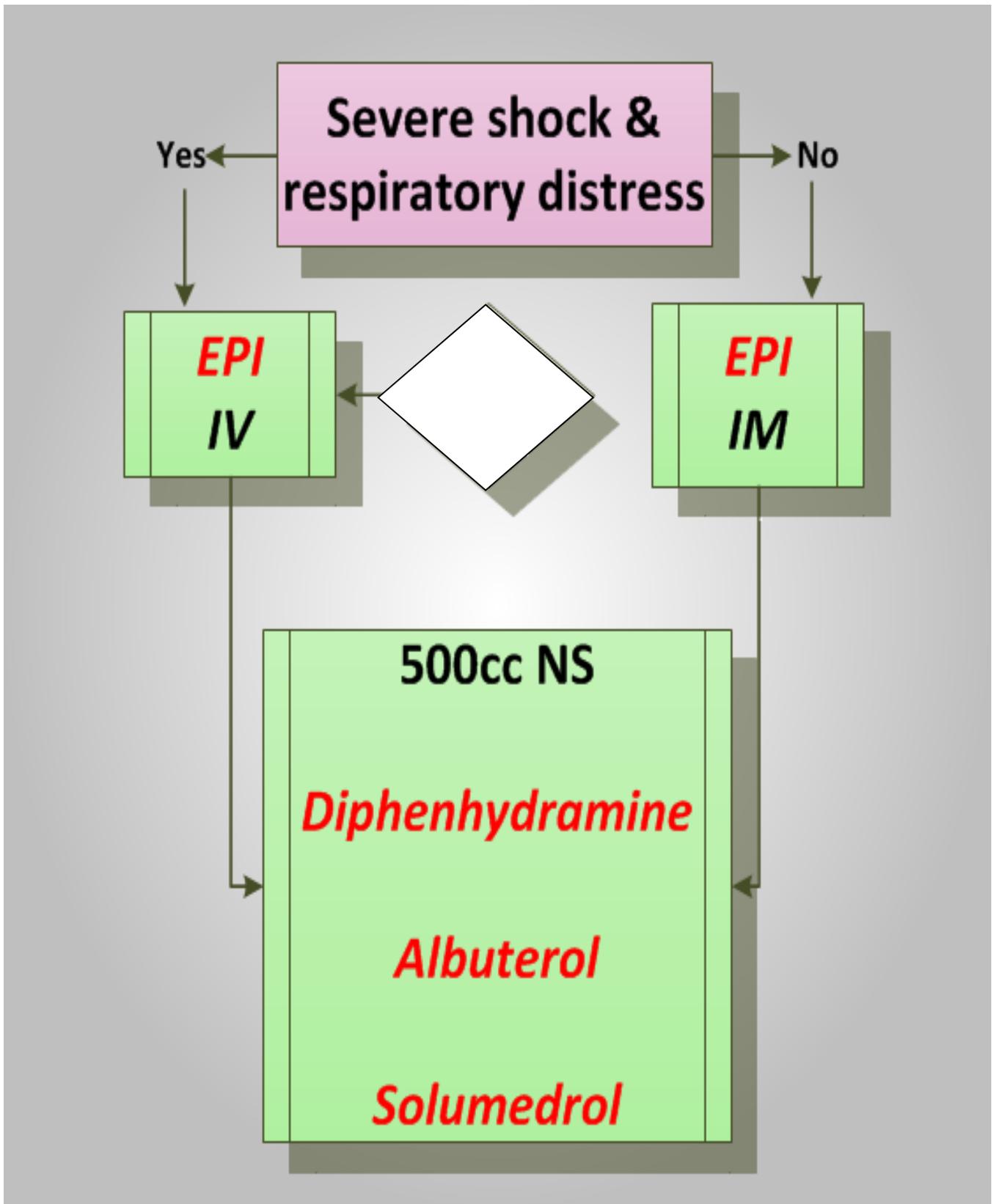
Airway Emergencies- Adult Dyspnea		Pg. 20
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<p>the presence of a continuous alveolar waveform on capnography</p> <ul style="list-style-type: none"> • If capnography is not available due to serious on-scene equipment failure, apply a colorimetric ETCO2 detector capable of continuous ETCO2 monitoring • If continuous expired ETCO2 cannot be detected by either of the above methods, the invasive airway device must be removed, and the airway managed noninvasively <p><u>Additional Measures-</u></p> <ul style="list-style-type: none"> • Assess epigastric sounds, breath sounds, and chest rise and fall • Record tube depth and secure in place using a commercial tube holder • Utilize head restraints devices (i.e. "head-blocks) or rigid cervical collar and long spine board immobilization as needed to help secure airway device in place 		
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Allergic Reaction		Pg. 21
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>Mild Reaction (Itching/Hives)</u></p> <ul style="list-style-type: none"> Administer Diphenhydramine (Benadryl) 	<p><u>Benadryl:</u> 1.0-2.0 mg/kg over 5 min IV, IM Max 100mg</p>	<p><u>Benadryl:</u> 1.0-2.0mg/kg IV over 5 min. Max 50mg</p>
<p><u>Moderate Reaction (Dyspnea, Wheezing, Chest tightness)</u></p> <ul style="list-style-type: none"> Administer Albuterol Administer Diphenhydramine (Benadryl) Administer Methylprednisolone (solumedrol) 	<p><u>Albuterol:</u> 2.5mg in 3cc N.S. <u>Benadryl:</u> 1.0-2.0 mg/kg over 5 min IV, IM Max 100mg <u>Solu-Medrol:</u> 125 mg SIVP or IM</p>	<p><u>Albuterol:</u> 2.5mg in 3cc N.S. <u>Benadryl:</u> 1.0-2.0mg/kg IV over 5 min. Max 50mg <u>Solu-Medrol:</u> 2 mg/kg, Max 60mg</p>
<p><u>Severe Reaction (BP<90, Stridor, severe respiratory distress)</u></p> <ul style="list-style-type: none"> Administer Epinephrine Administer Albuterol Administer Diphenhydramine (Benadryl) Administer Methylprednisolone (solumedrol) 	<p><u>Epinephrine IV:</u> 0.3mg IV slow push- 1:10,000 solution <u>Albuterol:</u> 2.5mg in 3cc N.S. <u>Benadryl:</u> 1.0-2.0 mg/kg over 5 min IV, IM Max 100mg <u>Solu-Medrol:</u> 125 mg SIVP or IM</p>	<p><u>Epinephrine IV:</u> 0.01 mg/kg, max 0.3mg 1:10,000 solution <u>Albuterol:</u> 2.5mg in 3cc N.S. <u>Benadryl:</u> 1.0-2.0mg/kg IV over 5 min. Max 50mg <u>Solu-Medrol:</u> 2 mg/kg, Max 60mg</p>
<p>In the setting of cardiac arrest, the following items should be performed in the post resuscitative phase, when time allows:</p> <ul style="list-style-type: none"> Administer Albuterol Administer Diphenhydramine (Benadryl) Administer Methylprednisolone (solumedrol) 	<p><u>Albuterol:</u> 2.5mg in 3cc N.S. <u>Benadryl:</u> 1.0-2.0 mg/kg over 5 min IV, IM Max 100mg <u>Solu-Medrol:</u> 125 mg SIVP or IM</p>	<p><u>Albuterol:</u> 2.5mg in 3cc N.S. <u>Benadryl:</u> 1.0-2.0mg/kg IV over 5 min. Max 50mg <u>Solu-Medrol:</u> 2 mg/kg, Max 60mg</p>

Allergic Reaction		Pg. 22
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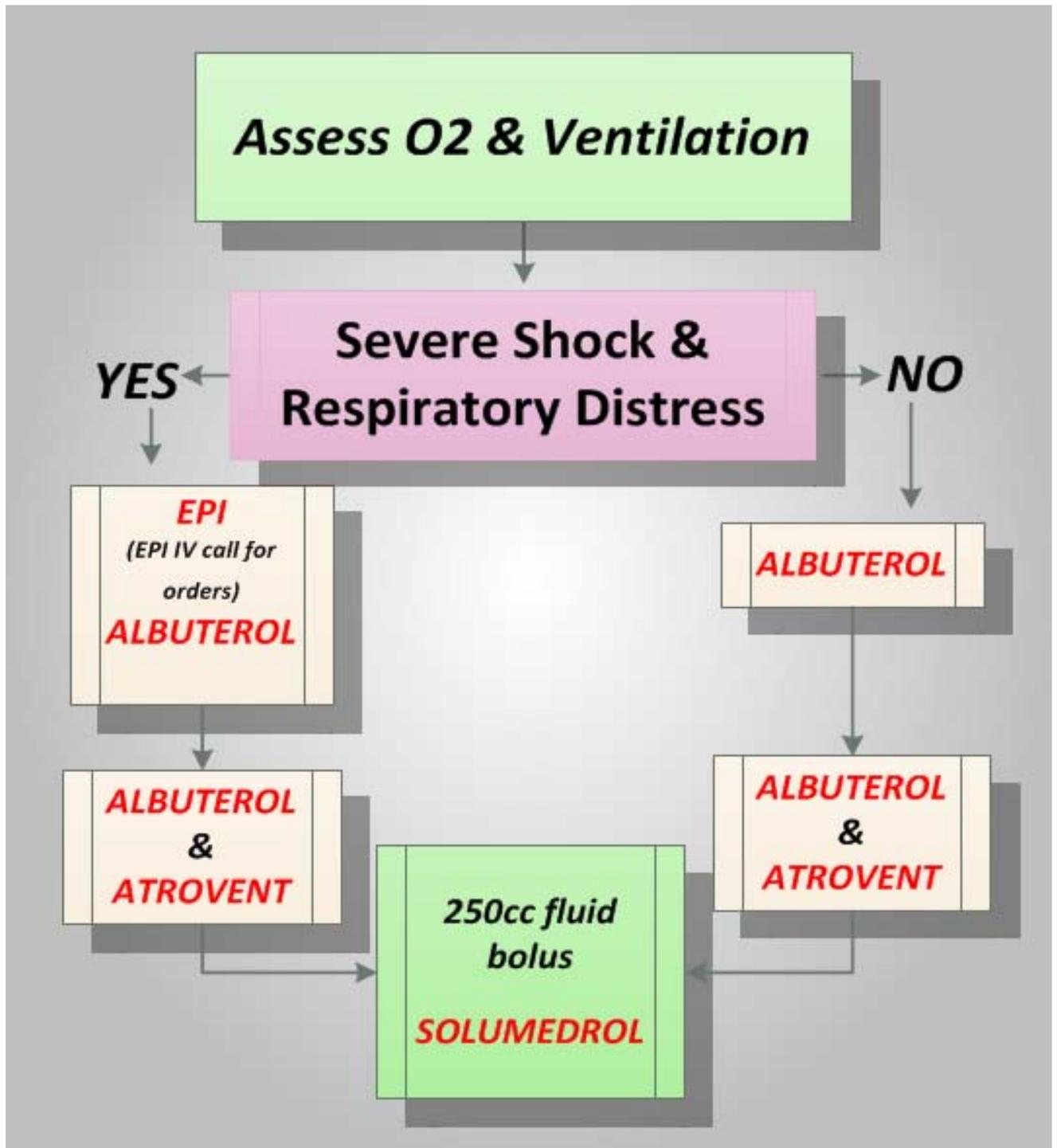
Behavioral Disorder		Pg. 23
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<u>Procedures/ Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Obtain brief history <ol style="list-style-type: none"> 1. The major problem or complaint from the patients point of view and from relatives/bystanders • Obtain specific information about the following and identify: <ol style="list-style-type: none"> 1. Significant past medical history 2. Thoughts or threats of suicide and previous attempts 3. Alcohol or drug use 4. Any abrupt changes in behavior or bizarre activity 5. Any crisis that may be a factor in the patient's condition (death of friend or relative, loss of job, illness, etc.) <p>ONLY IF SAFE AND MEDICALLY NECESSARY:</p> <ul style="list-style-type: none"> • Secure airway • Administer oxygen and assist ventilations as required • Establish IV access • Obtain a rapid bedside glucose test • Treat per applicable medical protocol • Consider IV administration of Versed if patient is a danger to himself or others • Attempt to establish rapport with patient <ol style="list-style-type: none"> 1. Remove or assist in removing individuals who may aggravate the situation 2. Put the patient at ease 3. Establish a calm, quiet atmosphere • If suicidal, do not leave patient alone and if possible, remove any dangerous objects • Transport while monitoring vital signs • If emergency treatment is unnecessary, do as little as possible, except to reassure while transporting • If patient is dangerous to himself or others, have law enforcement assist in transport • Restrain patient only if ABSOLUTELY NECESSARY as per patient restraint protocol 	<p>Versed- 5mg IV/IO, IN, IM may repeat as needed. MAX- 10mg</p>	<p>Versed- Total Kg X 0.2mg Max- 5mg or refer to Broslow tape.</p>

Bronchospasms/COPD		Pg. 24
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<u>Procedures/ Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> Secure airway Administer oxygen and assist ventilation as required Administer nebulized Albuterol sulfate If COPD Administer nebulized Atrovent (Ipratropium Bromide) Establish IV access Apply CPAP per CPAP protocol To reduce CPAP anxiety administer Ketamine Administer Solu-Medrol (methylprednisolone sodium succinate) <p>If history of asthma</p> <ul style="list-style-type: none">  Administer epinephrine HCL <p>In cases of severe shock and respiratory distress consider</p> <ul style="list-style-type: none">  epinephrine drip 	<p><u>Albuterol-</u> > 40kg (<8 y/o)- 2.5 mg in 3 cc N.S. repeat prn</p> <p><u>Atrovent-</u> >40kg (<8 y/o)- 0.5mg in 3cc NS May repeat prn</p> <p><u>CPAP-</u> Initial dose 0-2cm/H2O increase until effective</p> <p><u>Ketamine-</u>0.1-1mg/kg max or 400 mg total- IV,IO.</p> <p>IM- 2 mg/kg up to a total of 4 mg/kg</p> <p><u>Solu-medrol- >40kg (<8 y/o)-</u> 125mg SIVP/IO or IM</p> <p><u>Epinephrine-</u> >40kg (<8 y/o)- 0.3mg SQ</p> <p><u>Epinephrine Drip-</u> 0.3 mg in 100cc over 5-10 minutes</p>	<p><u>Albuterol-</u> <40kg (>8y/o)- 2.5mg in 3 cc N.S. repeat prn</p> <p><u>Ketamine-</u>0.1-1mg/kg max- IV, IM, IO.</p> <p><u>Solu-medrol- <40kg (>8y/o)</u> 2mg/kg SIVP/IO or IM max 60 mg</p> <p><u>Epinephrine-</u> <40kg (>8y/o) 0.01mg/kg, Max 0.3mg</p> <p><u>Epinephrine Drip-</u> 0.01mg/kg in 100cc, max 0.3mg over 5-10 minutes</p>

Bronchospasms/COPD		Pg. 25
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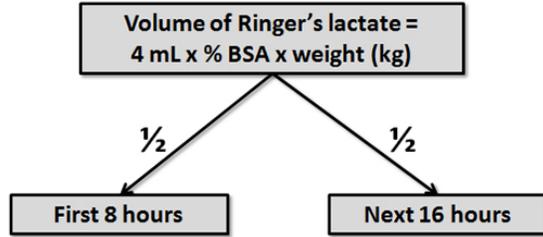
Burn Injury		Pg. 26
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>ASSESSMENT:</u> For burn patients with suspected more than 20% 2nd degree burns and/or greater than 5% 3rd degree burns, consider routing directly to appropriate burn care facility as determined by protocol. (Children’s Mercy, University of Kansas Hospital, and Research Medical Center)</p> <p><u>PRIMARY SURVEY</u></p> <ul style="list-style-type: none"> • Airway/C-spine immobilization • Breathing and ventilation • Circulation • Disability, neurologic deficit • Expose (remove all clothing and jewelry) • Fluid <p><u>SECONDARY SURVEY:</u> Use head-to-toe approach</p> <ul style="list-style-type: none"> • Remove all clothing and jewelry • Quickly assess % of skin involved and depth of burn • Cover patient with clean, dry sheet • KEEP WARM, hypothermia occurs rapidly • Avoid use of ice or ointments • If material is stuck to the skin, do not attempt to remove • For circumferential burns, elevate burn extremity above the level of the heart • May consider clear plastic wrap to reduce heat loss <p><u>TREATMENT:</u></p> <ul style="list-style-type: none"> • Calculate the percent of total burn surface area (TBSA) and include only partial (second degree) and full thickness (third degree) burns • Begin fluid resuscitation: <ul style="list-style-type: none"> ○ If burn size is greater than 10% pediatric or greater than 15% adult, initiate fluid resuscitation ○ Patients with greater than 30% TBSA burns require 2 large bore IVs (may be inserted through burned skin if necessary) • Pain Management <p><u>CAUTION:</u> For patients with pre-existing cardiac disease, pulmonary disease or age >70, start IV fluid administration at 250cc/hr. Avoid fluid challenge unless patient is hypotensive due to trauma</p>	<p><u>Fluid Management:</u> 500cc/hour</p> <p><u>Fentanyl-</u> 50mcg IV/IO slow push or IM, IN (max of 100mcg)</p> <p><u>Morphine-</u> 2-4mg IV/IO q 2-3 min (Max 10mg)</p>	<p><u>Fluid Management:</u> <5 yrs= 125 cc/hour 6-13 yrs= 250cc/hour</p> <p><u>Fentanyl-</u> 1-3 mcg IV/IO or refer to Broslow tape</p> <p><u>Morphine-</u> For patients ≤ 25 kg (≤ 8 y/o): 0.1 mg/kg, q 5 min, max 10mg IV or IO</p>

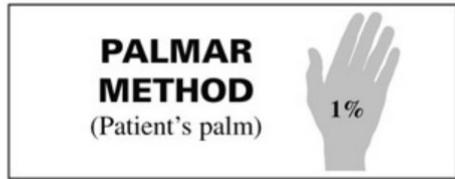
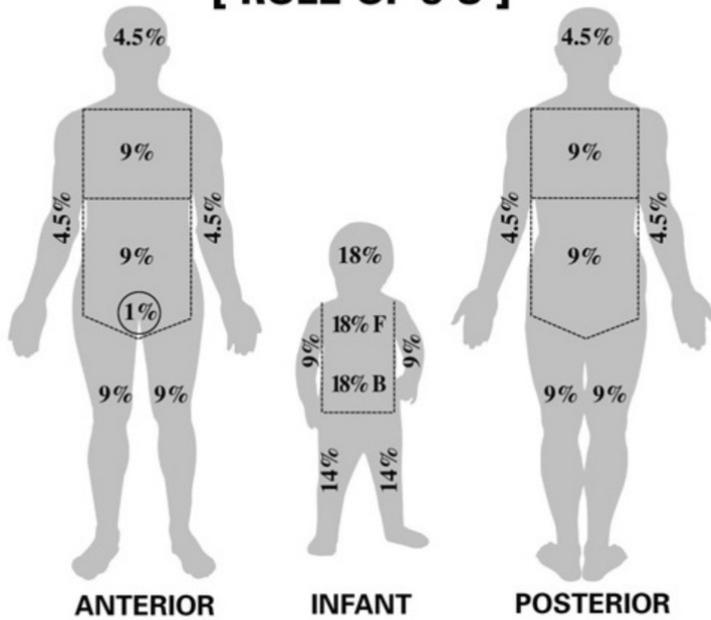
Burn Injury		Pg. 27
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<p><u>Thermal Burns: Flame/Scald/Contact Burns</u></p> <ul style="list-style-type: none"> • Remove all clothing and items such as jewelry • Cover the burned area loosely with a dry dressing or clean sheets/blankets • Do not apply ice or ointment • May need to initiate fluid resuscitation • Manage pain as indicated <p><u>Electrical Burns:</u> The danger from an electrical shock depends on voltage, current, pathway and co-morbidities.</p> <ul style="list-style-type: none"> • Initiate fluid resuscitation regardless of burn size • Assess for associated injuries: <ul style="list-style-type: none"> ○ Cardiac arrest ○ Dysrhythmias-treat per ACLS protocol ○ Respiratory Failure ○ Unconsciousness ○ Muscle pain and contractions ○ Seizures ○ Numbness and tingling <p><u>Special Circumstances-</u> High voltage electrical injuries require trauma immobilization and evaluation Special note: For multiple victims of lightning strike, “reverse triage” (Treating the cardiac or pulmonary arrest victims first). As patients who do not experience immediate cardiac arrest have an excellent chance for recovery</p> <p><u>Chemical Burns-</u></p> <ul style="list-style-type: none"> • Consider HAZMAT response • Remove contaminated clothing • Brush off powder and solid chemicals from clothing • Irrigate involved skin with water or saline for at least 20 minutes or until the burning sensation is relieved • CAUTION: Do not delay transporting patient; may need to continue irrigation en route 	<p><u>Fluid Management:</u> 500cc/hour</p>	<p><u>Fluid Management:</u> <5 yrs= 125 cc/hour 6-13 yrs= 250cc/hour</p>
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Parkland Formula



[RULE OF 9'S]

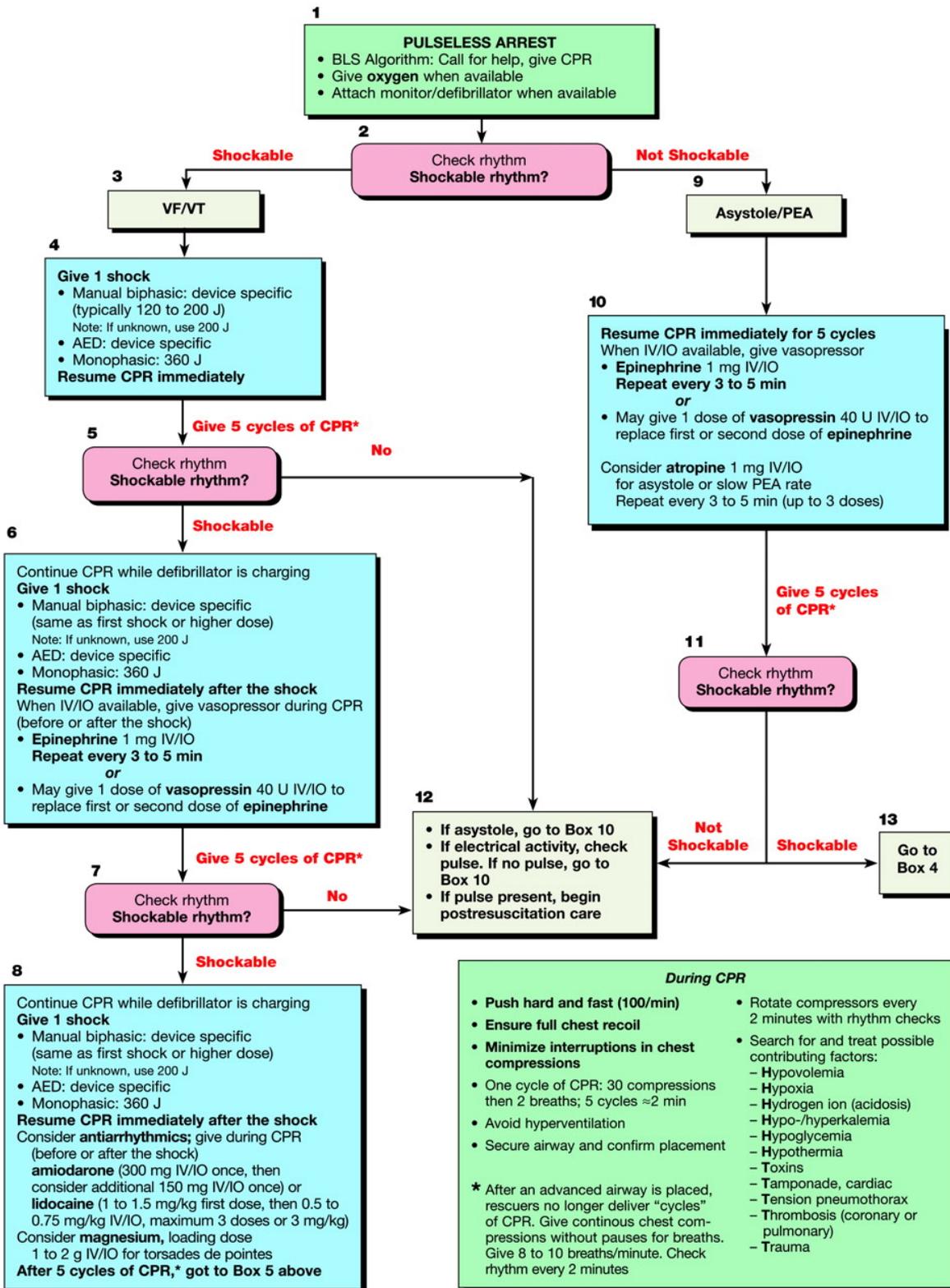


Cardiopulmonary Arrest		Pg. 29
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>Hypothermia Induced Cardiac Arrest</u></p> <ul style="list-style-type: none"> • If V-fib or pulseless V-tach administer one (1) shock per ACLS algorithms • Obtain core (rectal) temp: • Establish IV • Administer fluid bolus- If possible warm IV fluid to approx. 43° C (109°F) • Prevent further heat loss via: <ul style="list-style-type: none"> ○ Insulate from ground ○ Protect from wind ○ Remove wet clothing ○ Wrap patient in dry blankets and cover with vapor barrier ○ Active external warming IS NOT INDICATED PREHOSPITAL • Handle gently to avoid V-fib • If temp > 30°C (86°F) administer medications: • Administer Dextrose (CBG <60) • Administer Narcan <p><u>Arrest Associated with Pregnancy</u></p> <ul style="list-style-type: none"> • During resuscitation remember there are two patients, the mother and the fetus. <ul style="list-style-type: none"> ○ The best hope of fetal survival is maternal survival ○ Rapid transport to the closest emergency department is advised <p><u>Treatment</u></p> <ul style="list-style-type: none"> • Place the patient in the left/right lateral position <p><u>Airway</u></p> <ul style="list-style-type: none"> • Secure the airway early to prevent regurgitation • Be prepared to use smaller ET tube <p><u>Breathing</u></p> <ul style="list-style-type: none"> • Ventilation volumes may need to be decreased due to elevated diaphragm <p><u>Circulation</u></p> <ul style="list-style-type: none"> • All drug dosage and electrical therapies remain the same 	<p><u>Dextrose-</u> 25 gm</p> <p><u>Narcan-</u> 2.0mg IV/IO, IT, IN, IM or SQ</p>	<p><u>Dextrose-</u> 0.5-1.0 gm/kg 25%, Max 25 gm</p> <p><u>Narcan-</u> 0.1 mg/kg IV/IO,IT, IN, IM, SQ Max- 2.0mg</p>

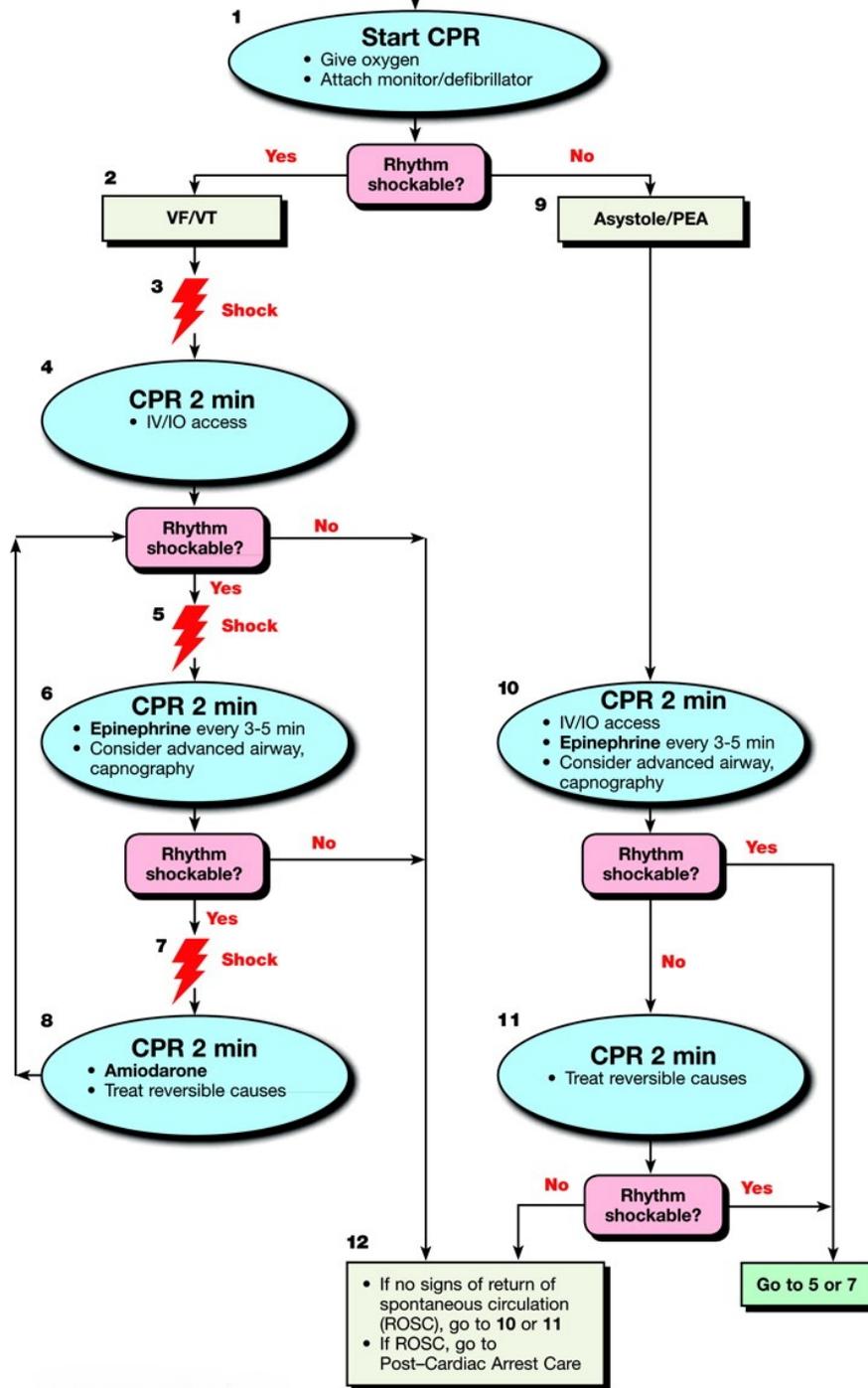
Cardiopulmonary Arrest		Pg. 30
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<p>Notes-</p> <ul style="list-style-type: none"> • Adequate airway, ventilation, oxygenation, chest compressions and defibrillation are more important and take precedence over initiating an IV line or injecting medications • If patient that is in cardiac arrest and is suspected to have hyperkalemia (i.e. renal failure, dialysis) consider administration of the following prior to the first dose of Epinephrine: <ul style="list-style-type: none"> ○ Sodium Bicarbonate • In children (< 8 y/o), when IV/IO is established, do a rapid bedside glucose determination • Bolus medication should be administered rapid IV or IO push at the port site closest to the patient. After each IV medication administration, give a bolus of IV NS and elevate the extremity. This should improve drug delivery <ul style="list-style-type: none"> ○ 3-5 ml bolus in a child ○ 20-30 ml bolus in an adult • If problems arise (i.e., scene unsafe, inability to intubate or start IV, etc.) It is valid to continue good CPR and proceed to the nearest appropriate hospital • Contact medical control per Report Format Procedure 	<p>Sodium Bicarbonate- 1 mEq/kg IVP.</p>	
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Adult Cardiac Arrest

Shout for Help/Activate Emergency Response



CPR Quality

- Push hard (≥2 inches [5 cm]) and fast (≥100/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
 - If PETCO₂ <10 mm Hg, attempt to improve CPR quality
- Intra-arterial pressure
 - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in PETCO₂ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Shock Energy

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO Dose:** 1 mg every 3-5 minutes
- **Vasopressin IV/IO Dose:** 40 units can replace first or second dose of epinephrine
- **Amiodarone IV/IO Dose:** First dose: 300 mg bolus. Second dose: 150 mg.

Advanced Airway

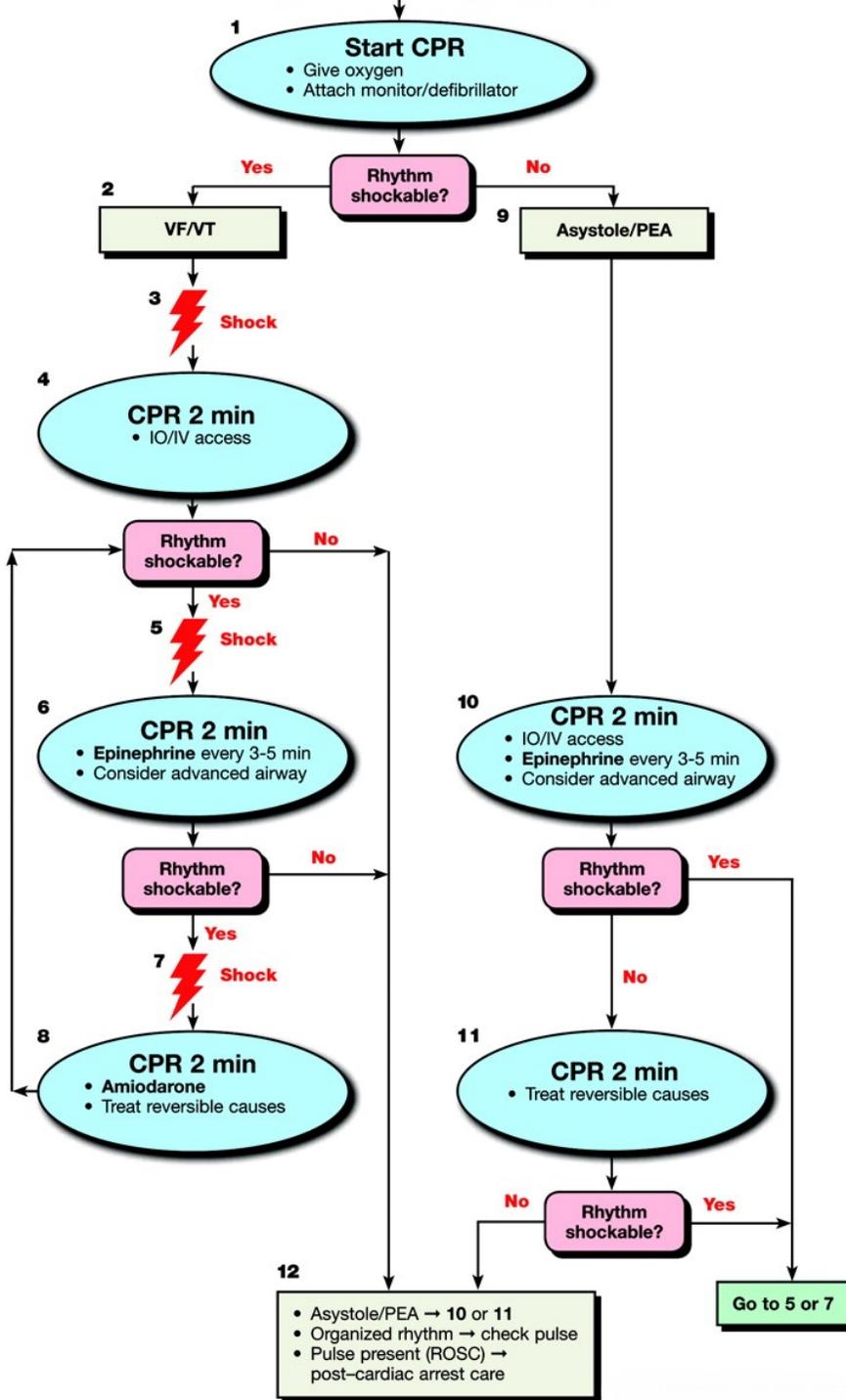
- Supraglottic advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- 8-10 breaths per minute with continuous chest compressions

Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

Pediatric Cardiac Arrest

Shout for Help/Activate Emergency Response



Doses/Details

CPR Quality

- Push hard ($\geq 1/3$ of anterior-posterior diameter of chest) and fast (at least 100/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressor every 2 minutes
- If no advanced airway, 15:2 compression-ventilation ratio. If advanced airway, 8-10 breaths per minute with continuous chest compressions

Shock Energy for Defibrillation

First shock 2 J/kg, second shock 4 J/kg, subsequent shocks ≥ 4 J/kg, maximum 10 J/kg or adult dose.

Drug Therapy

- **Epinephrine IO/IV Dose:** 0.01 mg/kg (0.1 mL/kg of 1:10 000 concentration). Repeat every 3-5 minutes. If no IO/IV access, may give endotracheal dose: 0.1 mg/kg (0.1 mL/kg of 1:1000 concentration).
- **Amiodarone IO/IV Dose:** 5 mg/kg bolus during cardiac arrest. May repeat up to 2 times for refractory VF/pulseless VT.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place give 1 breath every 6-8 seconds (8-10 breaths per minute)

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypoglycemia
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

Cardiopulmonary Arrest		Pg. 34
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Potential Cause Of PEA	Treatment
Hypovolemia (Most common cause)	Normal Saline 1-2 liters IV/IO
Hypoxia	Secure airway and ventilate
Hydrogen Ion, Acidosis	Sodium Bicarbonate 1mEq/kg IV/IO
Hyperkalemia (End stage renal disease)	Sodium Bicarbonate 1mEq/kg IV/IO
Hypothermia	Active Rewarming
Toxins (Drug overdose)	See below
Tamponade, Cardiac	Normal Saline 1-2 liters IV/IO Expedite transport
Tension Pneumothorax	Needle Thoracostomy
Thrombosis, Coronary	Expedite transport
Thrombosis, Pulmonary	Expedite transport

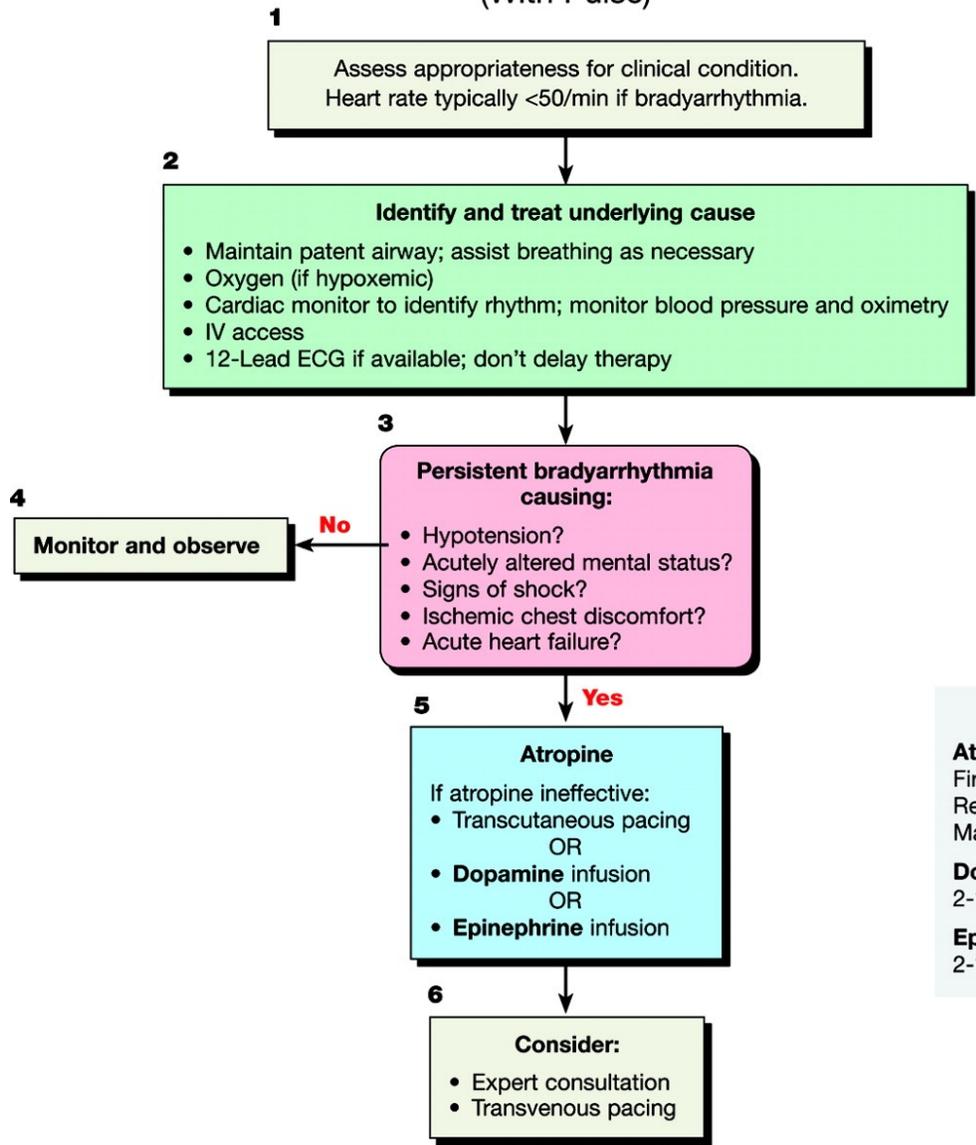
Drug Overdose-

- Glucagon 3mg IV/IO for calcium channel and B blocker OD
- Sodium Bicarbonate 1mEq/kg IV/IO for tricyclic antidepressant OD
- Naloxone (Narcan) 2 mg IV/IO for possible narcotic OD
 - May be given IM if no IV/IO available

Cardiac Dysrhythmia		Pg. 35
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<u>Procedures/ Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> Secure airway Administer oxygen and assist ventilation as required Establish IV/IO access Transport while frequently monitoring vital signs and cardiac rhythm Proceed according to specific dysrhythmia sub-section <p>Consider sedation if cardioversion or external pacing is planned and patient is awake</p> <ul style="list-style-type: none"> Obtain brief history of current symptoms, especially any chest pain or shortness of breath Obtain a past history of any cardiac disease or conditions to include congenital disease, previous dysrhythmias, coronary artery disease and its complications, heart failure, heart murmurs, and medications Assess the cardiac, respiratory, and neurologic systems. Particularly note any signs of poor perfusion such as altered level of consciousness, cool clammy skin, or hypotension Determine stability <p>Stable:</p> <ul style="list-style-type: none"> Presence of dysrhythmia and absence of below signs or symptoms If uncertain about the patient's stability, contact medical control <p>Unstable:</p> <ul style="list-style-type: none"> Presence of dysrhythmia with any one of the following: <ul style="list-style-type: none"> Altered mental status Severe chest pain (consistent with ischemia) Clinical signs of shock Severe shortness of breath/pulmonary edema Cyanotic on 100% oxygen with adequate ventilations <p>BRADYCARDIA HEART RATE CRITERIA</p> <ul style="list-style-type: none"> ≥ 1 y/o -- HR less than 60 per minute < 1y/o -- HR less than 80 per minute <p>HYPOTENSION CRITERIA</p> <p>a) 70 + 2 x age in years (systolic) <12 y/o</p> <ul style="list-style-type: none"> If stable, consider 12 Lead EKG Treat the patient, not the rhythm strip 	<p>Versed- titrated to light sleep, slurring of speech or nystagmus IN-Adults over 50kg: 5mg (2ml) may repeat x1 IV, IO, IM</p>	<p>Versed- titrated to light sleep, slurring of speech or nystagmus IN-Children: Total kg wt X 0.2mg= total mg dose OR refer to Broslow tape IV, IO, IM</p>

Adult Bradycardia (With Pulse)



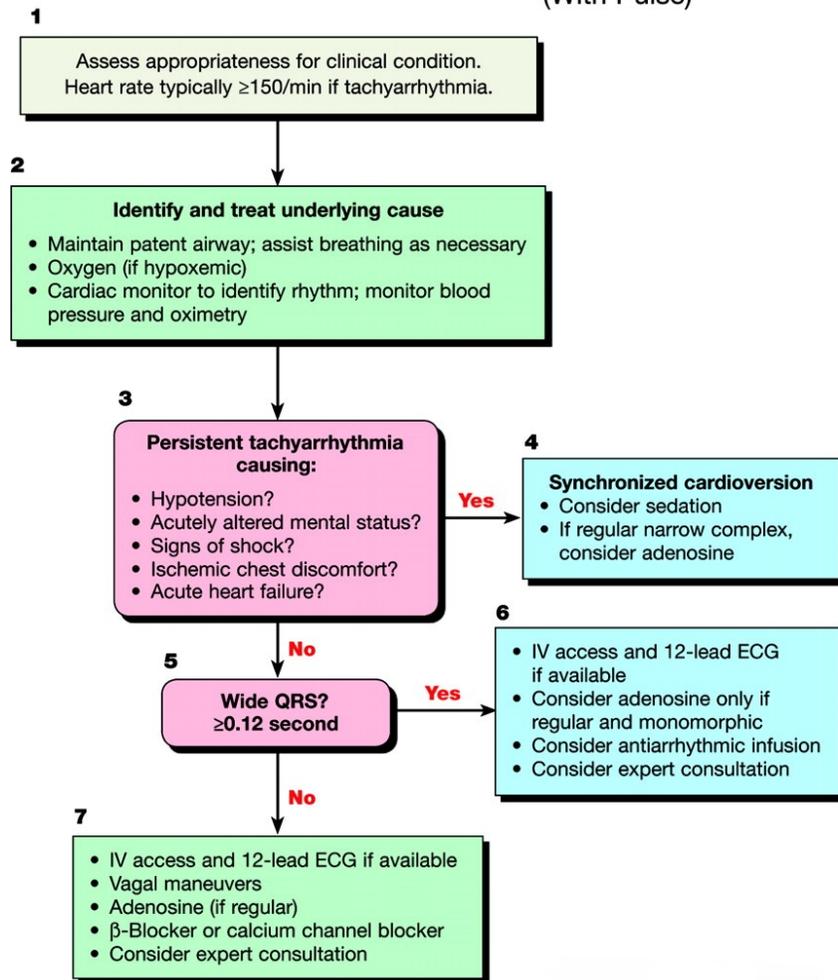
Doses/Details

Atropine IV Dose:
 First dose: 0.5 mg bolus
 Repeat every 3-5 minutes
 Maximum: 3 mg

Dopamine IV Infusion:
 2-10 mcg/kg per minute

Epinephrine IV Infusion:
 2-10 mcg per minute

Adult Tachycardia (With Pulse)



Doses/Details

Synchronized Cardioversion
Initial recommended doses:

- Narrow regular: 50-100 J
- Narrow irregular: 120-200 J biphasic or 200 J monophasic
- Wide regular: 100 J
- Wide irregular: defibrillation dose (NOT synchronized)

Adenosine IV Dose:
First dose: 6 mg rapid IV push; follow with NS flush.
Second dose: 12 mg if required.

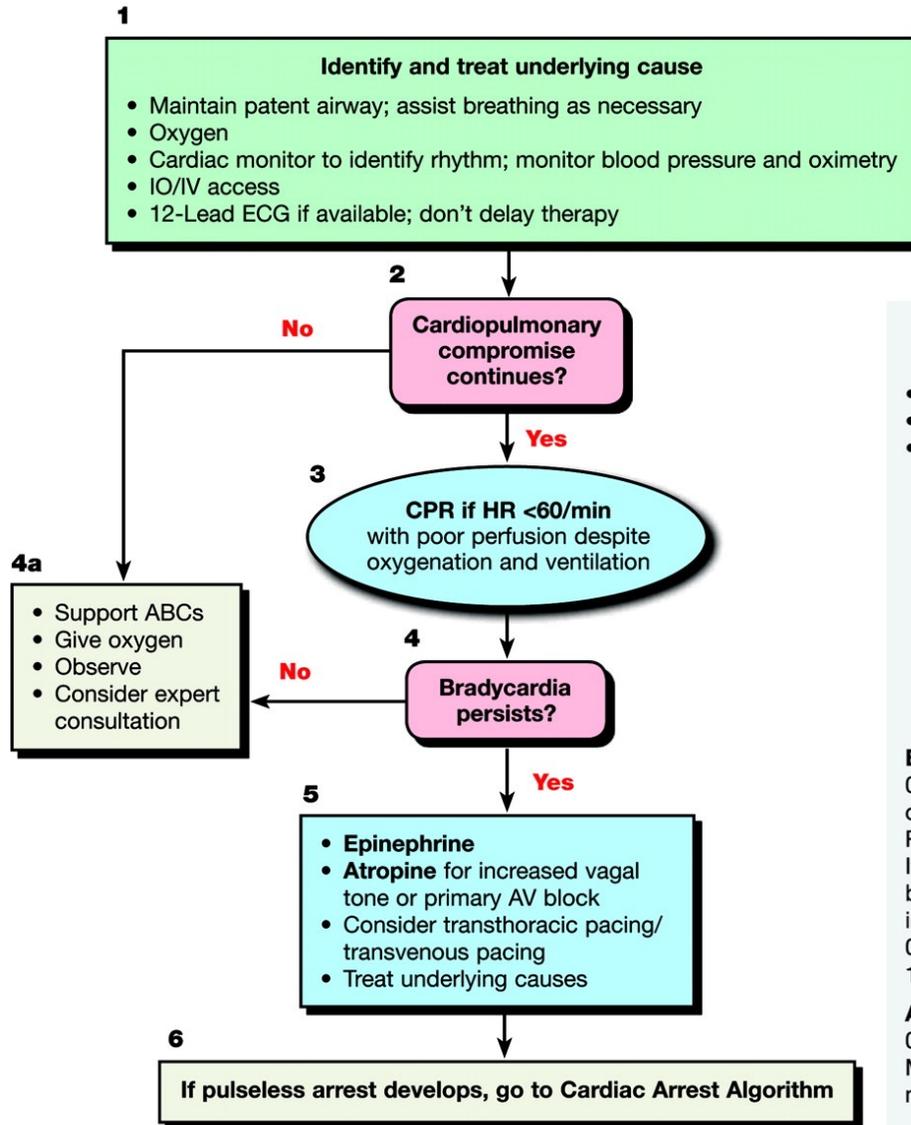
Antiarrhythmic Infusions for Stable Wide-QRS Tachycardia

Procainamide IV Dose:
20-50 mg/min until arrhythmia suppressed, hypotension ensues, QRS duration increases >50%, or maximum dose 17 mg/kg given. Maintenance infusion: 1-4 mg/min. Avoid if prolonged QT or CHF.

Amiodarone IV Dose:
First dose: 150 mg over 10 minutes. Repeat as needed if VT recurs. Follow by maintenance infusion of 1 mg/min for first 6 hours.

Sotalol IV Dose:
100 mg (1.5 mg/kg) over 5 minutes. Avoid if prolonged QT.

Pediatric Bradycardia
With a Pulse and Poor Perfusion



Cardiopulmonary Compromise

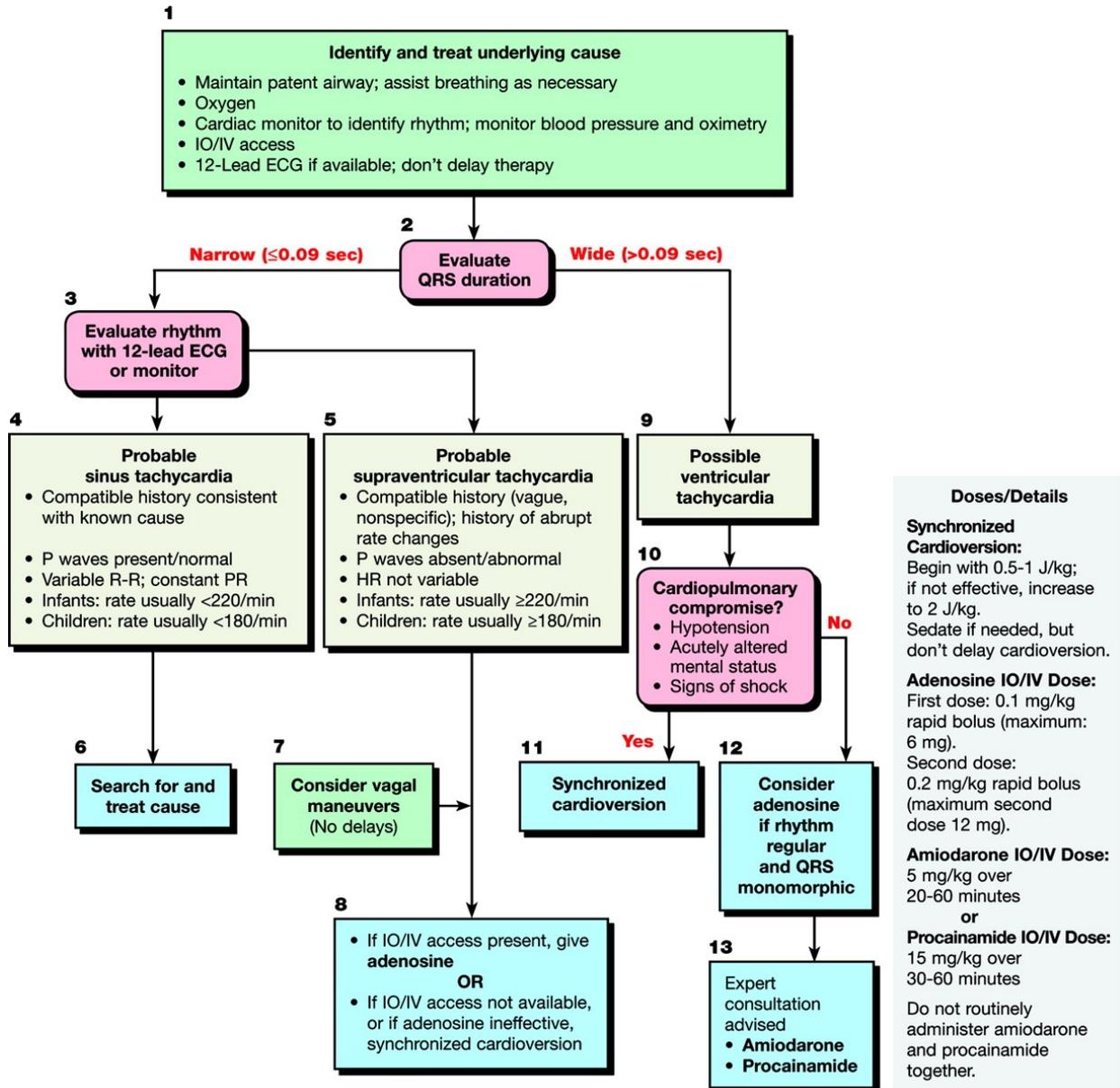
- Hypotension
- Acutely altered mental status
- Signs of shock

Doses/Details

Epinephrine IO/IV Dose:
0.01 mg/kg (0.1 mL/kg of 1:10 000 concentration). Repeat every 3-5 minutes. If IO/IV access not available but endotracheal (ET) tube in place, may give ET dose: 0.1 mg/kg (0.1 mL/kg of 1:1000).

Atropine IO/IV Dose:
0.02 mg/kg. May repeat once. Minimum dose 0.1 mg and maximum single dose 0.5 mg.

Pediatric Tachycardia
With a Pulse and Poor Perfusion



Doses/Details

Synchronized Cardioversion:
Begin with 0.5-1 J/kg; if not effective, increase to 2 J/kg. Sedate if needed, but don't delay cardioversion.

Adenosine IO/IV Dose:
First dose: 0.1 mg/kg rapid bolus (maximum: 6 mg).
Second dose: 0.2 mg/kg rapid bolus (maximum second dose 12 mg).

Amiodarone IO/IV Dose:
5 mg/kg over 20-60 minutes
or
Procainamide IO/IV Dose:
15 mg/kg over 30-60 minutes

Do not routinely administer amiodarone and procainamide together.

Congestive Heart Failure		Pg. 40
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<u>Procedures/ Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> Secure Airway Administer oxygen and assist ventilation as required Establish IV access Apply CPAP per CPAP protocol To reduce CPAP anxiety administer Ketamine Administer Nitroglycerine <ul style="list-style-type: none"> Paste can be used concurrently with spray Administer Albuterol Sulfate for wheezing Administer Morphine Sulfate Fluid resuscitation should not be attempted due to pulmonary edema 	<p>CPAP- Initial dose 0-2cm/H2O increase until effective</p> <p>Ketamine- 0.1-1mg/kg max or 400 mg total- IV,IO.</p> <p>IM- 2 mg/kg up to a total of 4 mg/kg</p> <p>Nitroglycerine- Spray- 0.4mg SL if BP greater than 100 Systolic and no anti-impotence medications within 24-48 hours. May repeat every 3-5 minutes Nitro Paste- 0.5-1.0 inch</p> <p>Albuterol- < 40kg (<8 y/o)- 2.5 mg in 3 cc N.S. repeat prn</p> <p>Morphine- 1-3mg IV every 5 minutes as indicated. (Max 10mg)</p>	<p>Ketamine- 0.1-1mg/kg max- IV, IM, IO.</p> <p>Albuterol- >40kg (>8y/o)- 2.5mg in 3 cc N.S. repeat prn</p>

OB and Gynecological Emergency		Pg. 41
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Complete vital signs • Obtain brief history: Due date, history of multiple births, onset of labor, timing of contractions, history of ruptured membranes including color or history of previous prenatal complications • Assess cardiac, respiratory and neurologic systems as well as the abdomen • As appropriate assess for crowning, abnormal presentation or significant vaginal bleeding • Monitor contractions including strength and frequency <p><u>Delivery NOT Imminent</u></p> <ul style="list-style-type: none"> • Secure airway • Transport in position of comfort as soon as possible while monitoring vital signs • If the patient is hypotensive, place in left lateral recumbent position • Notify the receiving hospital of impending arrival • Be prepared to stop transport and deliver infant if indicated <p><u>Delivery Imminent</u></p> <ul style="list-style-type: none"> • Request a 2nd medic unit • Secure airway • Establish IV access • If abnormal part (arm or foot) presents, contact medical control immediately for routing instructions • If umbilical cord is prolapsed enroute, do the following: <ol style="list-style-type: none"> 1. Elevate mother's hips (Knee/chest position) 2. With a sterile, gloved hand, gently push the baby up the vaginal canal several inches and maintain this position during transport • If breach birth and the head has not delivered, use two fingers to create air passage for the infant and maintain until arrival at receiving facility • If normal presentation and crowning, control the delivery of the head, but do not attempt to delay or restrain the delivery in any fashion • Reduce nuchal cord as necessary. If unable to reduce, clamp the cord in two places and cut the cord between the two clamps 		

- Suction the mouth and then the nose with a bulb syringe after the head is delivered
- Deliver the anterior shoulder followed by the posterior shoulder
- Keep the infant level with the perineum; dry with towel; wrap in a blanket
- Clamp the cord in two places. Leave 8-10 inches between the abdominal wall and the first clamp. Cut the cord between the two clamps
- Prepare to deliver placenta
DO NOT PULL ON CORD
- Provider caring for infant should refer to Neonatal resuscitation protocol
- If the mother develops profuse hemorrhage or shock, then refer to OB protocol
- Transport while monitoring vital signs
- Do not wait for placenta delivery. If the placenta delivers spontaneously, gathering placenta for hospital
- If not already notified, contact medical control and notify about impending arrival/delivery
- Evaluate APGAR at 1 and 5 minutes

	0 (Points)	1	2
Appearance	Blue or pale all over	Blue extremities, but torso pink	Pink all over
Pulse	None	< 100	≥ 100
Grimace	No response	Weak grimace when stimulated	Cries or pulls away when stimulated
Activity	None	Some flexion of arms	Arms flexed, legs resist extension
Respirations	None	Weak, irregular or gasping	Strong cry

0-3 Critically Low, 4-6 Fairly Low, 7-10 Generally Normal

Crush Syndrome		Pg. 43
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<p>In the event that a patient has been entrapped for a prolonged period of time (>2 hours) with prolonged compression of one of more extremities and is suspected of suffering from crush syndrome (S/S: Lower, upper extremity(s) and/or trunk pinned against a hard surface, sensory loss, flaccid paralysis, and/or peaked T-waves(hyperkalemia), the following treatments may be considered</p> <p><u>Procedures/Interventions</u></p> <p><u>Penetrating Extremity Wounds</u></p> <ol style="list-style-type: none"> 1. Apply pressure with sterile gauze pads and elevate to control external bleeding If direct pressure fails- use a tourniquet on the proximal part of the extremity to control bleeding 2. Splint extremity 3. Transport while monitoring vital signs frequently <p><u>Prolonged Entrapment/Crush Syndrome- PRIOR TO EXTRICATION:</u></p> <ul style="list-style-type: none"> • Support ABC's per General Trauma Protocol • Secure airway and administer oxygen as required • Establish IV/IO access <p>When vital signs are stabilized, consider the following:</p> <ul style="list-style-type: none"> • ☪ Fluid challenge • ☪ After 2 hours reduce fluid to 500cc/hr • ☪ Administer Fentanyl • Administer Sodium Bicarbonate • Administer Albuterol 	<p><u>Adult Dosages</u></p> <p><u>Fluid Challenge-</u> 1000cc NS @1000cc/hr</p> <p><u>Fentanyl-</u> 100mcg IV/IO, IN titrate to effect over 1-2 minute Repeat PRN</p> <p>☪ <u>Sodium Bicarbonate-</u> 50 mEq in IV bag, infuse at drip rate</p> <p><u>Albuterol-</u> 2.5mg in 3mL NS repeat PRN</p>	<p><u>Pediatric Dosages</u></p> <p><u>Fluid Challenge-</u> <8 y/o 10cc/kg NS</p>
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Cyanide Poisoning		Pg. 44
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>Baseline Assessment</u></p> <ul style="list-style-type: none"> Remove patient from environment <ul style="list-style-type: none"> Decontaminate patient, if needed Secure airway, administer oxygen and assist ventilation as required <ul style="list-style-type: none"> <i>If in cardiac arrest, refer to cardiac arrest protocol</i> <i>If pt has burn injuries, refer to burn injury protocol</i> Take vitals, including SpCO with RAD-57 Establish IV access, fluid resuscitate if no pulmonary edema Monitor EKG, be prepared for dysrhythmias/cardiac arrest <p><u>Suspected Cyanide Poisoning</u></p> <ul style="list-style-type: none"> Exposure to fire or smoke in an enclosed area Soot around mouth, nose, or back of mouth Altered mentation (confusion, dizziness, unconsciousness) High SpCO readings <p><u>Administer CYANOKIT®</u></p> <ul style="list-style-type: none"> If clinical suspicion of cyanide poisoning is high, CYANOKIT® should be administered without delay In cardiac arrest, infuse CYANOKIT® <u>ON A SEPARATE IV LINE</u> <p> If signs/symptoms persist, may administer additional 5g dose of CYANOKIT® over 15-120 minutes</p> <p><u>Special Considerations/Precautions:</u></p> <ul style="list-style-type: none"> Rock vial for 60 seconds – do not shake! Discard if solution is not deep red in color, or particulate matter is visible may cause transient hypertension incompatible with many other medications – must be infused via separate IV line 	<p><u>Adult Normal Saline:</u> 500cc bolus IV</p> <p><u>Adult CYANOKIT®: 5g</u> over 15 minutes IV</p> <p> additional 5g CYANOKIT® over 15-120 minutes</p>	<p><u>Peds Normal Saline:</u> 5cc/kg bolus IV</p> <p><u>Peds</u> <u>CYANOKIT®:</u> 100mg/kg over 15 minutes IV</p> <p> additional 100mg/kg CYANOKIT® over 15-120 minutes</p>

Diabetic Emergency/ Altered Mental Status		Pg. 45
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>Hypoglycemia-</u></p> <ul style="list-style-type: none"> • Secure Airway • Administer oxygen and assist ventilation as required • Administer oral glucose to patients that are awake with intact gag reflex • Establish IV access • Administer Dextrose IV, may repeat once if C.B.G. <60 • If IV/IO cannot be established or is not likely to be established, administer <u>Glucagon</u> • If C.B.G. >60 and altered mentation continues consider Narcan (Naloxone) • IF C.B.G. >250 and S/S of dehydration fluid resuscitate until vitals stabilize, repeat prn • If patient is on insulin pump, leave the pump in its normal operating mode DO NOT TRY TO ADJUST THE SETTING • Repeat C.B.G after administration of Dextrose 	<p><u>Oral Glucose:</u> 15-30g P.O.</p> <p><u>Adult Dextrose 50%:</u> Up to 25 g IV/IO, repeat x1 PRN Adult</p> <p><u>Glucagon:</u> .5-1 mg IM</p> <p><u>Narcan:</u> >40 kg 2.0 mg IV, IT, IM,IN or SQ Max:2.0mg</p> <p><u>Fluid Challenge:</u> NS 500 mL</p>	<p><u>Peds Dextrose 25%:</u> 0.5-1g/kg IV/IO (25 g maximum)</p> <p><u>Peds Dextrose 10%:</u> 4 mL/kg IV/IO Peds</p> <p><u>Glucagon: < 5 yo:</u> 0.03 mg IM/SQ Max: 1 mg</p> <p><u>Narcan:</u> <40kg 0.1mg/kg IV, IT, IM, IN or SQ Max:2.0mg</p> <p><u>Peds Fluid Challenge:</u> <1 mo: NS 10 mL/kg >1 mo: NS 20 mL/kg</p>

Drowning		Pg. 46
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Attempt to gather history <ol style="list-style-type: none"> 1. Length of submersion, water temperature and potential trauma • Initiate resuscitation in all drowning with down time less than 60 minutes <ol style="list-style-type: none"> 1. Refer to Cardiac Arrest protocol • Assume cervical spine injury is present and initiate spinal injury protocol • Secure ABCs as indicated • Treat patients conditions based on appropriate protocol • If severely hypothermic (86-90 degrees F:30-34 degrees C core/rectal)- Initiate Enviromental protocol <ol style="list-style-type: none"> 1.Cardiac Arrest medication dose intervals increase to 1.5 times • Monitor ECG/vitals during transport • Consider CPAP •  Consider PEEP 	<p>CPAP- Initial dose 0-2cm/H20 increase until effective</p>	

Procedures/Interventions		Adult Dosages	Pediatric Dosages
<ul style="list-style-type: none"> Secure Airway Administer oxygen and assist ventilation as required Establish IV access Check blood sugar via glucometer If C.B.G. <60 refer to Diabetic Emergency Administer Narcan if narcotic OD with depressed LOC and decreased respirations Administer activated charcoal PO- if pt is conscious and alert Administer sodium bicarb for tricyclic antidepressant OD CHOLINERGIC POISONING- Administer Atropine CO POISONINGS- Use RAD 57 to rule out ☎ Consider direct transportation to tertiary facility with hyperbaric capabilities 		<p>Narcan- (Naloxone) 2.0mg IM,IO,IN,IV,IT or SQ</p> <p>☎ Activated Charcoal- 1gm/kg PO</p> <p>☎ Sodium Bicarb- 1.0-3.0 mEq/kg to IV infusion</p> <p>Atropine- 2-6mg IV or IM repeat every 5 minutes until signs of improvement</p>	<p>Narcan- 0.1 mg/kg IM,IO,IN,IV,IT or SQ max 2.0 mg</p> <p>Atropine- 0.05mg/kg IV push or IM repeat every 5 minutes until signs of improvement</p>
SpCO %	Clinical Manifestations		
0-4%	None - Normal		
5-9%	Minor Headache		
10-19%	Headache, Shortness of Breath		
20-29%	Headache, Nausea, Dizziness, Fatigue		
30-39%	Severe Headache, Vomiting, Vertigo, ALOC		
40-49%	Confusion, Syncope, Tachycardia		
50-59%	Seizures, Shock, Apnea, Coma		
60% - up	Coma, Death		

Environmental Emergencies		Pg. 48
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p>Heat Related Disorders:</p> <ul style="list-style-type: none"> • Remove to cool environment • Secure Airway • Administer oxygen and assist ventilations as required • Established IV access <p>Heat Exhaustion or Hyperthermia:</p> <ul style="list-style-type: none"> • Remove clothing • Fan and cool patient • Avoid massaging extremities <p>Heat Stroke</p> <ul style="list-style-type: none"> • Remove clothing • Initiate rapid body cooling • Stop the cooling process at 102 degrees • Rinse with cold water • Apply ice packs to neck, groin and under arms • Wrap in wet sheet <p>Hypothermia Related Disorders:</p> <p>Severe Hypothermia- (86-90 degrees F 30-34 degrees C core/rectal)</p> <ul style="list-style-type: none"> • Remove to warm environment • Secure airway • Administer oxygen and assist ventilation as required • Establish IV access • Handle patient gently to avoid precipitation of V-Fib • Monitor ECG and obtain rectal core temp with hypothermia thermometer • Prevent further heat loss <ul style="list-style-type: none"> 1. Insulate from ground 2. Protect from wind 3. Eliminate evaporative heat loss by removing wet clothing, wrap patient in dry blankets and cover with vapor barrier • Apply external rewarming devices to truncal areas only <ul style="list-style-type: none"> 1. Towel wrapped warm packs to neck, armpits, and groin <p>Hypothermia Induced Cardiac Arrest:</p> <p>If V-Fib or Pulseless V-tach administer one (1) shock per ACLS algorithm</p>	<p><u>Temp < 30°C (86°F)</u> Continue CPR and transport</p> <p><u>Temp > 30°C (86°F)</u> Give IV meds as indicated, but at intervals 2x Normal</p>	

CVA/TIA		Pg. 49
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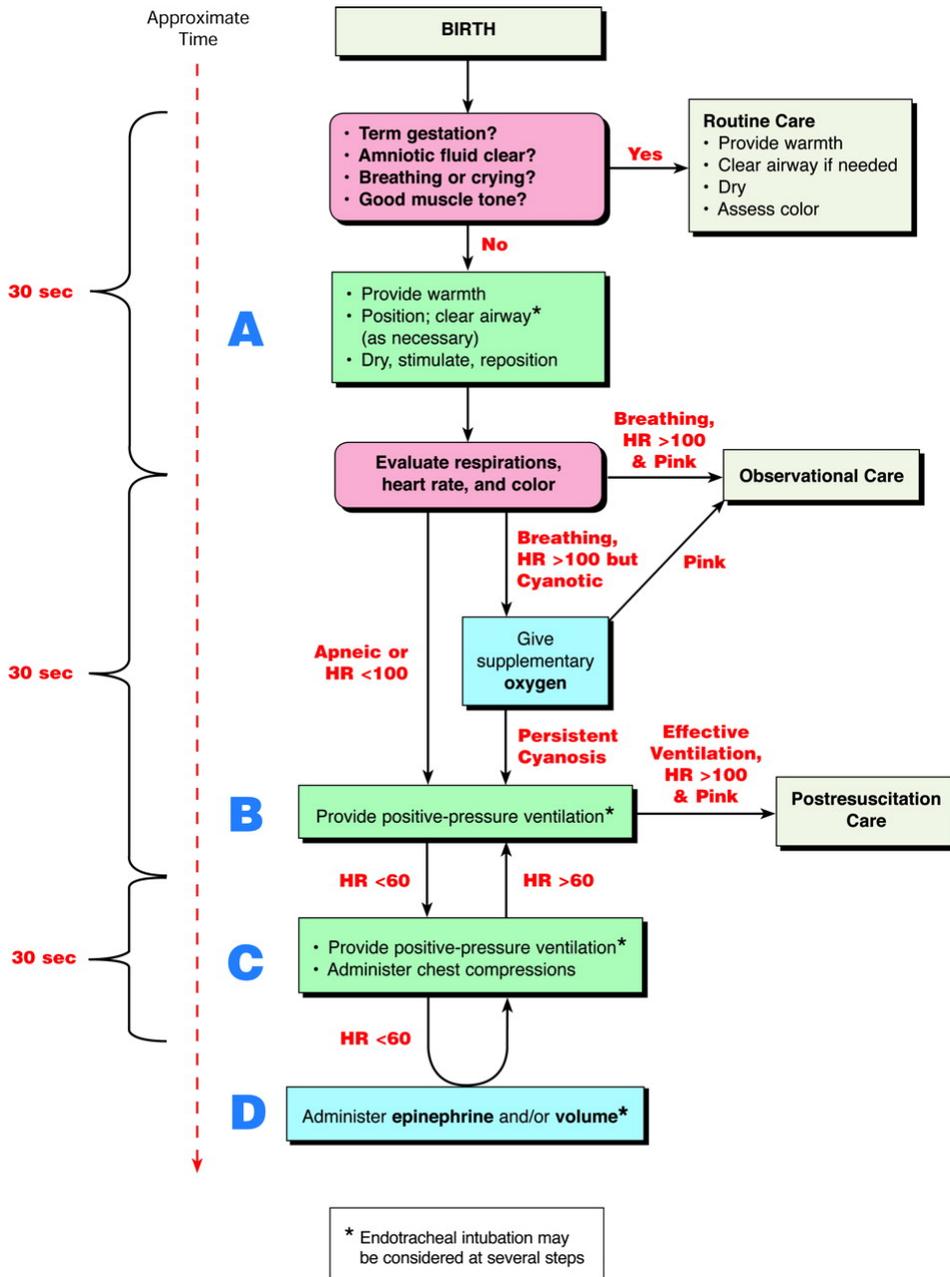
<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p>Assessment Indicators:</p> <ol style="list-style-type: none"> 1. Systolic > 185 Diastolic <110 2. Neurological changes 3. New Onset of Stroke-like symptoms <ul style="list-style-type: none"> • Cincinnati Pre-hospital Stroke Scale • Los Angeles Stroke Scale <p>If onset of stroke like symptoms or failed CPSS notify LMH of: "CVA ALERT"</p> <ul style="list-style-type: none"> • Secure airway • Administer oxygen and assist ventilation as required • Establish IV access • Consider other causes of altered mental status, such as hypoxia, hypoperfusion, hypoglycemia, trauma or overdose • Check blood sugar via glucometer • If C.B.G. <60 refer to Diabetic Emergency • If time allows collect blood • If no spinal injury transport with head elevated to 35 degrees to promote cerebral drainage • Seizures refer to seizure protocol • S/S of intracranial pressure: <ol style="list-style-type: none"> 1. Increase systolic BP 2. Widen pulse pressure 3. Bradycardia 4. Abnormal respiratory pattern • Hypertensive Crisis (DBP>130mmHg with associated symptoms): <ol style="list-style-type: none"> 1. Elevate the pt head 35 degrees to promote cerebral drainage 2. DO NOT LOWER BLOOD PRESSURE IF CVA IS SUSPECTED 	<p>Oxygen- Signs of ICP ventilate 12-15 BPM while maintaining EtCO2 at 30-35mmHg</p>	

Hazardous Materials Exposure- HAZMAT ALERT		Pg. 50
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<u>Basic life support</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Stop the burning process • Remove all clothing prior to irrigation • If caustic liquid is involved, flush with copious amounts of water • If a dry chemical is involved, brush it off, then flush with copious amounts of water • Do not use water for element metals (sodium, potassium, lithium) and phenol: <ul style="list-style-type: none"> ○ Remove obvious metallic fragments from skin and cover the burn with mineral oil or cooking oil ○ As a last resort use extremely large amounts of soup and water with continuous irrigation until all phenols are removed • For chemical burns with eye involvement, immediately begin flushing the eye with normal saline and continue throughout assessment and transport • Apply a burn sheet or dry sterile dressing to burn areas <p><u>Advanced Life Support</u></p> <ul style="list-style-type: none"> • For inhaled toxin with acute bronchospasms: <ul style="list-style-type: none"> ○ Administer Albuterol ○ Administer Atrovent • Observe for signs of impending respiratory failure <p><u>Initiate HAZMAT alert</u></p> <p>Purpose-</p> <ul style="list-style-type: none"> • Early notification of receiving hospital of an incoming HAZMAT patient • Early involvement of 	<p><u>Albuterol-</u> 2.5mg in 3cc</p> <p><u>Atrovent-</u> 0.5mg in 2.5cc</p>	<p><u>Albuterol-</u> 2.5mg in 3cc</p> <p><u>Atrovent-</u> 0.5mg in 2.5cc</p>

Neonatal Resuscitation		Pg. 51
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> • Assess airway, breathing and circulation • The need for resuscitation can be guided by heart rate, respiratory rate, effort, tone and color <ul style="list-style-type: none"> -Do not be overly concerned about exact APGAR calculation • Keep the neonate warm and dry. IT IS VERY IMPORTANT TO KEEP NEONATE DRY • Position the neonate on his/her back in a slight Trendelenburg position with the head in a neutral position • If the neonate is depressed and the amniotic fluid is stained with meconium: <ol style="list-style-type: none"> 1. Immediately intubate the neonate 2. Apply suction with the meconium adapter directly to the ET tube 3. Repeat intubation with a new Et tube 4. Suction in the mouth and then the nose prior to re-intubation, and repeat suction until clear 5. If the neonate deteriorates, stop suctioning and move on to resuscitation • Suction the mouth and then the nose with the bulb syringe or a suction device • If no meconium is present: <ol style="list-style-type: none"> 1. Administer oxygen by face mask • Keep neonate warm and dry. If necessary, tactile stimulation may be used to stimulate adequate breathing Drying, suctioning, flicking the soles of the feet and gently rubbing the neonate’s back are approved methods • If necessary, insert an oral airway and ventilate with a bag valve mask • If evidence of respiratory distress despite adequate warming, dry, stimulation and oxygen treatment: <ul style="list-style-type: none"> Intubate and ventilate with BVM • If the heart rate is less than 80 beats/minute: <ul style="list-style-type: none"> begin chest compressions at mid-sternum at minimum of 120/minute with a 3:1 ratio • Administer Epinephrine 		<p><u>Epinephrine-</u> 0.01mg/kg IV/IO, ET</p>



Neonatal Resuscitation		Pg. 53
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Evaluate and document at 1 and 5 minutes postpartum

	0 (Points)	1	2
Appearance	Blue or pale all over	Blue extremities, but torso pink	Pink all over
Pulse	None	< 100	≥ 100
Grimace	No response	Weak grimace when stimulated	Cries or pulls away when stimulated
Activity	None	Some flexion of arms	Arms flexed, legs resist extension
Respirations	None	Weak, irregular or gasping	Strong cry

0-3 Critically Low, 4-6 Fairly Low, 7-10 Generally Normal

Pain Management		Pg. 55
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> Assess baseline pain level (0-10 scale, 0 = No pain, 10 = worst pain) <p><u>Advanced Life support-</u> Analgesic agents may be administered under standing orders for patients experiencing severe pain from any of the following:</p> <ul style="list-style-type: none"> Isolated extremity injuries <ul style="list-style-type: none"> Fractures/dislocations of the shoulder and upper extremity Fractures/dislocations of the hip and lower extremity Burn without airway, breathing, or circulatory compromise Severe back pain Acute chest pain, in accordance with chest pain protocol <p><u>Agents for pain control</u></p> <ul style="list-style-type: none"> Fentanyl Morphine Ketamine 	<p><u>Fentanyl-</u> 50mcg IV/IO Slow Push or IM,IN</p> <p><u>Morphine-</u> For patients > 25 kg (> 8 y/o): 2-4 mg IV, q 5 min, max 10 mg</p> <p><u>Ketamine-</u> 0.1-1mg/kg Max or 400mg total IV,IO IM- 2mg/kg up to a total of 4mg/kg</p>	<p><u>Fentanyl-</u> 1-3 mcg/kg/IV slow</p> <p><u>Morphine-</u> For patients ≤ 25 kg (≤ 8 y/o): 0.1 mg/kg, q 5 min, max 10 mg IV or IO</p> <p><u>Ketamine-</u> 0.1-1mg/kg IV,IM,IO</p>

Seizure		Pg. 56
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p>For actively seizing pt and for continued seizure activity:</p> <ul style="list-style-type: none"> • Secure Airway • Administer oxygen and assist ventilation as required • Establish IV access/IO • Check blood sugar via glucometer • If C.B.G. >60 refer to Diabetic Emergency • Administer Versed If given IN, vascular access should be established when possible 	<p>Versed- >40kg: 5mg IV, IN, IM, IO (2ML) may repeat as needed (Max 10mg) ☠️If max dose is used call for additional dose</p>	<p>Versed- <40kg: Total kg X 0.2 mg= total mg dose (Max 5mg) or refer to Broslow tape IV, IN, IM, IO, Rectal</p>

Syncope		Pg. 58
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<u>Procedures/ Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p>Obtain a brief history including onset, duration, warning symptoms(e.g. light headedness, dizziness, nausea) presence of seizure activity, and precipitating factors (e.g. sudden change of position)</p> <ul style="list-style-type: none"> • Secure Airway • Administer oxygen and assist ventilation as required • Consider ammonia capsule to assess level of consciousness • Establish IV access • Transport while monitoring Vital signs <p>ALL PATIENTS >35 Y/O SHOULD HAVE 12 LEAD PERFORMED</p>		

Tactical Medic		Pg. 59
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Purpose

To provide emergency medical care in the field to law enforcement officers and citizens, injured or taken ill during high-risk law enforcement incidents. Tactical Medics provide care under departments medical, and tactical medic protocols.

Priorities of assessment and treatment

Due to the expectation of limited resources in a tactical environment, and the possibility of casualties exceeding available resources, there is a prioritization of identification and assessment of potential patients. The following order for identification and assessment applies in the tactical environment.

1. Law Enforcement Officers (LEO) assessment is the first priority.
2. Hostages and known public assessment is the second priority.
3. Suspect(s) assessment is the third priority once secured by a LEO.

Once a patient has been rendered safe of weapons or other hazards, they will be triaged and treated accordingly.

Medical Protocols Based on Area of Care

The traditional EMS standard and procedures which are applied under ordinary circumstances do not always apply in a tactical environment. The tactical environment is by its very nature a dynamic and austere environment in which to practice EMS. For this reason significant latitude exists regarding strict protocol compliance, including both commission and omission of assessments, treatments, interventions, and care. Significant deviations shall be documented within the after-action report and on the Electronic Patient Care Report (ePCR). Risk/benefit ratio and resource availability must be considered when performing time consuming procedures in a tactical environment.

The tactical environment is dynamic. These phases of care are situational, not geographic, and not always clearly defined. The expectation of care under each of these areas is clearly defined. They prioritize, the greatest benefit for the least amount of risk, keeping in mind the overall mission objectives and the general goal of limiting further casualties.

Direct Threat Care/ Hot Zone

1. Identify casualties; address the threat, direct casualty to remain engaged in neutralizing threat.
2. Assume cover and concealment; prevent further injury to the casualty and rescuer.
3. Direct casualty to apply self-aid/self-rescue.
4. Tourniquet (TQ) for life threatening hemorrhage.
5. Recovery position (if tactically feasible).

Tactical Medic		Pg. 60
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6. Remote assessment and rescue development.

Indirect Threat Care/ Warm Zone

1. Weapons-

- Identify and control all weapons and/or potential threats (less-lethal devices, distraction devices, K9 Officers etc.) from patient, keeping in mind the potential to returning patient to operational status.

2. Hemorrhage Control-

- Reassess previous TQ application.
- Potentially remove or loosen TQ.
- Wound packing and pressure dressing.
- Hemostatic agents.

3. Airway-

- Allow to maintain own position
- Airway adjunct as needed
- Recovery position
- Consider risk/benefit of advanced airway
 - ✓ Endotracheal Intubation
 - ✓ Supraglottic airway
 - ✓ Surgical or percutaneous airway

4. Respiration-

- Chest seal for any penetrating wound to the chest wall
- Needle decompression for any penetrating chest trauma that presents with progressive respiratory distress
 - ✓ Mid-clavicular decompression at second intercostal space.
 - ✓ Mid-axillary decompression
- In the presence of explosive setting consider blast lung injury and increased transport priority

Tactical Medic		Pg. 61
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5. Circulation-

- Reassess bleeding
- Assess for S/S of shock
- Consider IV access, as large an IV as possible with saline lock or IO access
- Fluid resuscitation, keeping in mind appropriate permissive hypotension. Target BP of > 80mmHg for hemorrhagic shock and 100mmHg for potential head injury.

6. Hypothermia-

- Preserve body temperature through dry clothing, passive warming and insulation.

7. Everything Else/Evacuation

- Consider transport priorities and communicate with command if tactically feasible.
- Address other injuries or medical complaints that can be addressed in tactical environment.
- Consider risk/benefit of some level of spinal immobilization.
- In presence of explosive history consider Traumatic brain injury.
- Consider risk/benefit of treatment of cardiac arrest in isolated circumstances (electrocution, drowning, atraumatic arrest, hypothermia).
- Limited care of medical problems (ASA for chest pain, oral glucose for low bG).
- Consider pain medication for delays in evacuation or to facilitate care.

Evacuation Care/Cold Zone

- Communication with command to coordinate evacuation.
- Ensure clear routes of egress for medics and ambulances.
- Transfer care to conventional EMS.
- Return to tactical environment or down grade operation.
- Remain alert for the potential dynamic tactical environment and potential for secondary devices and unconventional threats.

General Trauma		Pg. 62
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<u>Procedures/Interventions</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<p><u>Scene Size Up/BSI-</u></p> <ul style="list-style-type: none"> Assure that the scene is safe for you, other rescuers, and the patient. It may be appropriate to withdraw from the scene in some situations until a safe environment can be obtained. It may be appropriate to rapidly remove the patient from a dangerous situation Don personal protective equipment (PPE) as appropriate. Identify the number of patients and other resources that may be needed. When there is more than one adult trauma patient, consider evenly distributing patients among more than one trauma center. If this is not feasible, contact medical control for routing assistance <p><u>Trauma Routing-</u> Any trauma patient with any of the following criteria should be considered for preferential routing to a verified (by state or national criteria) Level I or II trauma center. Patients transported by helicopter should be routed to the closest level I trauma center. Patients transported by ground should be routed to the closest level I or II trauma center based on injury type(s)</p> <ul style="list-style-type: none"> Adults- <ul style="list-style-type: none"> KUMC Level I St. Luke's Level I Truman Level I Overland Park Level II Research Level II Stormont Vail Level II Pediatric ≤ 16 y/o <ul style="list-style-type: none"> CMH Level I <p><u>Physiologic Criteria</u></p> <ul style="list-style-type: none"> Shock <ul style="list-style-type: none"> BP less than 90 systolic (adults) Respiratory distress <ul style="list-style-type: none"> RR >29 or <10 (adults) or <20 (infant less than one year old) or need for ventilator support RR <20 (1 year old and under) Altered mental status <ul style="list-style-type: none"> Glasgow Coma Scale of less than 13 <p><u>Anatomic</u></p> <ul style="list-style-type: none"> All penetrating injuries to head, neck, torso and extremities proximal to elbow or knee Chest wall instability or deformity (e.g., flail chest) Airway burns 20% 2nd degree burns and/or 5% 3rd degree burns Two or more proximal long bone fractures Pelvic fracture 		

General Trauma		Pg. 63
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<ul style="list-style-type: none"> • Limb paralysis • Amputation proximal to wrist or ankle • Open or depressed skull fracture • Crushed, degloved, mangled or pulseless extremity <p>Mechanism of injury</p> <ul style="list-style-type: none"> • Complete rollover • High speed MVC > 55 mph • Major auto deformity > 20 inches • Intrusion into passenger or any occupant compartment (including roof) >18 inches • Auto vs. pedestrian/bicyclist thrown, run over or with significant (20 mph) impact • 🏠 Older Adults: <ul style="list-style-type: none"> ○ Risk of injury/death increases after age 55 years ○ SBP <110 may represent shock after age 65 ○ Low impact mechanisms (ground level falls) may result in severe injury • 🏠 Children: <ul style="list-style-type: none"> ○ Should be triaged preferentially to pediatric capable trauma centers • 🏠 Anticoagulants and bleeding disorders <ul style="list-style-type: none"> ○ Patients with head injury are at high risk for rapid deterioration • Burns: <ul style="list-style-type: none"> ○ Without other trauma mechanisms: triage to burn facility ○ With trauma mechanism: triage to trauma center • 🏠 Pregnancy >20 weeks • Occupant ejection (partial/complete) • Death of same car occupant • Pedestrian thrown or run over • Motorcycle crash > 20 mph or with separation of rider from bike • Fall from height > 20ft for adults, Peds >10ft or 2X height • EMS provider judgment <p>Notes</p> <p>If a delay in transport is expected (e.g.: distance, multiple victims or prolonged extrication) transport to a tertiary trauma facility by helicopter is indicated</p> <p>Primary Survey- Search for immediate life threats by assessing the “ABCs” (airway, breathing or circulation problems) and treating the problems as they are found</p>		
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<p>Spinal Restriction- Refer to C-spine stabilization/LSB The following patient(s) should be treated for possible spinal injuries. Initiate motion restriction procedures, unless C-spine is cleared per protocol</p> <ul style="list-style-type: none"> • Violent mechanism of injury (witness, scene, situation) • Head injury with altered state of consciousness • Any unconscious trauma victim • Significant blunt injury above the level of the clavicles • Any history of sudden violent movement/deceleration or spine, or signs of spinal injury • Any patient ejected from an automobile • Any patient with helmet damage in a motorcycle accident or sports injury <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Pain, with or without movement • Point tenderness surrounding spine • Deformity of guarding of head, neck or back • Paralysis, partial paralysis, numbness or tingling <p>A-Assess airway with simultaneous cervical spine stabilization. Note: Patient’s ability to speak, and any evidence of actual or potential airway obstruction including vomitus, bleeding, dentures, loose teeth or foreign bodies</p> <ul style="list-style-type: none"> • BLS Maneuvers <ul style="list-style-type: none"> ○ Jaw thrust, (head tilt- chin lift only if no concern about cervical spine injury) ○ Oral or nasal airway ○ Suction ○ Position for gravity drainage ○ Combitube if indicated • ALS Maneuvers <ul style="list-style-type: none"> ○ Oral endotracheal intubation- may be attempted if unable to adequately ventilate the patient with BVM because of severe facial trauma or excessive blood or secretions. Maintain inline cervical spine traction ○ Transport of the unstable trauma patient should not be delayed by attempts at intubation unless the patient cannot be adequately ventilated with BVM ○ Nasal endotracheal intubation ○ Cricothyroidotomy <p>B- Assess Breathing: Note rate, depth and quality of ventilations, abnormal noises/stridor, retractions, accessory muscle use, nasal flaring or cyanosis</p>	<p>Fluid resuscitate- 500 cc bolus</p>	
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<ul style="list-style-type: none"> ○ Administer oxygen to maintain O2 SaO2 >95% ○ Assist ventilation as required ○ If evidence of open pneumothorax <ul style="list-style-type: none"> ❖ Seal with occlusive dressing ❖ Monitor for tension pneumothorax ○ If evidence of tension pneumothorax <ul style="list-style-type: none"> ❖ Needle decompress <p>C-Assess Circulation: Note pulses, level of consciousness, skin abnormalities (color, temperature, capillary refill and moisture), blood sweep. Assist circulation as required</p> <ul style="list-style-type: none"> ● If major bleeding is present, control with sterile dressing, direct pressure, elevation, pressure point or tourniquet use may be indicated ● Administer TXA for uncontrollable hemorrhagic shock ● If no pulse: <ul style="list-style-type: none"> ○ Follow DOA protocol if applicable ○ Initiate CPR if indicated ○ A cardiopulmonary arrest secondary to trauma cannot be adequately resuscitated in the field and must reach definitive care without delay for any chance of survival ● Initiate IVs with NS <ul style="list-style-type: none"> ○ Fluid resuscitate until vitals stabilize, repeat PRN ○ Transport of the unstable patient should not be delayed to initiate IV therapy ○ Begin IV in route to the hospital <p>D-Assess Neurological function (disability): Note level of consciousness, Glasgow Coma Scale or AVPU scale, movement of each extremity</p> <p>E-Expose: Exposure of the trauma patient is critical to finding all injuries</p> <ul style="list-style-type: none"> ● Remove as much clothing as necessary to determine the presence or absence of a condition or injury ● Once the body has been examined the patient should be recovered to conserve body heat <p>Secondary Survey- A detailed systemic history and physical examination, focused on the patient’s complaints, searching for problems that may not be immediate life or limb threatening Obtain chief complaint</p> <ul style="list-style-type: none"> ● Obtain “SAMPLE” history <ul style="list-style-type: none"> ○ Symptoms (including Pertinent positives and negatives) ○ Allergies ○ Medications 	<p>TXA- 1 gram in 100mL NS IV over 10 minutes</p> <p>Maintenance Infusion- 1 gram in 100mL over 8 hours</p>	
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<ul style="list-style-type: none"> ○ Past Medical history ○ Last Meal ○ Events/Environment leading to this episode ● Obtain baseline vital signs every 5 or 15 minutes based on patients condition ● Perform focused physical examination (this evaluation is dependent on the above history as well as the findings from the primary survey and may be more or less detailed depending on the situation.) ● Application of cardiac monitor on all patients with cardiac history ● Consider obtaining rapid bed side glucose determination ● Consider establishing 2nd IV access for critical patients ● Consider administering drug therapies (if indicated) <p><u>Transport-</u></p> <ul style="list-style-type: none"> ● Transport while monitoring vital signs and patient condition ● Emergent or Opticom transport to the hospital may be indicated if the patient is physiologically unstable: <ul style="list-style-type: none"> ○ Unable to establish or maintain an airway ○ Unable to ventilate ○ Unremitting shock (including cardiac arrest) ● Patient destination as determined by appropriate protocol ● 📞 Medical control contact as determined <p><u>Consideration for Specific Body Areas:</u></p> <p><u>Head Trauma-</u></p> <ul style="list-style-type: none"> ● As per primary and secondary survey ● Obtain brief history noting mechanism of injury, use of safety devices and level of consciousness ● The neurological exam should include assessing the level of consciousness (Glasgow Coma Scale/AVPU scale), pupil size and reactivity, and presence of posturing or paralysis ● Be alert of associated injuries. Assume that cervical spine injury is present in all patients with significant head trauma <p><u>Interventions:</u></p> <ul style="list-style-type: none"> ● As per primary and secondary survey ● Treat Seizures as per page 35 (Seizures) ● If S/S of increased Intracranial Pressure <ul style="list-style-type: none"> ○ Ventilate to maintain ETCO2 30-35mmHg ● Transport while monitoring vital signs every 5 minutes <p><u>Spinal Trauma-</u></p>		
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<ul style="list-style-type: none"> • As per primary and secondary survey • The chest/abdominal exam should include specifically assessing for open wounds, flail segments, tracheal deviation, unequal breath sounds, subcutaneous emphysema adequacy of ventilation <p><u>Interventions:</u></p> <ul style="list-style-type: none"> • As per primary and secondary survey • Using manual in-line stabilization, apply appropriately sized cervical collar • Spinal restrictions: <ul style="list-style-type: none"> ○ In the unstable patient, transport should not be delayed by the application of a short spine board prior to patient removal. Appropriate rapid patient removal techniques using appropriate collar and long spine board with manual spinal immobilization should be used ○ In the stable patient, complete spinal immobilization as indicated by mechanism of injury, using appropriate collar, short spine board, and long spine board as indicated per the spinal immobilization procedural protocols ○ Pregnant patients: if the uterus is palpable above the umbilicus, then roll the long spine board 10° to 15° to the left to prevent compression of the vena cava and hypotension. If unable to roll the long spine board, the uterus should be gently, manually displaced to the left with the palm of your hand ○ Have suction immediately available, as there is always a risk of aspiration while immobilized on a spine board <p><u>Chest Trauma-</u></p> <ul style="list-style-type: none"> • As per primary and secondary survey • The chest exam should include specifically assessing for open wounds, flail segments, tracheal deviation, unequal breath sounds, subcutaneous emphysema and adequacy of ventilation <p><u>Interventions:</u></p> <ul style="list-style-type: none"> • As per primary and secondary survey • A flail chest with respiratory distress is best treated with positive pressure ventilation • Cover an open chest wound with non-porous material secured on three sides to act as a “flap” • Tension pneumothorax can occur with or without a penetrating chest injury. If suspected, treat per the needle thoracostomy procedure • Monitor cardiac rhythm and treat dysrhythmias per the 		
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<p>appropriate protocol</p> <ul style="list-style-type: none"> • Transport while monitoring vital signs every 5 minutes <p><u>Abdominal Trauma-</u></p> <ul style="list-style-type: none"> • As per primary and secondary survey • The abdominal exam should include specifically assessing for open wounds, flail segments, tracheal deviation, unequal breath sounds, subcutaneous emphysema and adequacy of ventilation <p><u>Interventions:</u></p> <ul style="list-style-type: none"> • As per primary and secondary survey • If evisceration is present, cover the exposed viscera with sterile saline soaked pads. Do not attempt to replace the exposed viscera in the abdominal cavity • Transport while monitoring vital signs every 5 minutes <p><u>Extremity Trauma-</u></p> <ul style="list-style-type: none"> • Assess the injured extremity noting neurovascular adequacy (color, temperature, deformity, open wounds, and distal sensation and movement) <p><u>Fractures, dislocations and sprains:</u></p> <ul style="list-style-type: none"> • Apply the appropriate splints • If a pelvic fracture is suspected, place the patient on a long spine board • Splinting principles <ul style="list-style-type: none"> ○ Splint the joint above and below suspected fractures ○ Splint the bone above and below suspected joint injuries ○ Splint in position found. Severely angulated fractures may be straighten by gentle continuous traction if necessary for immobilization, extrication, or if significant neurovascular compromise is present ○ Recheck neurovascular status immediately after splinting and then every 5 minutes • Apply sterile saline moistened dressing to all open wounds • Chemical cold packs may be applied after splinting <p><u>Amputations:</u></p> <ul style="list-style-type: none"> • Search for and control external bleeding • Direct pressure with sterile gauze pads and elevation at the amputation site. DO NOT CLAMP BLEEDERS • Tourniquet: If significant extremity bleeding persists, apply pressure cuff and inflate until bleeding stops. Deflate cuff for 5 minutes every 30 minutes while maintaining direct pressure • General care for the patient. Apply sterile dressing to proximal amputation site and use appropriate narcotic to 		
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<p>provide pain relief</p> <ul style="list-style-type: none"> • Incomplete amputation: Rinse part briefly with saline and DO NOT SCRUB • Splint part in as normal a position as possible, and apply sterile pressure dressing • Place amputated part on ice bags or cold packs (no direct contact with ice, do not allow tissue to freeze) and replace ice as needed to keep cold • DO NOT CUT ANY EXISTING ATTACHMENTS no matter how small or thin <p>Complete Amputations-</p> <ul style="list-style-type: none"> • Rinse part briefly with saline DO NOT SCRUB • Wrap part in thin layer of dry or saline moistened gauze • Place part in plastic bag and seal. DO NOT PUT ANY FLUID INTO BAG • As time is of the greatest importance to assure viability of the amputated part, direct transport should be considered and proceed as promptly as possible to the nearest trauma facility <p><u>Penetrating extremity wounds-</u></p> <ul style="list-style-type: none"> • Apply pressure with sterile gauze pads and elevate to control external bleeding • In the rare instance when direct pressure fails to control bleeding and the patient may exsanguinate, use a blood pressure cuff on the proximal part of the extremity and inflate sufficiently to control the bleeding • Splint extremity • Transport while monitoring vital signs every 5 minutes <table border="1" data-bbox="250 1304 907 1843"> <thead> <tr> <th colspan="2">Glasgow coma scale</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Eye opening</td> <td>spontaneously</td> <td>4</td> </tr> <tr> <td>to speech</td> <td>3</td> </tr> <tr> <td>to pain</td> <td>2</td> </tr> <tr> <td>none</td> <td>1</td> </tr> <tr> <td rowspan="4">Verbal response</td> <td>orientated</td> <td>5</td> </tr> <tr> <td>confused</td> <td>4</td> </tr> <tr> <td>inappropriate</td> <td>3</td> </tr> <tr> <td>incomprehensible</td> <td>2</td> </tr> <tr> <td rowspan="5">Motor response</td> <td>none</td> <td>1</td> </tr> <tr> <td>extension to pain</td> <td>2</td> </tr> <tr> <td>flexion to pain</td> <td>3</td> </tr> <tr> <td>withdraws from pain</td> <td>4</td> </tr> <tr> <td>localises to pain</td> <td>5</td> </tr> <tr> <td>Maximum score</td> <td></td> <td>15</td> </tr> </tbody> </table>	Glasgow coma scale		Score	Eye opening	spontaneously	4	to speech	3	to pain	2	none	1	Verbal response	orientated	5	confused	4	inappropriate	3	incomprehensible	2	Motor response	none	1	extension to pain	2	flexion to pain	3	withdraws from pain	4	localises to pain	5	Maximum score		15		
Glasgow coma scale		Score																																			
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	extension to pain	2																																			
	flexion to pain	3																																			
	withdraws from pain	4																																			
	localises to pain	5																																			
Maximum score		15																																			

A

The patient is awake.

V

The patient responds to verbal stimulation.

P

The patient responds to painful stimulation.

U

The patient is completely unresponsive.

Activated Charcoal		Pg. 71
Sorbitol		
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Charcoal is an absorbent compound that absorbs toxins by binding the toxins in the stomach. Once bound, the toxins are inactive then excreted <p><u>Indications:</u></p> <ul style="list-style-type: none"> Ingested poisonings within 30 minutes to one hour of ingestion <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> Decreased LOC Decreased Gag reflex <p><u>Precautions:</u></p> <ul style="list-style-type: none"> In patients with decreased LOC, Charcoal should only be administered via lavage or NG tube to protect airway Shake thoroughly to insure charcoal residue is in suspension and not left on bottom of bottle In PEDs (<1 yr) may experience a electrolyte imbalance due to diarrhea if charcoal with sorbitol is administered <p><u>Administration:</u></p> <ul style="list-style-type: none"> P.O. in the conscious patient <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> None 	<p><u>Adult Dosages</u></p> <p>1 gm/kg PO (25-75 grams)</p>	<p><u>Pediatric Dosages</u></p> <p>1 gm/kg PO (25-50 grams)</p>
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Adenosine (Adenocard)		Pg. 72
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Slows conduction through the AV node, disrupting AV nodal reentry Half life is less than 10 seconds due to cellular uptake and metabolism <p><u>Indications:</u></p> <ul style="list-style-type: none"> Regular rhythm narrow complex tachycardia >150 BPM in adults or > 220 BPM in pediatrics Adenosine may be indicated while setting up to sedate and cardiovert the patient <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> Patient with allergy to adenosine Poison induced tachycardias, e.g. Cocaine Will not work in the following: <ul style="list-style-type: none"> History of Wolf-Parkinson White Syndrome Sick-sinus syndrome 2nd and 3rd degree AV heart block <p><u>Precautions:</u></p> <ul style="list-style-type: none"> May produce transient first, second or third degree AV blocks or asystole May cause bronchospasms in asthma patients Effects are antagonized by methylxanthines (caffeine) Effects are potentiated by dipyridamole (Persantine) and carbamazepine (Tegretol) <p><u>Administration:</u></p> <ul style="list-style-type: none"> Establish an IV as close to the core as is practical (e.g. antecubital vein) Short ½ life (<10 seconds). Administer by rapid IV bolus at injection port closest to patient and follow by a saline flush Only acceptable routes of administration are IV/IO <p><u>Side Effects:</u></p> <p>Is not effective in:</p> <ul style="list-style-type: none"> Sinus Tachycardia Atrial Fibrillation /Atrial Flutter Ventricular Tachycardia If the cardiac rate is less than the designated criteria rate, consider other etiologies and contact medical control to discuss etiology and treatment <p>Frequent, transient side effects include:</p> <ul style="list-style-type: none"> Facial flushing Dyspnea/ Chest pressure Nausea Headache/Light headedness 	<p><u>Adult Dosages</u></p> <p>6mg IV repeat at 12 mg in 1-2 min. 3rd dose of 12 in 1-2 min</p>	<p><u>Pediatric Dosages</u></p> <p>0.1mg/kg (6mg max) repeat at 0.2mg/kg</p>
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Albuterol Sulfate		Pg. 73
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Bronchodilation through beta 2 mediated smooth muscle relaxation Albuterol also has some Beta-1 agonist activity which can increase myocardial contractility, irritability, and rate <p><u>Indications:</u></p> <ul style="list-style-type: none"> Bronchospasm due to any etiology including: asthma, COPD, allergic reactions and pulmonary infections <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Do not neglect more basic maneuvers such as O2, appropriate airway control (including intubation) and appropriate ventilation (including BVM) Use with caution (i.e. close monitoring of vital signs, patient condition, and EKG monitor) in patients with coronary artery disease, dysrhythmias, hypertension, prior recent beta adrenergic drug use, monamine oxidase inhibitor use, or tricyclic antidepressant use Albuterol may exacerbate congestive heart failure <p><u>Administration:</u></p> <ul style="list-style-type: none"> Acceptable routes include nebulizer and metered dose inhaler (MDI) <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Tremors Nervousness Nausea Vomiting Cardiac irritability or tachycardia dysrhythmias may manifest and warrant termination of treatment 	<p><u>Adult Dosages</u></p> <p>2.5mg in 3cc</p>	<p><u>Pediatric Dosages</u></p> <p>2.5mg in 3cc</p>
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Amiodarone (Cardarone)		Pg. 74
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Amiodarone is a class 3 antidysrhythmic, with multiple actions on K+, Na+, and Ca+ movement in myocardial cells • Decreases phase 4 automaticity • Decreases cardiac conduction velocity, increases action potential duration, and prolongs refractory period • Decreases the disparity of electrical conduction and repolarization times between healthy and ischemic tissue <p><u>Indications:</u></p> <ul style="list-style-type: none"> • All tachydysrhythmias • V-fib • Pulseless Ventricular tachycardia <p><u>Contraindications:</u> Patients with a pulse</p> <ul style="list-style-type: none"> • Cardiogenic shock • Sinus Bradycardia • 2nd or 3rd degree heart block • A-Fib/Flutter >48hr in duration <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • May worsen existing arrhythmias in <2% of patients • May potentiate the effects of beta and calcium channel blockers • May reduce energy requirements to defibrillate <p><u>Administration:</u></p> <ul style="list-style-type: none"> • IV/IO in pulseless patients and IV/IO drip in patients with a pulse <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Hypotension • Bradycardia • Heart Block • Congestive Heart Failure 	<p><u>Adult Dosages</u></p> <p>VF/Pulseless VT- 300mg repeat in 3-5 min at 150mg.</p> <p>Non cardiac arrest- 150mg over 10min.</p> <p>Maintenance infusion- 1mg/min</p>	<p><u>Pediatric Dosages</u></p> <p>VF/pulse less VT- 5mg/kg q 5 min max of 15mg/kg</p> <p>VT with pulse- 5mg/kg over 20-60 min.</p>
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Ammonia Caps		Pg. 75
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<u>Pharmacology and Actions:</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> Respiratory Stimulant- Aromatic spirit is a reflex stimulant that acts by causing peripheral irritation of the sensory receptors in the nasal mucous membranes, esophageal mucosa, and fundus of the stomach <p><u>Indications:</u></p> <ul style="list-style-type: none"> Unconscious Altered mental status <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> Respiratory disease or impairment <p><u>Precautions:</u> Can cause:</p> <ul style="list-style-type: none"> Cough Difficulty breathing Headache Vomiting <p><u>Administration:</u></p> <ul style="list-style-type: none"> Acceptable route of administration is inhalation. Inhalant should be held away from the face and not allowed to touch the skin <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Pediatric use is controversial 		

Aspirin		Pg. 76
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Aspirin has been proven to reduce mortality and re-infarction rates in myocardial infarction by altering platelet function and prolonging bleeding time. This is not an anticoagulant and does not affect the clotting cascade <p><u>Indications:</u></p> <ul style="list-style-type: none"> Use in patients with chest pain considered to be of cardiac ischemic origin <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> Patients with known allergies to aspirin or nonsteroidal anti-inflammatory drugs. (e.g. ibuprofen, ketoprofen, naprosyn, or relafan) Patients with a history of asthma <p><u>Precautions:</u></p> <ul style="list-style-type: none"> When taken with nitroglycerin, aspirin may result in unexpected hypotension Exacerbate bronchospasms in asthmatics <p><u>Administration:</u></p> <ul style="list-style-type: none"> Oral (PO); chewed or swallowed <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Bleeding/hemorrhage Gastric Ulcers 	<p><u>Adult Dosages</u></p> <p>324mg P.O. chewed.</p>	<p><u>Pediatric Dosages</u></p>
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Atropine Sulfate		Pg. 77
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Atropine is an Anti-Cholinergic (Parasympatholitic). It is a positive chronotropic which increase heart rate and a positive dromotropic which increases electrical conduction within the heart <p><u>Indications:</u></p> <ul style="list-style-type: none"> Symptomatic bradycardias including: <ul style="list-style-type: none"> Sinus bradycardia Sinus arrest/block Sinus bradycardia with PVC's Slow junctional and idioventricular rhythms AV heart block Cholinergic poisoning <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Atropine may induce tachycardia and increase myocardial oxygen consumption, therefore, it should be used with caution in patients with: <ul style="list-style-type: none"> Coronary Artery Disease Ongoing myocardial ischemia CHF Reflex bradycardia if given slowly or at a dose of <0.5mg adult, <0.1mg Ped Not effective in 2° and 3° AV block with wide QRS <p><u>Administration:</u></p> <ul style="list-style-type: none"> Intravenous (IV) Intraosseous (IO) Endotracheal (ET) <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Ventricular fibrillation has occurred after IV administration of atropin Excessive doses of atropine may cause delirium, ataxia, blurred vision, tachycardia or coma 	<p><u>Adult Dosages</u></p> <p><u>Symptomatic Bradycardias:</u> 0.5-1mg IV q 3-5 min. Total dose of 0.04mg/kg</p> <p><u>Cholinergic OD:</u> 2-6mg IV or IM repeat every 5 minutes</p>	<p><u>Pediatric Dosages</u></p> <p><u>Symptomatic Bradycardias:</u> 0.02mg/kg repeat only once if needed in 5min. Max of 1mg</p> <p><u>Cholinergic OD:</u> 0.05mg/kg IV push or IM repeat every 5 minutes</p>
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Atrovent (Ipratropium Bromide)		Pg. 78
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Atrovent is a anticholinergic bronchodilator that relaxes muscles in the airways and increases air flow to the lungs (bronchodilation) <p><u>Indications:</u></p> <ul style="list-style-type: none"> Bronchospasm associated with acute exacerbations of COPD Asthma <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Do not neglect Oxygen administration, airway control, and proper ventilation <p><u>Administration:</u></p> <ul style="list-style-type: none"> Nebulizer <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Atrovent is chemically related to Atropine so it may cause minor anticholinergic side effects such as dry mouth, skin flushing, or headache 	<p><u>Adult Dosages</u></p> <p>.5 mg in 2.5 cc NS</p>	<p><u>Pediatric Dosages</u></p> <p>.5 mg in 2.5 cc NS</p>
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Benadryl (Diphenhydramine)		Pg. 79
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<p><u>Pharmacology and Actions:</u> An antihistamine which competitively blocks H-1 histamine receptors. Histamine can cause bronchoconstriction, vasodilatation, and capillary leak. It also has some anticholinergic (atropine-like) effects as well as direct CNS depressant effects</p> <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Anaphylaxis • Anaphylaxis with respiratory distress • Anaphylactic shock • Antidote for extrapyramidal reactions in phenothiazines and PCP <p><u>Contraindications:</u> None</p> <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • In anaphylaxis, oxygen, epinephrine, fluids and Albuterol should be utilized prior to administration • Due to anticholinergic effects, use with caution in patients with glaucoma, prostatism or peptic ulcer disease. <p><u>Administration:</u> Acceptable routes of administration include IV, IO and IM</p> <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • CNS depression • Hypotension • Thickening of bronchial secretions, tightness of chest and wheezing 	<p><u>Adult Dosages</u></p> <p>1.0-2.0mg/kg over 5 min IV, IO, IM Max 100mg</p>	<p><u>Pediatric Dosages</u></p> <p>1.0-2.0mg/kg over 5 min. Max 50mg</p>
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Cyanokit (Hydroxocobalamin)		Pg. 80
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<p><u>Pharmacology and Actions:</u> An emergency treatment (antidote) used in patients with a known or suspected cyanide poisoning. Cyanide can result in death within minutes due inhibition of cytochrome which prevents the cell from using oxygen and forces anaerobic metabolism resulting in lactate production, cellular hypoxia and metabolic acidosis. The cyanokit binds cyanide ions to form cyanocobalamin, which is then secreted in the urine.</p> <p><u>Indications:</u> Known or suspected cyanide poisoning. Exposure with any of the following:</p> <ul style="list-style-type: none"> • Hypotension not attributable to other obvious causes • Headache • Nausea/vomiting • Tachypnea(early) bradypnea(Late) • Altered mental status • Coma • Seizure • Respiratory arrest • Chest tightness • Cardiac Arrest <p><u>Contraindications:</u> Hypersensitivity to hydroxocobalamin or cyanocobalamin</p> <p><u>Precautions:</u> Allergic reactions may include anaphylaxis, chest tightness, edema, urticaria, pruritus, dyspnea and rash The following medications are not compatible with hydroxocobalamin and should not be administered simultaneously through the same line: Dopamine, Fentanyl</p> <ul style="list-style-type: none"> • When transporting, inform receiving hospital staff which line was used for hydroxocobalamin due to the following being incompatible: Diazepam, dobutamine, Nitroglycerin, Pentobarbital, Propofol, thiopental, blood products, sodium thiosulfate, sodium nitrate and ascorbic acid. <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • <u>CNS:</u> Headache • <u>CV:</u> Increased blood pressure • <u>GI:</u> Transient chromoarturia (abnormal coloration of the urine), Nausea • <u>Skin:</u> Erythema, rash, injection site reactions 	<p><u>Adult Dosages</u></p> <p>5g IV/IO infused over 15 minutes Each 5g vial needs to be reconstituted with 200cc of normal saline.</p> <p>If signs and symptoms persist, repeat dose at a rate between 15 minutes and 2 hours.</p>	<p><u>Pediatric Dosages</u></p> <p>2.5g IV/IO infused over 15 minutes Each 5g vial needs to be reconstituted with 200cc of normal saline.</p> <p>If signs and symptoms persist, repeat dose at a rate between 15 minutes and 2 hours.</p>
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Dextrose (Glucose)		Pg. 81
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<p><u>Pharmacology and Actions:</u> Glucose is the major metabolic substrate for energy metabolism. Although all tissues need glucose, the brain is particularly sensitive to low glucose levels. Glucose specifically reverses hypoglycemia</p> <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Confirmed hypoglycemia with a rapid bedside glucose test • Suspected hypoglycemia as manifested by altered mental status (including apparent drug or alcohol use, seizure or post ictal state) or coma <p><u>Contraindications:</u> None</p> <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Extravasation of glucose will cause skin necrosis. The IV should be secure and the free return of blood should be checked during administration. If extravasation does occur, immediately stop administration. Notify the ED staff upon arrival of possible glucose extravasation • High glucose levels have been associated with worsened neurologic outcomes of patients with stroke, cardiac arrest and low perfusion states. When these states exist, it is preferable to only administer glucose after hypoglycemia has been documented by a rapid bedside glucose test <p><u>Administration:</u></p> <ul style="list-style-type: none"> • Acceptable routes of administration include IV, IM, PO • PALS recommends in cardiac arrest or low perfusion states, the D25 should be administered over 10 min <p><u>Special considerations:</u></p> <ul style="list-style-type: none"> • Consider oral glucose if mental status permits its use • One bolus should raise the blood sugar by 100-200mg% 	<p><u>Adult Dosages</u></p> <p>PO 15-30 gms.</p> <p>IV, IO 12.5-25 gms.</p>	<p><u>Pediatric Dosages</u></p> <p>IV, IO 0.5-1.0 gms/kg D25 Max 25 gms.</p>
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Dopamine		Pg. 82
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Chemical precursor of norepinephrine, occurring naturally in the body, stimulating both alpha and beta receptors. This allows for cardiac stimulation and blood pressure support which improves the pumping strength of the heart (myocardial contractility) <p><u>Indications:</u></p> <ul style="list-style-type: none"> low blood pressure (cardiogenic shock) after adequate volume resuscitation has been performed <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Dopamine is inactivated when added to sodium bicarbonate Tissue Necrosis may occur with infiltration <p><u>Administration:</u></p> <ul style="list-style-type: none"> IV/IO via micro drip (60 gtts) admin set <p><u>Side Effects:</u></p> <p>Myocardial Irritability S/S-</p> <ul style="list-style-type: none"> Ectopy Tachycardia Angina <p>GI S/S-</p> <ul style="list-style-type: none"> Nausea Vomiting <p>A "cardiac dose" of 5-10 mcg/kg/min acts through the sympathetic nervous system to increase heart muscle contraction force and heart rate, increasing cardiac output and blood pressure</p> <p>A "pressor dose" of 10-20 mcg/kg/min also causes vasoconstriction which further increases blood pressure, but can produce kidney function impairment and cardiac arrhythmias</p>	<p><u>Adult Dosages</u></p> <p>400 mg / 250 cc NS infused at 2-20 mcg/kg/min (titrated to effect)</p>	<p><u>Pediatric Dosages</u></p>
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Epinephrine		Pg. 83
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Epinephrine is a natural catecholamine that acts to stimulate (i.e., fight or flight) activity therefore increasing coronary blood flow, cardiac electrical activity, and strength of contraction. Beta- Smooth muscle relaxation, Bronchodilation <p><u>Indications:</u></p> <ul style="list-style-type: none"> Used in cardiac arrest for <ul style="list-style-type: none"> Ventricular fibrillation Pulseless v-tachycardia Asystole PEA (pulseless electrical activity) Severe bronchospasm or laryngospasm as seen in asthma and anaphylaxis Bradycardia <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Patients with suspected myocardial ischemia, history of coronary artery disease, or age greater than 50 In patients taking digitalis, epinephrine may exacerbate ventricular ectopy Glaucoma <p><u>Administration:</u></p> <ul style="list-style-type: none"> Acceptable routes of administration include subcutaneous (SQ), intravenous (IV), and endotracheal (ET). The sublingual venous plexus may be utilized as a site in anaphylactic shock <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Hypertension Tachycardia Angina Tremors 	<p><u>Adult Dosages</u></p> <p><u>Cardiac arrest</u> 1 mg repeated every 3-5 min.</p> <p><u>Asthma/ Anaphylaxis</u> .3 mg 1/1000 IM</p> <p>If hypotension <90 or severe respiratory distress, .3 mg 1/10,000 IVSP per Dr. consult</p> <p><u>Bradycardia</u> 2-10 mcg/min infusion</p>	<p><u>Pediatric Dosages</u></p> <p><u>Cardiac arrest</u> .01 mg/kg repeat every 3-5 min. continually.</p> <p><u>Asthma/ Anaphylaxis</u> .01 mg/kg max .3 mg</p> <p>If hypotension < age x 2 plus 70 or severe respiratory distress, .01 mg/kg 1/10,000 IVSP per Dr. consult</p> <p><u>Bradycardia</u> .01 mg/kg IVSP</p>
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Fentanyl Citrate		Pg. 84
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Synthetic, potent narcotic analgesic with pharmacologic actions qualitatively similar to those of morphine, but action is more prompt and less prolonged <p><u>Indications:</u></p> <ul style="list-style-type: none"> First line drug when providing analgesia for moderate to severe pain in isolated trauma <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> Patients having taken MAO inhibitors within 14 days Myasthenia gravis (Neuromuscular disorder) Labor and delivery/Pregnancy Hypersensitivity Hypotension (BP>100) <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Head injuries/increased intracranial pressure Older adult population, debilitated, poor risk patients Cardiac diseases, angina, hypotension or cardiac arrhythmias/brady arrhythmias Liver or kidney dysfunction Children Use with caution in patients who have ingested alcohol or other CNS depressants Known substance abuse <p><u>Administration:</u> IV/IO or IM. Can be paired with Zofran to combat nausea side effect</p> <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Central Nervous System: Sedation, euphoria, dizziness, diaphoresis, delirium, convulsions with high doses Cardiovascular: Hypotension, bradycardia, circulatory depression, cardiac arrest Gastrointestinal: <ul style="list-style-type: none"> nausea, vomiting, constipation Respiratory: <ul style="list-style-type: none"> laryngospasm, bronchoconstriction, respiratory depression or arrest 	<p><u>Adult Dosages</u></p> <p>50mcg IV/IO Slow Push or IM, IN</p>	<p><u>Pediatric Dosages</u></p> <p>1-3 mcg/kg/IV slow</p>
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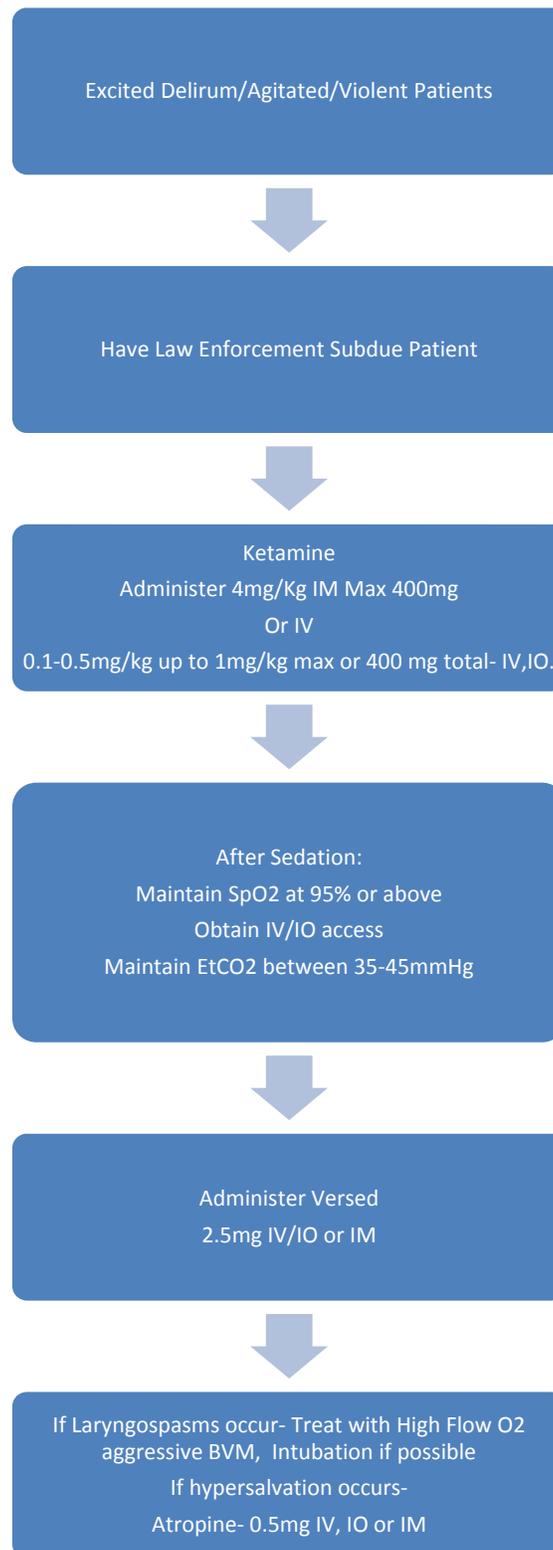
Glucagon		Pg. 85
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Glucagon is a hormone secreted by the pancreas Administration raises blood glucose levels by causing the breakdown of hepatic glycogen stores into glucose. Exogenous administration can also stimulate catecholamine release <p><u>Indications:</u> Symptomatic hypoglycemia, confirmed with a rapid bedside glucose test, when no IV line is available</p> <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • Known hypersensitivity to glucagon • Known adrenal gland tumor such as pheochromocytoma (due to extreme hypertension from possible catecholamine release) <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Glucagon is only effective if there are sufficient stores of glycogen within the liver • Supplemental glucose should be given to prevent secondary hypoglycemia as soon as the patient is conscious and able to tolerate oral administration <p><u>Administration:</u> Acceptable routes of administration include IM, SQ</p> <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Nausea and vomiting • Hypotension • Ventricular Tachydysrhythmias <p><u>Special Considerations:</u></p> <ul style="list-style-type: none"> • Consider oral glucose if mental status permits use • Return to consciousness following the administration of glucagon usually takes 5-20 minutes 	<p><u>Adult Dosages</u></p> <p>0.5-1.0mg IM, SQ</p>	<p><u>Pediatric Dosages</u></p> <p>0.03mg/kg IM, SQ Max 1mg</p>
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Ketamine		Pg. 86
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<p><u>Pharmacology and Actions:</u></p> <p><u>Indications:</u></p> <ul style="list-style-type: none"> • For violent and agitated patients that pose a serious challenge for EMS personnel. • To reduce excited delirium syndrome in extremely agitated patients. • Pain management of trauma patients • Acute Pediatric Asthma, Status Asthmatic's • Reduce CPAP anxiety <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • Extreme HTN, SBP>200mmHg • Known hypersensitivity to the drug. <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Use with caution with patients with chronic alcoholism or acute ethanol intoxication <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Cardiovascular - blood pressure and pulse rate are frequently elevated following administration • Respiration - frequently stimulated, severe depression of respiration or apnea may occur following rapid intravenous administration. Is also a Bronchodilator. • Laryngospasms have occurred and are extremely rare. • Eye - Diplopia and nystagmus have been noted • Neurological – Confusion and hallucinations as medication wears off. • Increase salivation 	<p><u>Adult Dosages</u></p> <p>0.1-1mg/kg max or 400 mg total- IV,IO.</p> <p>IM- 2 mg/kg up to a total of 4 mg/kg</p>	<p><u>Pediatric Dosages</u></p> <p>0.1-1mg/kg max- IV, IM, IO.</p>
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Ketamine		Pg. 87
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Lidocaine		Pg. 88
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Lidocaine functions to decrease the amount of electrical activity in the heart and increase the heart's threshold for ventricular fibrillation • Blocks Na⁺ entry into the cell • Decreases Phase 4 automaticity <p><u>Indications:</u> Used in cardiac resuscitation for ventricular fibrillation, pulseless ventricular tachycardia, and ventricular ectopy of</p> <ul style="list-style-type: none"> • PVC's- 6 or more per min • PVC couplets • R wave on T wave • Multifocal PVC <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • 2nd and 3rd degree heart block • IVR and AIVR • WPW syndrome <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • In patients with advanced age (>70) or history of compromised liver function, consider ½ dose <p><u>Administration:</u></p> <ul style="list-style-type: none"> • Acceptable routes of administration include intravenous (IV), intraosseous (IO), and endotracheal (ET) <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Large doses of Lidocaine may induce heart block and alter heart conduction • Excessive doses of Lidocaine can cause neurologic changes (seizures, mental status changes), myocardial depression and circulatory collapse 	<p><u>Adult Dosages</u></p> <p><u>VF/Pulseless V-tach</u> 1.5 mg/kg repeat .75 mg/kg x 2</p> <p><u>Post arrest</u> 1-4 mg/min infusion</p> <p><u>Ventricular Ectopy</u> 1-1.5 mg/kg IVSP May repeat at half initial dose, then follow with infusion.</p> <p><u>IO Analgesic</u> 40 mg may repeat at half initial dose.</p>	<p><u>Pediatric Dosages</u></p> <p><u>VF/Pulseless V-Tach</u> 1 mg/kg repeat .5 mg/kg x 2</p> <p><u>Post Arrest</u> 20-50 mcg/kg/min infusion</p> <p><u>Ventricular Ectopy</u> 1 mg/kg IVSP May repeat at half initial dose, then follow with infusion.</p> <p><u>IO Analgesic</u> .5 mg/kg may repeat at half initial dose.</p>
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Magnesium Sulfate		Pg. 89
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Seizures, toxemia of pregnancy: Exact mechanism is not clearly understood. Magnesium may decrease the amount of acetylcholine released at the myoneuronal junction, resulting in depression of neuromuscular transmission. Magnesium also may have a direct depressant effect on smooth muscle and may CNS depression Antiarrhythmic effect: Magnesium may decrease myocardial cell excitability by contributing to the re-establishment of ionic equilibrium and stabilizing cell membranes. Magnesium also appears to modulate the sodium current, the slow inward calcium current, and at least one potassium current <p><u>Indications:</u></p> <ul style="list-style-type: none"> S/S of severe pre-eclampsia and seizures associated with eclampsia Torsades de pointes Refractory VF/VT <p><u>Contraindications:</u> Heart block Recent AMI</p> <p><u>Precautions:</u> Monitor for signs of magnesium toxicity (absent patellar reflexes, respirations < 12/min, chest tightness, dyspnea, ECG changes.)</p> <p><u>Administration:</u> Acceptable routes include IVP in pulseless patients and IV drip in patients with a pulse</p> <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Respiratory depression and paralysis of respiratory muscles Depress reflexes Hypotension Heart block Hypocalcemia 	<p><u>Adult Dosages</u></p> <p>Torsades: 1 to 2 g IVP</p> <p>Pre-eclampsia: 4gm in 100cc NS, IV over 20 minutes</p>	<p><u>Pediatric Dosages</u></p>
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Metoprolol (Lopressor)		Pg. 90
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Negative chronotropic- Slows heart rate • Negative inotropic- Decreases Contractility • Decreases Cardiac output and decreases blood pressure <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Hypertension • Beta blockers have been shown to reduce morbidity and mortality when administered early in the course of AMI by reducing MVO2 and cardiac workload thus preserving muscle tissue <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • Hypotension/Cardiogenic shock (SBP < 100mmHG) • Bradycardia, second or third degree heart block • Cocaine induced acute coronary syndrome <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Evaluate carefully in administration to AMI patients as Metoprolol can worsen those in cardiogenic shock • Can have severe hypotensive effects when administered with other beta blocking medications <p><u>Administration:</u></p> <ul style="list-style-type: none"> • Acceptable routes include intravenous (IV) <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Hypotension • Bradycardia • Heart failure • Bronchospasms 	<p><u>Adult Dosages</u></p> <p>5 mg q 5 min max of 15 mg.</p>	<p><u>Pediatric Dosages</u></p> <p>Not recommended for pediatric use.</p>
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Morphine Sulfate		Pg. 91
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Acts as an opiate agonist • Alters the patient's perception of pain and acts as an analgesic by stimulating opiate receptor sites • Produces venous vasodilatation <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Drug of choice for the treatment of pain and anxiety associated with AMI • Useful to relieve pain associated with burns and isolated trauma • As an adjunct in the treatment of pulmonary edema <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • Respiratory distress or compromise (Asthma or COPD) • Cardiac dysrhythmia present • Altered mental status • Sensitivity/allergy to Morphine • Hypotension and suspected shock <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • This drug causes decreased respiratory drive, and as such should only be given while monitoring pulse oximetry and closely monitoring respiratory status • Pregnancy • Drug/alcohol intoxication • Age less than 12 months • Stimulates Vomiting <p><u>Administration:</u></p> <ul style="list-style-type: none"> • For specific doses, refer to applicable protocol • May be administered IV only <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • CNS- Depression, Convulsions in children • CV- Bradycardia, Decrease Blood pressure • Respiratory- Depression, Wheezing • G/I- Nausea/Vomiting 	<p><u>Adult Dosages</u></p> <p>Titrate morphine sulfate, 2-4 mg IV/IO q 2-3 minutes to pain relief, max 10 mg.</p> <p><u>Sedation/Pain Mgmt</u> For patients > 25 kg (> 8 y/o): 2-4 mg IV, q 5 min, max 10 mg</p> <p><u>CHF</u> 🚰 Titrate morphine sulfate, 1-3 mg IV every 5 minutes as indicated. (MAX 10 mg.)</p>	<p><u>Pediatric Dosages</u></p> <p><u>Sedation/Pain Mgmt</u> For patients ≤ 25 kg (≤ 8 y/o): 0.1 mg/kg, q 5 min, max 10 mg IV or IO</p>
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Narcan (Naloxone)		Pg. 92
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Narcotic antagonist which blocks narcotic effects by occupying, without activating, narcotic receptor sites. The duration of action is 20 to 60 minutes Reversing Respiratory depression, Sedation and Hypotension <p><u>Indications:</u></p> <ul style="list-style-type: none"> Used for the reversal of narcotic effects, especially respiratory depression, due to overdose of narcotic drugs by any route Used diagnostically in coma of unknown etiology to rule out (or reverse) narcotic depression <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Airway and ventilation always take priority over an IV and Naloxone In appropriate clinical situations (i.e. a known or suspected narcotics abuser) it may be advisable to restrain the patient prior to administering Naloxone In patients who are physically dependent on narcotics, withdrawal symptoms may be precipitated <p><u>Administration:</u></p> <ul style="list-style-type: none"> For specific doses refer to the applicable protocol Acceptable routes of administration include intravenous (IV), intraosseous (IO), endotracheal (ET), or intramuscular (IM), (IN) Intranasal <p><u>Special Considerations:</u></p> <ul style="list-style-type: none"> The duration of action of Naloxone is shorter than many narcotics and so the patient must be monitored closely for return of CNS or respiratory depression. Patients who receive this drug must be transported Very large doses may be needed to reverse some narcotics (i.e propoxyphene-Darvon; pentazocine-Talwin) 	<p><u>Adult Dosages</u></p> <p>For patients > 25 kg (> 8 y/o): 2.0 mg IV, IT, IN or SQ</p>	<p><u>Pediatric Dosages</u></p> <p>For patients ≤ 25 kg (≤ 8 y/o): 0.1 mg/kg IV, IT, IN or SQ max 2.0 mg</p>
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Nitroglycerin		Pg. 93
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Dilate smooth muscle within arteries and veins Consequently, this decreases the workload of the heart, increases blood supply to cardiac tissue and lowers blood pressure <p><u>Indications:</u></p> <ul style="list-style-type: none"> Used to treat chest pain of cardiac origin Used to treat congestive heart failure with pulmonary edema <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> VIAGRA has been shown to potentate the hyposensitive effects of nitrates. The administration of an organic nitrate within 24 hrs of taking Viagra (Sildenafil) or other erectile agent use within the past 48 hrs is contraindicated Hypotension <100 <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Because of nitroglycerin's tendency to lower blood pressure, it should be given with caution. Vital signs continuously monitored <p><u>Administration:</u></p> <ul style="list-style-type: none"> Acceptable routes of administration include SL spray or cutaneous 2% ointment <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Headache Dizziness Light-headed Nausea 	<p><u>Adult Dosages</u></p> <p>0.4mg SL (Systolic BP above 100mm Hg) Repeat q 3-5 min</p> <p>Paste 0.5-1.0 inch.</p>	<p><u>Pediatric Dosages</u></p>
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Oxygen		Pg. 94
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<u>Pharmacology and Actions:</u>	<u>Adult Dosages</u>	<u>Pediatric Dosages</u>
<ul style="list-style-type: none"> Oxygen is required to enable cells to break down glucose into a usable energy form Supplemental oxygen increases alveolar concentrations of oxygen and therefore arterial oxygen tension is increased Supplemental oxygen reduces both the magnitude and the extent of ST-segment changes on the EKG in patients with acute MI Increased myocardial contractility increased PVR <p><u>Indications:</u></p> <ul style="list-style-type: none"> Suspected hypoxemia of any etiology Oxygen saturation of < 94% indicates need for supplemental oxygen <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> COPD patients (whose primary breathing stimulus is the hypoxic drive) must be monitored very closely for decreased respiratory drive when oxygen is being administered The tank containing oxygen is under great pressure – make sure the tank is secure at all times. Failure to do so may result in fire and explosion Avoid hyperoxia(excessive oxygenation) in the post-resuscitation patient <p><u>Administration:</u></p> <ul style="list-style-type: none"> All responsive adult patients breathing > 24 breaths per minute or < 12 breaths per minute or pediatric patient showing respiratory distress should receive high flow oxygen (defined as 10-15 L/min non-rebreather mask) If the patient is unresponsive and the breathing is adequate, provide high flow oxygen Assist ventilations if the respiratory rate is < 12 or > 24, as indicated by clinical status If the pt is apneic, use high flow oxygen via BVM (bag valve mask) administration <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> None for short-term emergency use 		

Pitocin		Pg. 95
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<p><u>Pharmacology and Actions:</u> Normal occurring posterior pituitary hormone</p> <ul style="list-style-type: none"> • Exerts a selective action on uterine smooth muscle • Stimulates rhythmic contractions of the uterus • Increases the frequency of existing contractions • Raises the tone of the uterine musculature • Exerts slight anti-diuretic effect (ADH effect) in large doses <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Control of postpartum hemorrhage <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Uterine hypertonicity, tetany, and rupture if administration rate not carefully monitored <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Most common side effect: If rapidly administered causes relaxation of systemic vascular smooth muscle resulting in transient hypotension, tachycardia and flushing • Hypertensive episodes, subarachnoid bleeding • Tachycardia, Cardiac dysrhythmias, PVC's 	<p><u>Adult Dosages</u></p> <p>10 units IM</p>	<p><u>Pediatric Dosages</u></p>
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Alcaine (Proparacaine)		Pg. 96
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Topical ophthalmic anesthetic • Competes with calcium for sites in nerve membranes that control sodium transport across cell membrane; decreases rise of depolarization phase of action potential <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Eye Pain • Chemical exposure to the eyes • Abrasions to the eye <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • Hypersensitivity to Tetracaine or other amides • Less than one year of age <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Concurrent use of steroid eye drops is not recommended • Attempt to prevent the patient from rubbing their eyes as this may cause corneal abrasion • Protect from light <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Localized burning and irritation to the eye. Encourage the patient to blink their eyes, as this will cause the burning sensation to subside 	<p><u>Adult Dosages</u></p> <p>1 to 2 drops instilled in the affected eye and repeat after 20 minutes as needed</p>	<p><u>Pediatric Dosages</u></p> <p>Not recommended for patients <1yr</p>
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Sodium Bicarbonate		Pg. 97
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Serves as a buffer for acidosis <p><u>Indications:</u></p> <ul style="list-style-type: none"> Known or suspected hyperkalemia Known or suspected TCA (tricyclic antidepressant overdose) Prolonged compression of one or more extremities in patients suspected of suffering from crush syndrome <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> Administration rapidly generates carbon dioxide which can result in tissue and cerebrospinal fluid acidosis Do not mix with other drugs as it inactivates catecholamine <p><u>Administration:</u></p> <ul style="list-style-type: none"> For specific doses, refer to the applicable protocol Acceptable routes include IV and IO only Adequate ventilation is a major buffering agent and is essential prior to administration <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Alkalosis Hypokalemia 	<p><u>Adult Dosages</u></p> <p>TCA OD-1.0-3.0 meq/kg to IV infusion</p> <p>Crush Syndrome-50meq in IV infusion.</p>	<p><u>Pediatric Dosages</u></p>
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Solumedrol (Methyprednisolone)		Pg. 98
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<p><u>Pharmacology and Actions:</u> Synthetic steroid similar to the glucocorticoids (hydrocortisone and cortisone) which are released from the adrenal gland cortex. Used primarily for its anti-inflammatory properties</p> <ul style="list-style-type: none"> • Anti-inflammatory agent stabilizes cell membranes, and lysosomal membranes preventing the release of histamine, bradykinin, and myocardial depressant factor and preventing excessive lactic acid buildup • Generally increases BMR including protein metabolism, gluconeogenesis (glucose from protein), Na and H₂O reabsorption thus increasing BP, increases gland secretion (sweat, saliva, and gastric), and CNS stimulation <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Cerebral edema • Treatment of ARDS, bronchial asthma, and other bronchospastic states nonresponsive to conventional treatment • Life threatening shock including cardiogenic, anaphylactic, and septic shock- to reduce the body's own detrimental inflammatory response • Acute spinal cord injury- can reduce motor and sensory disabilities <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Administer with caution in diabetes mellitus <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • None 	<p><u>Adult Dosages</u></p> <p>125mg IV slow push or IM</p>	<p><u>Pediatric Dosages</u></p> <p>1-2mg/kg IV slow push or IM</p>
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TXA		Pg. 99
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> Used to treat or prevent excessive blood loss from trauma, surgery, and in various medical conditions. Tranexamic acid is a synthetic analog of the amino acid lysine. It serves as an antifibrinolytic by reversibly binding four to five lysine receptor sites on plasminogen or plasmin. This prevents plasmin from binding to and degrading fibrin and preserves the framework of fibrin's matrix structure. <p><u>Indications:</u></p> <ul style="list-style-type: none"> Hemorrhage Shock less than 2 hours old with the suspected need for massive transfusion due to internal or external blood loss. Sustained hypotension: SBP < 90 secondary to blood loss <p style="text-align: center;">AND/ OR</p> <ul style="list-style-type: none"> Sustained HR of 120 BPM or greater <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> Active intravascular clotting (DVT, PE) Risk benefit must be considered in patients with subarachnoid hemorrhage Hypersensitivity to TXA or any of its ingredients Trauma greater than 2 hours old <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> Uncommon but include gastrointestinal effects, dizziness, fatigue, headache, and hypersensitivity reactions. This medication needs to be used cautiously in people with kidney disease and who are at a high risk for blood clots. 	<p><u>Adult Dosages</u></p> <p>Bolus: 1 gram in 100ml NS IV over 10 minutes</p> <p><u>Maintenance Infusion:</u></p> <p>(If transport time exceeds 30minutes) 1 gram in 100ml NS over 8 hours.</p>	<p><u>Pediatric Dosages</u></p>
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Versed (Midazolam)		Pg. 100
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<p><u>Pharmacology and Actions:</u> Short acting benzodiazapine central nervous system depressant, reversibly interacts with gamma-amino butyric acid (GABA) receptors in the central nervous system which then exhibits sedative, amnesic and hypnotic activities</p> <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Premedication for cardioversion • Therapeutic hypothermia to prevent shivering • Conscious intubation • Seizures • Back spasms <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • None <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Monitor O2 saturation, EKG and respiratory status • Use with caution in patients exhibiting signs of shock, head injury and comatose states <p><u>Administration:</u></p> <ul style="list-style-type: none"> • Can be administered IM intramuscular, IV/IO intravenous/intraosseous, and IN intranasal <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • Transient mild hypotension • CNS depression • Respiratory depression • Slurred speech 	<p><u>Adult Dosages</u></p> <p>IV/IO: 2-5 mg @1mg/min</p> <p>IM: 5mg</p> <p>IN: 5 mg may repeat x1</p>	<p><u>Pediatric Dosages</u></p> <p>.2 mg/kg OR refer to Broslow tape</p>
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Zofran (Ondansetron)		Pg. 101
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<p><u>Pharmacology and Actions:</u></p> <ul style="list-style-type: none"> • Antiemetic • Prevents nausea/vomiting by selective inhibition of type 3 serotonin (5-HT₃) receptors centrally & peripherally • Can prolong the QT interval which increases pt risk for ventricular tachycardia or Torsades <p><u>Indications:</u></p> <ul style="list-style-type: none"> • Prevention or treatment of severe nausea and vomiting <p><u>Contraindications:</u></p> <ul style="list-style-type: none"> • Hypersensitivity • Pediatrics less than 2 years of age <p><u>Precautions:</u></p> <ul style="list-style-type: none"> • Use cautiously in patients with impaired renal function • Use cautiously in pregnancy or with nursing mothers <p><u>Side Effects:</u></p> <ul style="list-style-type: none"> • GI: Diarrhea, constipation, abdominal cramping • CNS: Headache, transient blurred vision, dizziness, fatigue • Musculoskeletal pain • Fever 	<p><u>Adult Dosages</u></p> <p>4 mg IV/IO slow over 30 seconds or 4mg ODT(oral disintegrating tablet) SL</p>	<p><u>Pediatric Dosages</u></p> <p>> 2 years: 0.1 mg/kg IV/IO slow over 30 seconds (max 4 mg)</p>
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