SKAMANIA EMS & RESCUE

Skamania County Public Hospital District

PATIENT CARE PROTOCOLS

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Introduction – MPD Responsibility

The following *PREHOSPITAL PATIENT CARE PROTOCOLS* are intended as treatment protocols for both basic and advanced life support technicians working under the advice of the Medical Program Director for Skamania County and the Southwest Region. They represent a consolidation of recommendations for patient care from many local and national sources.

MEDICAL PROGRAM DIRECTOR RESPONSIBILITIES FOR THESE PROTOCOLS:

A. **All treatment protocols, medications and procedures are to be approved by the County Medical Program Director for each county. It is the responsibility of the MPD to review this document and approve the Regional protocols, medications and procedures that will apply to their jurisdiction.**
B. **County Operating Procedures will be determined by the MPD and EMS governing bodies and agencies of each county and will conform to Regional Patient Care Procedures (PCPs).**

PURPOSE:

A. Standardize, as much as possible, prehospital care for Southwest Region EMS, while affording MPD-specific variations for Skamania County.
B. Provide the EMR, EMT, AEMT, and Paramedics with a framework for prehospital care and an anticipation of supportive orders from Medical Control.
C. Provide hospital physicians and nurses with an understanding of what aspects of patient care have been stressed to the EMR, EMT, AEMT, and Paramedics and what their treatment capabilities may be.
D. Provide the basic framework on which the Medical Program Director can audit the performance of both basic and advanced life support personnel.
E. Differentiate between basic, intermediate and advanced life support procedures. ALS procedures will be identified by a ✱ preceding the procedure. AEMT procedures will be identified by a ✚ preceding the procedure. A ➡ is intended to identify an ALS therapy to be used only with Medical Control Physician concurrence. Procedures that EMTs can provide after DOH and MPD approved training will be identified by ◈ preceding the procedure, a procedure that EMTs can provide with an additional WA DOH endorsement will be identified by ◈* preceding the procedure. ✚ * identifies an AEMT procedure requiring DOH and MPD approved training.
F. Identify Pediatric specific treatment, procedures and medications. EMT's, AEMT's and Paramedics should consult Pediatric length-based guides to ensure appropriate dosing of medications.
F. Expedite patient delivery to institutions best equipped to handle their specific problems.

PROTOCOLS ARE NOT INTENDED TO:

A. Be absolute treatment doctrines, but rather guidelines with sufficient flexibility to meet the needs of complex cases.
B. Be a teaching manual for Emergency Medical Providers; it is assumed that each EMT is trained to his/her level of certification and understands the Scope of Practice appropriate to their certification, and that she/he will continue to meet the requirements of the State of Washington for continuing education for recertification. The Medical Program Director will provide continuing education based on the results of patient care audit and review.
C. Interfere with the wishes of the patient or family, or the wishes of the patient's physician

D. Dictate details of care to advising physicians.
E. Warrant the EMS Provider as an independent field practitioner.

It is expected that all Emergency Medical Providers working within Skamania County will be familiar with the portion of the PREHOSPITAL PATIENT CARE PROTOCOLS appropriate to their certification level and Scope of Practice. Written acknowledgement of the receipt of this document will be required.

Scope of Practice by Certification Level

Washington State Approved Skills and Procedures for Certified EMS Providers

EMS Scope of Practice Guidance - In general EMS scope of practice includes environment of practice, EMS service affiliation; training, skills and procedures; and medical oversight and direction by a DOH certified EMS physician medical program director (MPD);

Certified EMS providers are authorized to provide patient care in a prehospital emergency setting; or during an interfacility ambulance transport; or when participating in a Community Assistance Education and Referrals (CARES) program authorized under RCW 35.21.930; or when providing collaborative medical care in agreement with local, regional, or state public health agencies to control and prevent the spread of communicable diseases; and

When performing for a licensed EMS service or in an Emergency Services Supervisory Organization (ESSO) recognized by the secretary; and

Within the scope of care that is included in the instructional guidelines / curriculum or approved specialized training; and is included in the department approved EMS Skills and Procedures List (DOH 530-173) for the individual's level of certification; and

When following department approved county MPD protocols. (RCW 18.73, 18.71, 70.168, WAC 246-976) Other regulations may apply.

Legend

N- National indicates the skill is listed in the interpretive guidelines of the National EMS Scope of Practice Model which defines the practice of EMS certified providers as a floor or minimum national standard. (National scope of practice)

W- Washington Initial Training indicates the skill is not listed in the interpretive guidelines of the National EMS Scope of Practice Model. However, Washington State Department of Health approves the skill to be in Washington state scope of practice and training for the skill is mandatory for inclusion in approved initial training and continuing education. (Not in national scope, required in all initial and continuing education).

W* - Washington Specialized Training Required indicates the skill is approved for use by Department of Health certified EMS providers through specialized training as authorized by WAC 246-976-024. Certified EMS providers must have completed a department and MPD approved training course and demonstrated knowledge and skills competency to the level of satisfaction of the MPD. The MPD authorizes the skill through department approved MPD patient care protocols. (Not in national scope, MPD option to implement, and specialized training required).

W - Washington State Endorsement on a Certification is Required** indicates the skill is approved for use by Department of Health certified EMS providers through specialized training as authorized by WAC 246-976-024. Certified EMS providers must have completed a department and MPD approved training course and demonstrated knowledge and skillscompetency to the level of satisfaction of the MPD. The MPD authorizes the skill through department approved MPD patient care protocols. The department requires a course application and approval for these skills and issues an endorsement to the provider's certification. The only authorized endorsements are EMT-IV and EMT-SGA. (Not in national scope, MPD option to implement, specialized training required, course application must be submitted and approved by the department, an endorsement added to the credential by department).

Blank space - If the space is blank, the skill is not authorized.				
Airway / Ventilation / Oxygenation	**EMR**	**EMT**	**AEMT**	**PARA**
Airway - Nasal		N	N	N
Airway Obstruction - dislodgement by direct laryngoscopy				N
Airway Obstruction - Manual dislodgement techniques	N	N	N	N
Airway - Oral	N	N	N	N
Airways not intended for insertion into the trachea (Esophageal / Tracheal Multi-Lumen Airways such as King LT and I-gel)		W**	N	N
Bag Valve Mask (BVM) Positive Pressure Ventilation	N	N	N	N
Bi-level Positive Airway Pressure (BiPAP)				N
Capnography (End Tidal CO2 waveform and/or numerical continuous monitoring)		W*	N	N
Capnometry (End Tidal CO2 colorimetric device)		W*	N	N
Chest Tube - Monitor and management				N
Chest Tube placement - Assist Only				N
Continuous Positive Airway Pressure (CPAP)		N	N	N
Cricothyrotomy - Percutaneous (needle) / Surgical				N
Endotracheal Intubation (Nasal and Oral)				N
Head Tilt/Chin Lift	N	N	N	N
Jaw Thrust	N	N	N	N
Mouth-to-barrier	N	N	N	N
Mouth-to-mask	N	N	N	N
Mouth-to-mouth	N	N	N	N
Mouth-to-nose	N	N	N	N
Mouth-to-stoma	N	N	N	N
NG Tube Placement				N
OG Tube Placement				N
Oxygen therapy - High Flow Nasal Cannula				N
Oxygen therapy - Humidifiers		N	N	N
Oxygen therapy - Nasal Cannula	N	N	N	N
Oxygen therapy - Non-rebreather Mask	N	N	N	N
Oxygen therapy - Partial Re-breather Mask		N	N	N
Oxygen therapy - Simple face mask		N	N	N
Oxygen therapy - Venturi Mask		N	N	N
Pharmacological facilitation of Intubation				N
Pleural Chest Decompression (finger thoracostomy)				W*
Pleural Chest Decompression (needle)				N
Pulse Oximetry	W	N	N	N
Suctioning - tracheal bronchial suctioning of an already intubated patient		W*	N	N
Suctioning - upper airway	N	N	N	N
Suctioning of tracheostomy requiring modified technique		W*	W*	N
Ventilation - Positive Pressure Ventilation - Automatic Transport Ventilator (i.e. Auto Vent, CAREvent, Uni-Vent, Pneupac VR1). EMT & AEMT are limited to the initiation during resuscitative efforts of ventilators that only adjust rate and tidal volume.		W*	N	N
Ventilation - Positive Pressure Ventilation - Transport ventilator with adjustments beyond rate and tidal volume.				N

Cardiovascular Care	EMR	EMT	AEMT	PARA
Automated and Semi-Automated External Defibrillation (AED / SAED)	N	N	N	N
Cardiopulmonary Resuscitation - Mechanical CPR device		N	N	N
Cardiopulmonary Resuscitation (CPR)	N	N	N	N
Cardioversion electrical				N
Defibrillation - Manual				N
Pericardiocentesis				W*
Semi-Automated External Defibrillation (SAED)	N	N	N	N
Transcutaneous Pacing				N
Transvenous Cardiac Pacing, monitor, and maintenance				W*
Patient Assessment & Diagnostic Procedures	**EMR**	**EMT**	**AEMT**	**PARA**
Assess Pulse	N	N	N	N
Assess Respirations	N	N	N	N
Blood Pressure - Manual and Automated	W	N	N	N
Blood chemistry analysis - Glucometry (capillary puncture)	W*	N	N	N
Blood chemistry analysis - Cardiac Enzymes (i.e., iStat devices)				N
Cardiac Monitoring - 12 Lead ECG-lead placement, ECG acquisition, computerized analysis, and transmission		N	N	N
Cardiac monitoring - 12 Lead ECG-lead placement, ECG acquisition, computerized analysis or interpretation by EMS provider, and transmission				N
Nasopharyngeal Swabbing for COVID-19 (See General Guidance Section)		W*	W*	W*
Telemetric monitoring		N	N	N
Ultrasound				W*
Splinting, Spinal Motion Restriction (SMR), PatientRestraint, Trauma Care	**EMR**	**EMT**	**AEMT**	**PARA**
Cervical Collar	N	N	N	N
Emergency moves for endangered patients	N	N	N	N
Extremity splinting	N	N	N	N
Extremity stabilization - manual	N	N	N	N
Eye Irrigation	N	N	N	N
Eye Irrigation with Morgan Lens				N
Hemorrhage Control - Direct Pressure	N	N	N	N
Hemorrhage Control - Use of Hemostatic Gauze / Agent / wound packing	N	N	N	N
Hemorrhage Control - Use of Tourniquet	N	N	N	N
Manual Cervical Spine Protection / Restricted Spinal Motion	N	N	N	N
Mechanical patient restraint		N	N	N
Spinal Motion Restriction / Immobilization (from standing, seated, or supine position) including Long Spine board and KED	W	N	N	N
Splint traction	W*	N	N	N
Medical Care	**EMR**	**EMT**	**AEMT**	**PARA**
OB - Assisted Complicated Delivery		N	N	N
OB - Assisted Normal Delivery	N	N	N	N
Ventricular Assist Devices (VAD) - May transport patients with VAD in place		W*	W*	N

Vascular Access, Infusion, and Monitoring of Lines	EMR	EMT	AEMT	PARA
Central Venous Line - Access Existing Line / Port for Infusion				N
Central Venous Line Insertion and Infusion – Femoral and Internal Jugular – Ultrasound guidance recommended				W*
Central Venous Line Insertion and Infusion – Subclavian				W*
External Jugular Insertion and Infusion - Adult				W*
Intraosseous Insertion and Infusion - Adult and Pediatric		W**	N	N
Operation and Management of a Controlled Delivery Device for IV Infusion(IV Pump)				N
Peripheral IV Insertion and Infusion - Adult and Pediatric		W**	N	N
Venipuncture to obtain venous blood sample		W**	N	N
Technique of Medication Administration	**EMR**	**EMT**	**AEMT**	**PARA**
Access indwelling catheters and implanted central IV ports				N
Buccal / Mucosal / Sublingual	W*	N	N	N
Endotracheal				N
Inhalation - Aerosolized/nebulized - EMT, limited to anticholinergics and beta agonist/bronchodilator.		N	N	N
Inhalation - Nitrous Oxide		W*	N	N
Inhalation - Unit-dosed, premeasured - EMR, limited to assisting patients with own prescribed medications such as bronchodilator for chronic respiratory condition.	W*	N	N	N
Intradermal				N
Intramuscular - Auto Injector	N	N	N	N
Intramuscular - Syringe and needle - Draw medication using a needle from a vial into a syringe.	W*	W*	N	N
Intranasal			N	N
Intranasal - Mucosal atomization device	N	N	N	N
Intranasal - Unit-dosed, premeasured	N	N	N	N
Intraosseous		W**	N	N
Intravenous		W**	N	N
Nasogastric				N
Ophthalmic				W*
Oral - per os (PO) - EMR (limited to aspirin and glucose)	W*	N	N	N
Oral - per os (PO) - EMT (limited to aspirin, glucose, assist with patient's prescribed nitroglycerine, ondansetron, and OTC analgesics (ibuprofen and acetaminophen) for pain or fever.		N	N	N
Oral - per os (PO) - AEMT (limited to aspirin, glucose, nitroglycerine, ondansetron, and OTC analgesics ibuprofen and acetaminophen for pain orfever)			N	N
Otic				W*
Rectal (EMT and AEMT limited to acetaminophen)		W*	W*	N
Subcutaneous			N	N
Topical				N
Transdermal				N

Medications - General Guidance	EMR	EMT	AEMT	PARA
Administration of Controlled Substances (FDA Scheduled)				N
Activated Charcoal		W*	N	N
Analgesic non-opioid analgesia (Ketorolac and Acetaminophen) (AEMT IV and IM with specialized training)			W*	N
Analgesic OTC for pain or fever		N	N	N
Antidotes for chemical / hazardous material / nerve agent exposures (auto-injector)	N	N	N	N
Antihistamine (Cetirizine and Diphenhydramine) (AEMT IV, PO, and IM with specialized training)		W*	W*	N
Antihistamine (Diphenhydramine and Cetirizine) EMT (limited to PO with specialized training)		W*	W*	N
Aspirin - Oral	W*	N	N	N
Assisting a patient with his/her own prescribed medications (aerosolized/nebulized)	W*	N	N	N
Benzodiazepines for Sedation				N
Benzodiazepines for Seizures				N
Benzodiazepines for Seizures (EMT and AEMT limited to assisting with the patient's prescribed medication)		W*	W*	N
Blood or Blood Products - Initiation / administration				W*
Blood or Blood Products - Maintenance of pre-existing infusion				N
Bronchodilator / Beta Agonist - Metered Dose Inhaler	W*	N	N	N
Bronchodilator / Beta Agonist - Nebulizer (EMT limited to anticholinergics and beta agonist/bronchodilator)		N	N	N
Buprenorphine (oral)				W*
Depolarizing Agents for Pharmacological Facilitation of Intubation				N
Emergency Cardiac Medications (AEMT limited to Epinephrine for cardiac arrest)			W*	N
Epinephrine (auto-injector) for anaphylaxis (supplied and carried by EMS agency or patients).	W	N	N	N
Epinephrine for Anaphylaxis Intramuscular - Syringe and Needle		W*	N	N
Expanded use of OTC medications - oral / topical				N
Glucose for hypoglycemia - Oral	W*	N	N	N
Hypoglycemic Medications (EMT with IV Endorsement - D10)		W*	N	N
Hypoglycemic Medications (Glucagon)		W*	N	N
Hypoglycemic Medications (i.e., Glucagon, D50)			N	N
Monoclonal antibodies for COVID-19 (See General Guidance Section)			W*	W*
Naloxone for Suspected Opiate / Narcotic Overdose - Intranasal - Mucosal Atomization Device or autoinjector	N	N	N	N
Naloxone for Suspected Opiate / Narcotic Overdose Intramuscular - Syringe and Needle		W*	N	N
Naloxone for Suspected Opiate / Narcotic Overdose Intravenous			N	N
Nitroglycerine - Intravenous				N
Nitroglycerine - Sublingual (EMT limited to assist with patients prescribed nitroglycerine)		N	N	N
Nitroglycerine - Transdermal				N
Nitrous Oxide		W*	N	N
Non-depolarizing Agents for Pharmacological Facilitation of Intubation				N
Ondansetron (EMT limited to PO) (AEMT IV, IM, PO)		W*	N	N
Opioid antagonist for suspected opioid overdose (auto-injector)	N	N	N	N

Other medications to facilitate sedation (I.E. Ketamine, Etomidate)				N
Oxygen Therapy	N	N	N	N
Oxymetazoline		W*	W*	N
Steroid (Dexamethasone and Methylprednisolone)				N
Thrombolytic (Initiation and Maintenance)				N
Vaccine for Influenza and COVID-19 (See General Guidance Section)		W*	W*	W*

General Guidance

Authorized medications and routes for EMR, EMT, and AEMT are identified in this document. All medication administration requires a protocol to be established by the MPD and approved by the department for the level of certification indicated.

Authorized medications and routes for paramedic personnel are identified in this document. Additional medications may be approved for paramedic personnel if a department-approved MPD protocol is in place and providers have completed department-approved MPD supplementary training on the medication and protocol.

Administration of purified protein derivative (PPD) - People who have taken a PPD administration course administered by a local health agency may administer PPD if: the person is doing so in accordance with a formal TB program through the local health agency; is under the medical oversight of the local health officer, and is not doing so while performing as an EMS provider.

Administration of vaccine – Washington state scope of practice allows some certified EMS providers to perform an intramuscular injection with MPD-approved specialized training. In compliance with Washington state's EMS scope of practice, it is the Department of Health's policy that an EMT, AEMT, or paramedic may administer a vaccination under all the following conditions:

1. The EMS personnel have completed MPD-approved specialized training and have received approval from the MPD to perform the skill.
2. The EMS personnel are acting under the medical oversight and direction of the county MPD or an MPD delegate physician such as the local health officer and a department approved MPD protocol is in place.
3. The EMS personnel are affiliated with a licensed EMS service, and the EMS service is conducting the activity in agreement with local, regional, or state public health organizations to conduct community surveillance of infectious disease.
4. The vaccines are managed in accordance with applicable local, state, and federal requirements.
5. Licensed EMS services who establish an in-house vaccine program must meet any applicable local, state, and federal requirements to do so and must have consulted with the Washington State Department of Health Office of Immunization and Child Profile.

Conducting nasopharyngeal swabbing for communicable infectious diseases – Washington state scope of practice allows some certified EMS providers to perform a nasopharyngeal swab to test for communicable infectious diseases with MPD-approved specialized training. In compliance with Washington state's EMS scope of practice, it is the Department of Health's policy that an EMT, AEMT, or Paramedic may administer a vaccination under all the following conditions:

1. The EMS personnel have completed MPD-approved specialized training and have received approval from the MPD to perform the skill.
2. The EMS personnel are acting under the medical oversight and direction of the county MPD or an MPD delegate physician such as the local health officer and a department approved MPD protocol is in place.
3. The EMS personnel are affiliated with a licensed EMS service, and the EMS service is conducting the activity in agreement with local, regional, or state public health organizations to conduct community surveillance of infectious disease.
4. The nasopharyngeal swab tests are managed in accordance with applicable local, state, and federal requirements and the licensed EMS service holds appropriate MTS licensing for conducting tests or verify that the test would be covered under a CLIA Waiver.

Monoclonal Antibodies – Washington state scope of practice allows some certified EMS providers to administer monoclonal antibodies with MPD-approved specialized training. In compliance with Washington state's EMS scope of practice, it is the Department of Health's policy that an AEMT, or Paramedic may administer monoclonal antibodies under all the following conditions:

1. The EMS personnel have completed MPD-approved specialized training and have received approval from the MPD to perform the skill.
2. The EMS personnel are acting under the medical oversight and direction of the county MPD or an MPD delegate physician such as the local health officer and a department approved MPD protocol is in place.

Manual cardiac defibrillators - EMT personnel may use manual cardiac defibrillators in place of an AED for cardiopulmonary resuscitation provided the equipment is in AED mode.

Inter-Facility Specific Devices and Procedures

Inter-facility transport of patients must occur with a level of care recommended by the sending physician. Clarification on common devices and procedures not routinely seen by certified EMS personnel in the pre-hospital setting is provided below.

Medical devices and equipment that do not require medical monitoring - EMT and higher-level providers may transport medical devices and equipment that can be managed by the patient or patient'scaregiver while in transport and require no medical intervention or monitoring from the EMS provider if authorized by the MPD. Examples include but are not limited to: Peg tubes, J tubes, CSF shunts, ileostomy bags, insulin pumps, and feeding tubes that are not running during transport.

IV monitor - EMT personnel may transport patients with a pre-established saline lock or peripheral IV gravity fed infusion of normal saline, dextrose or lactated ringers or a combination of these solutions when: it has been determined by the sending physicianto be a BLS level transport and a department approved MPD protocol is in place. EMTs are not authorized to establish an IVunless the EMT holds an endorsement for IV therapy. Transport of this equipment is limited to monitoring only and is optional for the MPD to implement.

Vascular access device - EMT personnel may transport patients with a pre-established long term vascular access device such as a central line, PICC line, subcutaneous infusion, epidural with a patient-controlled analgesia device when: it has been determined by the sendingphysician to be BLS-level transport and the EMT has successfully completed a department approved MPD specialized training course, and a department approved MPD protocol is in place. Transport of this equipment is limited to monitoring only and is optional for the MPD to implement.

Inter-facility medications - Paramedic personnel may transport patients with medications infusing if a department-approved MPD protocol is in place andproviders have completed department-approved MPD supplementary training on the medication and protocol. MPDs may establish a generic protocol to address uncommon medications presented in urgent cases where a specific protocol does not exist. The generic protocol must include just-in-time training requirements, information the paramedic must have about the medication prior to transport, any additional transport considerations, any required contact with medical control, and any CQI requirements for uncommon medications.

Specially trained paramedics - Paramedic personnel may transport patients determined by the sending physician as requiring care of a specially trained paramedic and/or nurse as long as the provider has successfully completed a department-approved MPD specialized training course, and department-approved MPD inter-facility protocols within scope addressing the skills, procedures, and medicationsare in place.

High-flow nasal cannula - Paramedic personnel may transport patients determined by the sending physician as requiring oxygen therapy - high flow nasal cannula. High-flow nasal cannula (HFNC) oxygen therapy comprises an air/oxygen blender, an active humidifier, a single heated circuit, and a nasal cannula. It delivers adequately heated and humidified medical gas at up to 60 L/min of flowand is considered to have several physiological effects: reduction of anatomical dead space, PEEP effect, constant fraction of inspired oxygen, and good humidification. Paramedics should complete training and a department approved MPD inter-facility protocols within scope addressing skills and procedures is in place. The above therapy does not refer to passiveoxygenation via high flow nasal cannula during CPR and emergent airway procedures (apneic oxygenation), which can be performed by all levels of EMT following local protocol.

Updates

May 2025 updates

- Removed - Combitube as a multi-lumen airway
- Removed - the W from SGA, now it only reads W**
- Added - Benzodiazepines for Seizures (EMT and AEMT limited to assisting with the patient's prescribed medication) EMT and AEMT W*
- Added - Buprenorphine (oral) for paramedics W*
- Added - Analgesic non-opioid analgesia (Ketorolac and Acetaminophen) (AEMT IV and IM with specialized training) W*

Skamania EMS Approved Medication List

MEDICATION	DOSE	INDICATION
Acetaminophen	1000 mg PO Peds 20 mg/kg PR, 15 mg/kg PO	Fever Mild to Moderate Pain
Activated Charcoal	50 g PO Peds 1-2 g/kg Max 50 g	Ingestion
Adenosine	6 mg, 12 mg Peds 0.1 mg/kg, 0.2 mg/kg. Max peds single dose 12 mg	PSVT (dose 12, 18 if pt. on theophylline; ½ normal dose if hx of heart transplant, Persantine, or Tegretol)
Albuterol (Proventil)	5mg Nebulized repeat prn to sx resolution Peds <15 kg 2.5-5 mg >15 kg 5-10 mg	-Bronchospasm/wheezing -Hyperkalemia
Aspirin	324 mg PO	Chest Pain
Atropine	a) 1 mg max 3 mg b) 1-2 mg q 5 minutes. Peds 0.01-0.02 mg/kg Max 0.04 mg/kg	a) Bradycardia b) Organophosphate poisoning c) RSI peds <5 y/o
Ipratroprium Bromide (Atrovent)	0.5 mg/2.5 ml Nebulized Peds <5 y/o ½ adult dose	Bronchospasm/wheezing due to asthma, COPD, anaphylaxis, inhalation
Calcium Gluconate 10%	10 ml (1 g) may repeat 2-5 min Peds 0.5 ml/kg Max 10 ml (1 g)	a) Hyperkalemia with ECG changes, Magnesium Toxicity b) Calcium Channel blocker OD
Calcium Chloride	a) 500 mg IV/IO, may repeat X 1 b) 250-500 mg IV/IO Peds 20 mg/kg (max 500 mg)	a) Hyperkalemia, Magnesium Toxicity b) Calcium Channel blocker OD
Dexamethasone (Decadron)	10 mg IV/IO/IM/PO Peds 0.6 mg/kg Max 10mg	Asthma, COPD, Anaphylaxis, Croup, Addisonian Crisis

Dextrose D10	10 g (100ml) repeat 5 g prn to normal BGL max 25 g Peds 0.1 g/kg Max 25 g	ALOC, Hypoglycemia
Diltiazem	a) 0.25 mg/kg IV/IO max 20 mg. Second dose 0.35 mg/kg IV/IO max 25 mg. b) 5-10 mg/hr IV infusion	a)Symptomatic AFib/Aflutter with RVR, SVT after adenosine b)Infusion post rate control
Diphenhydramine (Benadryl)	1 mg/kg IV/IM/PO Max 50 mg	Allergy, Anaphylaxis, EPS
Droperidol (Inapsine)	a) 0.625-2.5 mg b) 2.5-5 mg	a)Antiemetic b)Chemical Restraint
Epinephrine 1:1,000	0.3 mg IM Peds 0.01 mg/kg IM max 0.3 mg	Anaphylaxis Asthma
Epinephrine 1:10,000	a) 1 mg IV/IO Peds 0.01 mg/kg (max 1 mg) b) 2-10 mcg/minute IV Infusion Peds 0.1-1 mcg/kg/minute c) 10 mcg IVP	a)Pulseless Arrest b)Anaphylaxis, Non-Hypovolemic Shock, Asthma c)Shock, peri-intubation hypotension and bradycardia
Fentanyl	25-50 mcg IV, IO, IM Peds 1-2 mcg/kg IV, IO, IN	- Chest pain - Musculoskeletal pain
Glucagon	a) 1 mg IM Peds 0.5 mg b) 2-5 mg IV/IO Peds 0.1 mg/kg IV/IO max 5 mg	a) Hypoglycemia b) Beta Blocker OD, Calcium Channel Blocker OD
Ibuprofen	600 mg PO Peds 10 mg/kg max of 600 mg	Fever Mild to Moderate Pain
Ketamine	a) 2 mg/kg IV/IO b) 1 mg/kg IV/IO Q 10 minutes c) 0.3 mg/kg IV/IM/IO max 25 mg d) 0.5 mg/kg IV/IM/IO max 50 mg	a) Sedation during RSI b) Sedation post RSI c) Pain Control, CPAP Facilitation d) Technical Rescue Dose
Ketorolac (Toradol)	15 mg IM/IV Peds 1 mg/kg IM OR 0.5 mg/kg IV do not exceed adult dose	Pain Management without suspected active bleeding

Lidocaine	a) 1.5 mg/kg max 3 mg/kg b) 0.75 mg/kg IV/IO, max 3 mg/kg c) 40 mg slow IO Peds 1 mg/kg	a) VF, VT, WCT b) Symptomatic stable VT c) local pain control after IO insertion
Magnesium Sulfate	a) 2 g over 5 minutes b) 2 g over 5 minutes c) 5 g over 10 minutes Peds 25-50 mg/kg Max 2 gm	a) Torsades VT; TCA OD, b) WCT, status asthmaticus c) Eclampsia
Midazolam (Versed)	a) 0.05-0.1 mg/kg max of 10 mg IV/IO/Deep IM b) 2 mg IV/IO/Deep IM q 15-20 minutes Peds 0.1 mg/kg max of 2 mg c) 0.1 mg/kg max 10 mg IV/IO/Deep IM d) 0.05-0.1 mg/kg max of 10 mg IV/IO/Deep IM q 10 minutes	a) Seizures, Hyperadrenergic Toxicity, Chemical Restraint, Procedural Sedation b) CPAP facilitation/Narcotic potentiation c) RSI Sedation d) Post RSI Sedation
Ondansetron	4-8 mg IV/IM 8 mg ODT Peds >2 y/o 0.1 mg/kg IV max single dose 4 mg, max total 8 mg Peds ODT >40 kg 4 mg, may repeat once.	Antiemetic
Solumedrol	125 mg IV Peds 2 mg/kg Max 125 mg	Asthma, COPD, Croup, Anaphylaxis, Addisonian Crisis
Morphine Sulfate	2-10 mg IV/IO/IM Bolus Peds 0.1-0.2 mg/kg (max 2 mg single dose)	Pain management
Naloxone (Narcan)	0.1-2 mg x2 prn IV/IM/IN/IO Peds 0.1 mg/kg to max of 2 mg	Narcotic OD w/ respiratory depression ALOC w/ respiratory depression
Norepinephrine	4-12 mcg/min	Non-Hypovolemic Shock
Nitroglycerine	0.4 mg (spray) SL 2” paste TD Peds Consult OLMC	ACS CHF/Pulmonary Edema

Racemic Epinephrine	0.5 ml/3 ml NS Nebulized Peds <20 kg - 0.25 ml/3 ml NS	Stridor
Rocuronium	1 mg/kg IV/IO	Paralytic
Sodium Bicarbonate	a) 1 mEq/kg max 50 mEq IV/IO Peds 1 mEq/kg IV/IO max 50 mEq b) 50 mEq IV/IO + add 50 mEq in 1000 ml LR Peds 1 mEq/kg IV/IO max 50 mEq	a) Head injury b) TCA Overdose
Sodium Thiosulfate	1.65 ml/kg max of 50 ml of 25% solution IV over 10 minutes Peds - 1.65 mL/kg IV/IO infused over 10 to 20 minutes	Cyanide Poisoning
Succinylcholine	1.5 mg/kg IV/IO x 2 prn max single dose 200mg	Short Term Paralytic
Tranexamic Acid (TXA)	2 g	Shock in Trauma AMS in Trauma
Vecuronium (Norcuron)	0.1 mg/kg IV/IO	Long Term Paralytic After confirmed intubation

Universal Patient Care Protocol

TREATMENT:

A. Assess scene safety; hazards; number of patients; mechanism of injury.
   1. Request additional resources as needed
   2. Consider declaration of Mass Casualty Incident if needed
B. Use appropriate personal protective equipment (PPE).
C. Begin initial patient assessment, determine responsiveness and initial chief complaint.
   1. ABC or CAB if cardiac arrest (see Cardiac Arrest Guidelines)
   2. Secure airway and start oxygen as needed.
   3. Control any major external bleeding per Hemorrhage Control protocol
   4. Evaluate patient responsiveness, motor and sensory function in all extremities
   5. Expose patient as appropriate to complaint and to scene conditions (weather, by-standers, etc.)
D. Monitor vital signs, SpO2, ETCO2 and obtain CBG readings as appropriate.
E. Monitor ECG if appropriate to patient complaint/condition
F. ◈* Establish vascular access (IV or IO) as appropriate for patient's condition.
G. Obtain pain severity scale if applicable.
H. Perform secondary survey appropriate to patient presentation and complaint.
   1. Secondary survey may not be possible if patient has critical primary survey problems.
I OPQRST/SAMPLE HISTORY from patient or caregiver, if possible.
J. Follow appropriate Patient Care Treatment Protocol if patient's chief complaint or assessment findings change.

KEY CONSIDERATIONS:

A. If patient is unable to provide medical history, check for medical alert bracelets and necklaces, or other means of documenting medical history which can provide critical medical information and treatment.
B. Pediatrics:
   1. Use a length/weight-based assessment tool to estimate patient weight and guide medication. **Do not exceed maximum adult dosing criteria.**
   2. Use pediatric assessment triangle (appearance, work of breathing, circulation) to assist when first assessing a child.
C. Medications will need to be at the low end of the dosing scale in geriatrics (>65) and in patients with chronic renal disease (e.g., dialysis) or chronic liver disease (e.g., cirrhosis)

Offered and Refused:

A. For those treatment options offered to the patient and the patient refuses those treatment options, i.e. medications, procedures, it is imperative that this information is documented in the EHR, Document in the treatment and response section that the medication/procedure was "offered" and in the notes section indicate the patient "refused" EMS – Definition of a patient:

1. Any person who has requested EMS (1st party caller).
2. A patient exists if a 2nd party caller witnessed acute signs or symptoms which imply illness or injury, even in the face of denial by the patient.
3. Any person for whom a Power of Attorney has called 911.
4. Any person for whom a health care provider has called 911.
5. Any person involved in a situation that a trained provider suspects would lead to illness or injury.

Abdominal Pain/Acute Abdomen

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Place patient in a position of comfort.
C. If systolic blood pressure is < 90 mmHg systolic (MAP <65), follow Shock protocol and initiate rapid transport. If patient has a suspected abdominal aortic aneurysm, titrate IV to target of systolic blood pressure of 90 mmHg (MAP 65).
D. Do not allow the patient to eat or drink.
E. Treat pain per Pain Management protocol.
F. Treat nausea/vomiting per Vomiting/Significant Nausea protocol.

PEDIATRIC PATIENTS:

If systolic BP is inappropriate for age, treat per shock protocol.

Lowest normal pediatric systolic blood pressure by age:

- < one month: > 60 mmHg.
- One month to 1 year: > 70 mmHg.
- > 1 year: 70 + 2 x age in years.

Abuse and Maltreatment

PEDIATRIC/ADULT ABUSE:

A. Be alert to findings suspicious of abuse:
   1. Explanations of mechanisms of injury conflicting with actual injury.
   2. Suspicious injuries - cigarette burns, multiple bruises of varied age, belt marks, etc.
   3. History of repeated injuries.
   4. Blame placed upon others.
   5. Procrastination by caretaker(s) in seeking aid.
   6. Sexual abuse may accompany physical abuse or may be present without signs of apparent physical abuse.
   7. Evidence of medical neglect for injuries or infections.
   8. Unexplained trauma to genitourinary systems or frequent infections to this system.
   9. Evidence of malnourishment and/or serious dental problems.
B. Treat any injuries per protocols.
   1. Transport without delay for critical cases.
C. Document and Report as carefully as possible the caretaker's descriptions of the event(s):
   1. Note the environment carefully including temperature.
   2. Note the reaction of all individuals on scene (include all caretakers).
   3. Note clothing, stains, conditions, bring clothing in with patient.
   4. Encourage the caretaker(s) to allow transport to the hospital for medical evaluation and/or treatment. If refusing, consult Medical Control for further instruction.
   5. Should caretaker(s) not allow recommended transport, notify Law Enforcement.
D. Support and reassure:
   1. Be non-judgmental; be supportive to family concerns.
E. Notify receiving physician of abuse, neglect, or potential of same.
   1. EMS providers are mandated to report suspected abuse of children and vulnerable adults:
      a. Child Protective Services: 1-866-764-2233
      b. Adult Protective Services: 1-877-734-6277
   2. Mandatory reporter page:

https://www.dshs.wa.gov/altsa/home-and-community-services/reporting-abuse-mandatory-reporter

Allergic Reaction and Anaphylaxis

TREATMENT

A. Treat per Universal Patient Care protocol.

- MILD REACTION - (Generalized Itching, Hives, Skin signs ONLY)
  1. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg.✚✱ **Diphenhydramine** 1 mg/kg IV/IO max 50 mg

- SEVERE REACTION - (Dyspnea, Wheezes, Laryngospasm, Angioedema, Shock)
  1. EMT provider OR IV delayed and critical situation:
     a. ◈**Epinephrine** 1:1000 - 0.3 mg IM. May repeat after 5 minutes as needed. EMR may only administer epinephrine auto-injector
     b. ✱Begin Epi infusion as below when IV established, titrate to response.
  2. ✱Consider **Push Dose Epinephrine** 10 mcg IV/IO every 1-5 minutes until Epinephrine drip is administered.
  3. ✱**Epinephrine** infusion - Start at 2 mcg/minute IV drip and increase 2 mcg every 1 minute, prn max 10 mcg/min. (titrate to clinical response).
  4. ◈*Fluid challenge for shock, as needed.
  5. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ✚✱ **Diphenhydramine** 1 mg/kg IV/IM/IO max 50 mg.
  6. ◈**Albuterol** 5 mg **Ipratropium Bromide** 0.5 mg MedNeb for wheezes.
  7. ✱ **Solumedrol** 125 mg IV/IO/IM. ALTERNATIVE **Dexamethasone** IV/IO/IM/PO 10 mg.
  8. If refractory shock:

  ✱ **Norepinephrine** 4 mcg/min IV/IO. Increase 4 mcg/min q 5 mins to max of 12 mcg/min as needed.

PEDIATRICS

A. Treat per Universal Patient Care protocol.
B. ALS Care as indicated above.

- MILD REACTION - (Generalized Itching, Hives, Skin signs ONLY)
  1. ◈*IV - LR - EKG monitor
  2. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ✚✱ **Diphenhydramine** 1 mg/kg IV/IO/IM max 50 mg

  SEVERE REACTION - (Dyspnea, Wheezes, Laryngospasm, Angioedema, Shock)
  1. BLS provider OR IV delayed and critical situation:
     a. ◈**Epinephrine** 1:1000 - 0.01 mg/kg IM max 0.3 mg. May repeat after 5 minutes as needed.
     b. ✱Begin **Epinephrine** infusion when IV established, titrate to response.
  2. ✱**Epinephrine** infusion - Start at Peds 0.1 mcg/kg/minute IV drip and increase 0.2 mcg/kg/minute, every 1 minute, prn max of 10 mcg/minute. (titrate to clinical response).

3. ◈*Fluid challenge 20 ml/kg IV/IO for shock, as needed.
    4. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ✚✱ **Diphenhydramine** 1 mg/kg IV/IO/IM max 50 mg
    5. ◈**Albuterol** Patient weight <15 kg 2.5-5 mg. >15 kg 5-10 mg nebulized for wheezes.
    6. ✱**Solumedrol** 2 mg/kg IV/IO/IM (Max 125 mg). ALTERNATIVE
        ✱**Dexamethasone** 0.6 mg/kg IV/IO/IM/PO (Max 10 mg).
    7. If refractory shock:
        ✱**Norepinephrine** 0.1 mcg/kg/min IV/IO. May increase by 0.1 mcg/kg/min every 5 mins prn to max of 0.4 mcg/kg/min.

Altered Mental Status and Coma

TREATMENT:

A. Treat per Universal Patient Care protocol.
B. Treat underlying cause if known.
   • HYPERGLYCEMIA
      1. Monitoring:
         a. Check blood glucose level. Typical reading **HI** or well above normal.
      2. If glucose > 250 mg/dL with symptoms of dehydration, vomiting, abdominal pain, or altered level of consciousness:
         a. ◈*Fluid challenge LR: 1 L bolus IV; reassess and re-bolus 1 L if indicated.

   • HYPOGLYCEMIA
      1. Determine blood glucose level. If <70 mg/dl
         a. If patient can protect their own airway, give oral glucose.
         b. ◈*✚✱If patient is unable to protect their own airway infuse **Dextrose** titrate up to 25 gm IV/IO
      2. Check BGL after 5 minutes and repeat as above if blood sugar remains low and patient remains symptomatic.
      3. ◈*✚✱If no IV can be established, **Glucagon** 1 mg (unit) IM.

   • SUSPECTED OPIOID OVERDOSE w Respiratory Depression
      1. ✚✱**Naloxone** 0.1 – 2 mg IV/IM/IN. May repeat every two minutes titrating to respiratory rate. Consider larger doses if Methadone overdose. Ventilate with bag-valve mask as needed.
      2. ◈**Naloxone** 2 mg IN/◈* 2mg IM.
         EMR may only administer auto-injector (IN or IM).
      3. If patient is combative, consider sedation per Patient Restraint protocol.

PEDIATRIC MEDICATIONS:

A. ◈*✚✱**Dextrose** – For neonates (birth to 1 day) with BGL < 40 mg/dl and neonates (1 day to 1 week) BGL <60 mg/dl, (1 week plus) with BGL < 70 mg/dl give:
B. ◈*✚✱ **Dextrose** 0.5 g/kg by infusion not to exceed 25g total. (must dilute to maximum concentration of D25)
C. ◈*✚✱**Glucagon** 0.02 mg/kg IM to a maximum of 1 mg.
D. ✚✱**Naloxone** 0.1 mg/kg IV/IO/IM/IN may repeat every 2 minutes to a maximum of 2 mg per dose. Do not give to newborns.
E. ◈***Naloxone** 0.1 mg/kg IM/IN may repeat every 2 minutes to a maximum of 2 mg per dose. Do not give to newborns.
F. ◈*✚✱Pediatric fluid challenge: 20 ml/kg repeat x 1 prn.

Amputation

TREATMENT:

A. Universal Patient Care
B. Treat hemorrhage via Hemorrhage Control Protocol
C. Stump
    1. Cover with sterile dressing, saturate with sterile saline.
    2. Cover with dry dressing.
D. Severed Part
    1. Rinse gently with sterile saline to remove debris.
    2. Wrap severed part with moistened gauze; place in airtight bag.
    3. Place bag in ice water.
E. Partial Amputation
    1. Cover with sterile dressing, saturate with sterile saline.
    2. Cover with dry dressing.
    3. Splint in anatomical position, avoid torsion and angulation (reduce torsion into anatomical position).
F. Treat pain per Pain Control Protocol

GENERAL CONSIDERATIONS:

A. Do not use dry ice or put severed part in direct contact with ice.
B. Do not neglect total patient care in favor of caring for the amputation.
C. Time is of the greatest importance to assure viability.
D. Amputation above wrist or ankle meets trauma system entry criteria.

Blast Injuries

TREATMENT CONSIDERATIONS:

A. Manage hemorrhage per protocol.
B. Secure airway per protocol.
    1. If thermal or chemical burn to airway is suspected, early airway control is vital.
C. Breathing:
    1. Administer oxygen as appropriate with a target of achieving 94-98% saturation.
    2. Assist respirations as needed
    3. Cover any open chest wounds with semi-occlusive dressing
    4. ✱If patient has evidence of tension pneumothorax, perform pleural decompression.
D. Circulation:
    1. ◈*Establish large bore IV access, treat Shock per protocol.
E. Disability:
    1. Treat traumatic brain injury and immobilize the spine as needed.
    2. Manage amputation per protocol.

NOTES/KEY CONSIDERATIONS:

A. Scene safety is of paramount importance when responding to an explosion or blast injury.
B. Patients sustaining blast injury may sustain complex, multi-system injuries including: blunt and penetrating trauma, shrapnel, barotrauma, burns, and toxic chemical exposure.
C. Consideration of airway injury, particularly airway burns, should prompt early and aggressive airway management.
D. Consider potential for barotrauma including: tension pneumothorax and tympanic membrane perforation.
E. Blast injury patients will be transported to a trauma center.
F. Injury patterns include primary injury from over-pressurization. Can include tympanic membrane rupture, pulmonary damage and hollow viscus injury. Secondary injury from projectiles includes blunt and penetrating trauma. Tertiary includes injuries from displacement of victim by the blast wind. Quaternary injuries are all other injuries from the blast including crush injuries, burns, asphyxia, toxic exposures, exacerbations of chronic illness

Brief Resolved Unexplained Event - BRUE

DEFINITION:

A. Event lasting < 1 minute in an infant < 1 year of age associated with at least one of the following:
   1. Cyanosis or pallor
   2. Absent, decreased, or irregular breathing
   3. Marked change in muscle tone (hypertonia or hypotonia)
   4. Altered level of responsiveness

TREATMENT:

A. Support ABCs. Follow Airway Management and Respiratory Distress protocols as needed.
B. Obtain and document any complications of pregnancy, birth date and gestational age at birth, fever or recent infection, prior BRUE episodes, underlying medical conditions.
C. Obtain and document description of event including symptoms, inciting event, any resuscitation attempts before EMS arrival.
D. Place on cardiac monitor and follow dysrhythmia protocol as needed.
E. Assess blood glucose.
F. Transport via ALS to an emergency department even if the infant currently appears in no distress.
G. OLMC contact is mandatory for any patient with a suspected BRUE where parent or guardian wishes to refuse.

NOTES & PRECAUTIONS:

A. BRUE is a group of symptoms, not a specific disease. BRUEs are most common in infants under one year of age, but may occur up to two years of age.
B. Many infants appear normal by the time EMS arrives.
C. Consider non-accidental trauma.
D. Serious underlying causes can include pneumonia, bronchiolitis, seizure, sepsis, intracranial hemorrhage, and meningitis.
E. BRUEs are more frequent in premature infants and infants with other health conditions such as cystic fibrosis, bronchiolitis and congenital heart disease.

Burns

TREATMENT:

A. Treat per Universal Patient Care. Apply carbon monoxide monitor, if available.
    1. If SpCO > 3% treat per Carbon monoxide poisoning protocol.
B. If systolic BP < 100 (MAP <65) follow Shock Protocol.
C. Remove jewelry and clothing that is smoldering or that which is non-adherent.
D. Burn Classification:
    1. Superficial thickness: epidermis only and looks like a sunburn; skin is erythematous and mildly painful.
    2. Partial thickness (superficial): beyond the epidermis to include the superficial dermis. Blisters may occur; painful.
    3. Partial thickness (deep): beyond the superficial dermis to include the deep dermis.
    4. Full thickness: involves all layers of the skin and subcutaneous tissue, with involvement of underlying fascia.
E. Determine Total Body Surface Area (TBSA) involved using either Rule of Nines or the Palm Method. Do not include superficial thickness burns in TBSA
F. If the patient has the following, prepare for transport to the Oregon Burn Center at Emanuel:
    1. Partial thickness burns >10% total body surface area (TBSA).
    2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
    3. Full thickness burns in any age group.
    4. Electrical burns, including lightning injury.
    5. Chemical burns.
    6. Inhalation injury.
    7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.
    8. Any patient with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. Transport to the closest appropriate trauma center if the underlying trauma poses the greater immediate risk. The patient may be initially stabilized at the trauma center before being transferred to the burn unit.
    9. Burn patients who require special social, emotional or rehabilitative intervention.
G. Cool Burned areas (5 minutes max) then cover with sterile dressing. Discontinue cooling if patient begins to shiver. Leave unbroken blisters intact.
H. Treat pain per Pain Management protocol.
I. Airway considerations in the burn and inhalation injury patient:
    1. Singed nasal hairs and facial burns alone are not indications for intubation
    2. Mild inhalation injuries in patient with normal O2 saturation and no respiratory distress can be safely observed.
    3. Indicators for early intubation.
        a. Signs of respiratory distress, stridor, accessory muscle use
        b. New onset of hoarseness

c. Blisters or edema of oropharynx.

J. Deep burns to lower face or neck.
   1. ◈*Establish IV access
   2. Burns greater than 20% TBSA should have two large bore IVs
   3. Initial fluid rates: Lactated Ringer's
      a. Less than 6 years of age @ 125 ml/HR
      b. 6 years to 13 years old @ 250 ml/hr
      c. 14 years and older @ 500 ml/hr

K. If chemical burn:
   1. Consider Haz-Mat response; protect yourself from contamination.
   2. Flush contaminated areas with copious amounts of water.
   3. If chemical is dry, carefully brush off prior to flushing. Do not use a neutralizer.

L. If electrical burn:
   1. Apply sterile dressings to entry and exit wounds.
   2. Treat any dysrhythmias per appropriate Cardiac Dysrhythmia protocol.
   3. Risk for rhabdomyolysis, provide adequate fluids, as above
   4. Report arc flash or contact, and voltage if known.

M. IF inhalation Injury:
   If Cyanide Toxicity is suspected based on location (closed space fire with plastics, wool or industrial chemicals), findings (soot in mouth, nose or oropharynx) and patient is comatose, in cardiac or respiratory arrest, or has persistent hypotension despite fluid resuscitation:
   1. ✱**Sodium Thiosulfate** 1.65 ml/kg max of 50 ml of 25% solution IV/IO infused over 10 to 20 minutes.
   2. Treat other presenting symptoms per appropriate protocol.
   3. Initiate emergent transport to appropriate facility.
   4. Notify receiving facility of use of Sodium Thiosulfate

PEDIATRIC PATIENTS:

A. Treat pain per Pain Management protocol.
B. Consider possibility of non-accidental cause in children.
C. If cyanide suspected: ✱**Sodium Thiosulfate** dose is 1.6 ml/kg IV/IO infused over 10 to 20 minutes. Do not exceed adult dosing.
D. If systolic BP is inappropriate for age, treat per Shock protocol.
   Lowest normal pediatric systolic blood pressure by age:
   - <One month: > 60 mmHg.
   - One month to 1 year: > 70 mmHg.
   - >1 year: 70 +2 x age in years.

Cardiac Arrest – INITIAL MANAGEMENT

TREATMENT:

A. Establish unresponsiveness

B. Identify absence of pulse and respirations.
C. Continuous CPR for 2 minutes if down time estimated at > 5 minutes; if < 5 minutes or if bystander CPR, do CPR until AED/Monitor applied.
    1. Apply ECG Leads/Defib Pads, Anterior/Posterior is preferred initial position
    2. Analyze and follow AED instructions or Paramedic interpretation (Defibrillate prn).
    3. Continuous CPR for 2 minutes; rhythm analysis
D. Secure airway with minimal interruptions in CPR. ◈*SGA acceptable initial airway, 100% O2 and continuous capnography throughout. Ventilation rate should be 8-10 breaths per minute.◈*IV/IO TKO with LR. Placement above diaphragm preferred.
E. Use a length-based system for treatment of pediatric cardiac arrest, i.e. Broselow Tape
F. Third trimester pregnancy, left lateral
G. THIRD TRIMESTER CONSIDERATIONS: Provide lateral uterine displacement while performing CPR or position the patient at 15-30° to their left side if using mechanical CPR.
H. ✱Consider sedation for patient with consciousness during CPR. **Ketamine** 0.5mg/kg to a max of 25 mg may repeat q 10 min PRN.
I. If obvious signs of death, POLST form indicating DNR, traumatic arrest, or If patient not responding to treatments as below, consider Death in the Field

Cardiac Arrest – ASYSTOLE

TREATMENT: – Determined by the Paramedic:

A. ✚✱**Epinephrine** 1:10,000 1 mg IV/IO as soon as IV/IO access is available.
B. If asystole persists continue two-minute cycles of CPR and rhythm analysis.
C. ✚✱Continue **Epinephrine** 1:10,000 1 mg IV/IO every 4 minutes.

PEDIATRIC PATIENTS:

A. Follow adult algorithm.
B. ✚✱**Epinephrine** 1:10,000 - 0.01 mg/kg IV/IO max of 1 mg as soon as possible after cardiac arrest is recognized. Repeat every 4 minutes.

TREAT OTHER POSSIBLE CAUSES:

A. Acidosis
    1. Oxygenation and ventilation
    2. ✱**Sodium Bicarbonate** Adults 50 mEq – Peds 1 mEq/kg IV Max 50 mEq. May be considered in other conditions causing severe acidosis (arrest due to acidosis, asphyxiation, etc.)
B. Cardiac tamponade – consider hospital transport.
C. Hyperkalemia –Hyperkalemia protocol. (Renal failure, rhabdomyolysis, crush injury, etc.)
D. Hypothermia – Treat per Hypothermia protocol.
E. Hypovolemia – ◈*Treat with fluids per Shock protocol.
F. Hypoxia – Oxygenate and ventilate.
G. Pulmonary embolus – consider hospital transport.
H. Tension pneumothorax –✱ Needle decompression.
I. Toxins - Tri-cyclic antidepressant OR Benadryl overdose –✱**Sodium Bicarbonate** Adults 50 mEq, Peds 1 mEq/kg IV max 50 mEq. Other toxins, refer to toxidrome table.

Cardiac Arrest – PULSELESS ELECTRICAL ACTIVITY (PEA)

TREATMENT: – Determined by the Paramedic:

A. ✚✱**Epinephrine** 1:10,000 1 mg IV/IO as soon as IV/IO access is available.
B. If PEA persists continue two-minute cycles of CPR and rhythm analysis.
C. ✚✱Continue **Epinephrine** 1:10,000 1 mg IV/IO every 4 minutes.
D. ◈*Administer LR up to 2 L rapid infusion.

PEDIATRIC PATIENTS:

A. Follow adult algorithm.
B. ✚✱**Epinephrine** 1:10,000 dose - 0.01 mg/kg IV/IO as soon as possible after cardiac arrest is recognized. Repeat every 4 minutes.
C. ◈*Administer LR up to 20 ml/kg bolus infusion, may repeat prn to Max 60 ml/kg.

TREAT OTHER POSSIBLE CAUSES:

A. Acidosis
    1. Oxygenation and ventilation
    2. ✱**Sodium Bicarbonate** Adults 50 mEq – Peds 1 mEq/kg IV Max 50 mEq. May be considered in other conditions causing severe acidosis (arrest due to acidosis, asphyxiation, etc.)
B. Cardiac tamponade – consider hospital transport.
C. Hyperkalemia –Hyperkalemia protocol. (Renal failure, rhabdomyolysis, crush injury, etc.)
D. Hypothermia – Treat per Hypothermia protocol.
E. Hypovolemia – ◈*Treat with fluids per Shock protocol.
F. Hypoxia – Oxygenate and ventilate.
G. Pulmonary embolus – consider hospital transport.
H. Tension pneumothorax –✱ Needle decompression.
I. Toxins - Tri-cyclic antidepressant OR Benadryl overdose –✱**Sodium Bicarbonate** Adults 50 mEq, Peds 1 mEq/kg IV max 50 mEq. Other toxins, refer to toxidrome table.

Cardiac Arrest – VFIB/PULSELESS VTACH

TREATMENT: – Determined by Paramedic:

A. Assess heart rhythm; Defibrillate 200J if Vfib, pulseless Vtach.
B. Immediately continue CPR for two minutes.
C. Assess heart rhythm; Defibrillate 300 J if Vfib, pulseless Vtach.
D. 1. ✚✱**Epinephrine** 1 mg 1:10,000 IV/IO.
   2. ✱**Lidocaine** 1.5 mg/kg IV/IO
   3. ✱If multifocal WCT (Torsades) or Magnesium deficiency suspected, **Magnesium Sulfate** 2 g bolus IV (dilute in 50cc NS wide open).
E. Immediately continue CPR for two minutes.
F. Assess heart rhythm; Defibrillate 360J if Vfib, pulseless Vtach.
F. Immediately continue CPR for two minutes.
G. Defibrillation pad vector change
H. Assess heart rhythm; Defibrillate 360J if Vfib or pulseless Vtach.
I. ✱**Lidocaine** 1.5 mg/kg IV/IO. Immediately continue CPR for two minutes. If VFib/pulseless VTach persists, continue two-minute cycles of CPR, rhythm analysis and defibrillation 360J.
J. ✚✱Continue **Epinephrine** 1 mg 1:10,000 IV/IO every 4 minutes.
K. Continue above until ROSC or DIF/TOR criteria apply. If ROSC, target O2 sat of 94-96%, ETCO2 of 35-40 mmHg and monitor waveform. Follow ROSC protocol.

PEDIATRIC PATIENTS:

A. Follow adult algorithm flow. Use the following dosing:
   1. ✱Defibrillation: 2 J/kg, subsequent doses at 4 J/kg
      ✱Drugs:
      a. ✱ **Lidocaine** – 1.5 mg/kg per dose, not to exceed 3 mg/kg.
      b. ✚✱**Epinephrine** – 1:10,000 – 0.01 mg/kg IV/IO max 1 mg

Cardiac Arrest – RETURN OF SPONTANEOUS CIRCULATION (ROSC)

TREATMENT:

A. Optimize ventilation and oxygenation
   1. ✱Intubate as needed.
   2. Titrate oxygen to the lowest level to achieve target SpO2 between 94 – 99%.
   3. Monitor ETCO2 (normal is 35-40 mmHg), do not hyperventilate (ideal rate is 10-12 breaths/minute).
   4. If hypotensive (systolic BP < 90 mmHg or MAP <65 mmHg) follow Shock protocol. Goal is to maintain a mean arterial pressure (MAP) > 65 mmHg.
   5. Perform 12-lead ECG.
   6. Transport all patients with ROSC to closest hospital with interventional capability per local criteria.

NOTES:

A. If patient has ROSC, observe briefly to ensure sustained stability prior to transport.

Cardiac Dysrhythmia – BRADYCARDIA

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Obtain 12-lead ECG if feasible.
C. Observe and monitor patient.
D. Are signs or symptoms of poor perfusion (Altered mental status, acute heart failure, hypotension or other signs of shock) caused by the bradycardia present?
    1. ✱**Atropine** 1 mg IV/IO, repeat every 2-5 minutes as needed (max 3 mg) to maintain blood pressure of 90 systolic (MAP 65)
    2. If no response to **Atropine**:
        a. ✱**Epinephrine** infusion - Start at 2 mcg/min IV drip and increase 2 mcg every 1 minute, prn. (titrate to clinical response).
    3. ✱External Pacemaker
        a. Primary initial treatment for symptomatic high degree heart block.
        b. Do not delay transcutaneous pacer if IV access difficult.
        c. Initial setting should be **80 BPM** at **80 mA**, increasing current until electrical and mechanical capture is obtained.
        d. ✱ **Sedate as needed with Ketamine** 0.5 mg/kg to a max of 25 mg may repeat q 10 min PRN. Alternate medication **Midazolam** 0.05 mg/kg may repeat every 10 minutes
        e. ✱Treat pain with **Fentanyl** per protocol.

NOTES & PRECAUTIONS:

A. Immediate TCP can be considered in unstable patients when vascular access is not available.
B. TCP is at best a temporizing measure and is not useful in asystole.
C. If TCP capture is not achieved, try repositioning pads.
D. If STEMI, refer to protocol.
E. Consider lowering rate of pacing to 60 BPM if STEMI.

Cardiac Dysrhythmia – STABLE TACHYCARDIA

CONSIDERATION:
Patient does NOT have signs or symptoms of poor perfusion caused by the dysrhythmia (AMS, ischemic chest discomfort, acute heart failure, signs of shock)

TREATMENT:

A. Treat per Universal Patient Care Protocol
B. Obtain 12 Lead
C. ✱Narrow complex QRS (< 0.12 sec) NARROW COMPLEX TACHYCARDIA (NCT) :
    1. Suspected SVT with rate > 150 BPM
        a. Attempt vagal maneuvers.
        b. If refractory, **Adenosine** 6 mg rapid IV followed by 20 ml LR rapid bolus
        c. If refractory, **Adenosine** 12 mg rapid IV followed by 20 ml LR rapid bolus
    2. Suspected Atrial Fibrillation or Flutter rate >110 (symptomatic but not unstable)Monitor patient, consider and treat underlying causes of tachycardia (sepsis, shock, dehydration, etc.).
        a. **Diltiazem** 0.25 mg/kg (maximum 20 mg) given slow over 2 minutes. after 10 minutes. may repeat at 0.35 mg/kg (maximum 25 mg). If rate control is achieved infuse **Diltiazem** 5-15 mg/hr titrated to keep rate <110
        b. Do not use diltiazem if patient has known severe heart failure or WPW.

D. ✱Wide complex QRS (> 0.12 sec) WIDE COMPLEX TACHYCARDIA (WCT):
    1. Regular Rhythm and QRS Monomorphic:
        a. **Lidocaine** 0.75 mg/kg IV/IO if Vtach suspected, may repeat to maximum 3 mg/kg.
        b. If no conversion, repeat **Lidocaine** 0.75 mg IV/IO may repeat to maximum 3 mg/kg.
    2. Irregular Rhythm:
        a. If possible Torsades give **Magnesium Sulfate** 2 g IV over 5 minutes
        c. Other wide complex irregular rhythms, monitor patient consider causes.
E. Obtain post treatment 12-lead ECG.

PEDIATRIC PATIENTS:

A. Treat per Universal Patient Care Protocol. Identify and treat underlying causes
B. Obtain 12-lead ECG
C. ✱Narrow complex QRS (< 0.09 sec)
    1. Probable SVT (Compatible history Infants HR > 220; Children: HR > 180)
        a. Attempt vagal maneuver
        b. **Adenosine** 0.1 mg/kg Max 6 mg rapid IV followed by 20 ml LR rapid bolus
        c. If no conversion may repeat **Adenosine** once at 0.2 mg/kg Max 12 mg rapid IV followed by 20 ml LR rapid bolus
    2. Probable Sinus Tachycardia Infants: HR < 220; Children: HR < 180

   a. Monitor patient, consider causes

D. ✱Wide complex QRS (> 0.09 sec)
   a. Suspected VTach: **Lidocaine** 0.75 mg/kg IV/IO.
   b. If no conversion, repeat **Lidocaine** 0.75 mg/kg IV/IO, may repeat to maximum 3 mg/kg.

NOTES & PRECAUTIONS:

A. Adenosine should be reduced to one-half (50%) in patient with history cardiac transplant, or carbamazepine (Tegretol).
B. Do not use Adenosine or Calcium Channel blockers in patients with known Wolff-Parkinson-White syndrome.
C. Adenosine should be used with caution in patients with asthma as it may cause a reactive airway response in some cases.
D. In patients with tachycardia, particularly with AFib/AFlutter evaluate for possible causes of tachycardia, such as shock, sepsis, dehydration, hypovolemia etc., and treat underlying cause first.
E. Calcium Channel blockers are not meant to convert AFib/AFlutter but decrease ventricular rate.

Cardiac Dysrhythmia – UNSTABLE TACHYCARDIA

CONSIDERATIONS:

Patient HAS signs or symptoms of poor perfusion caused by the dysrhythmia (AMS, pulmonary edema, acute heart failure, signs of shock)

A. In patient with underlying atrial fibrillation consider causes of instability other than rate.
B. Rate related symptoms uncommon if HR <150 bpm. Consider other causes.

TREATMENT:

A. Treat per Universal Patient Care Protocol
B. ✱Immediate synchronized cardioversion. If patient is conscious, provide sedation. Do not delay cardioversion for sedation.
    1. **Midazolam** 0.05 mg/kg IV/IM prn.
    2. If patient is in cardiogenic shock consider **Ketamine** 0.5 mg/kg IV/IM/IO max single dose of 50 mg or immediate shock without sedation.

    Energy selection for all cardioversion 200J, 300J, 360J
C. ✱Repeat cardioversion if refractory.
D. ✱NO Conversion:
    1. Suspected VT **Lidocaine** 1.5 mg/kg IV/IO slow push
    2. Repeat synchronized cardioversion x 2 prn.
    3. If recurrent: **Lidocaine** 0.75 mg/kg IV/IO to a max of 3 mg/kg.
    4. If multi-focal (Torsades): **Magnesium Sulfate** 2 g IV slow.
    5. Consider hypovolemia, fluid challenge
E. YES Conversion:
    1. Obtain 12-lead ECG if not already done.
    2. Consider contributing factors and other treatments.

PEDIATRIC PATIENTS:

A. Treat per Universal Patient Care Protocol; Identify and treat underlying causes.
B. ✱Immediate synchronized cardioversion at 1 J/kg; If patient is conscious, consider sedation. Do not delay cardioversion for sedation.
    1. **Midazolam** 0.1 mg/kg IM/IV. Max 2.5 mg.
    2. If patient is in cardiogenic shock consider **Ketamine** 0.5 mg/kg IV/IM/IO max single dose of 50 mg or immediate shock without sedation.
C. ✱Repeat cardioversion, if refractory, at 2 J/kg
D. ✱NO Conversion:
    1. Suspected VT **Lidocaine** 1.5 mg/kg IV/IO slow push.
    2. Repeat synchronized cardioversion at 2 J/kg two additional times if needed
    3. If repeatedly no conversion, rapid transport.
E. YES Conversion:
    1. Obtain 12-lead ECG if not already done.
    2. Consider contributing factors and other treatments.

Chest Pain/Acute Coronary Syndrome

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Administer oxygen if needed to achieve a SpO2 between 94 – 98%.
C. Obtain 12-lead ECG. This may be done concurrently with other treatments.
D. **Aspirin** 324 mg PO. Contraindicated in known allergy, active bleeding ulcer.
E. If systolic BP > 110
    1. **Nitroglycerine** 0.4 mg (patient's prescribed nitro) or ✚✱**Nitrospray** 0.4 mg SL. May repeat x 2 every 3-5 minutes.
        a. Caution in Right Sided Myocardial Infarction (positive changes in V3R or V4R).
        b. Contraindicated in patient taking phosphodiesterase inhibitor (Sildenafil, Viagra, Cialis, Levitra) in the past 48 hrs.
        c. Vascular access should be done prior to Nitroglycerine.
    2. ✱**Fentanyl** 1 mcg/kg IV/IM max of 100 mcg single dose, may repeat every 5-10 min. Do not exceed 300 mcg per hour.
F. If hypotensive, follow Shock protocol.

IF ACUTE MI SUSPECTED Transport C-3 Patient Destination COP, Transmit ECG via Pulsara when possible.

Crush Injury/Entrapment

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Spinal immobilization if indicated and feasible.
C. Consider pain management.
D. Evaluate degree of entrapment and viability of extremities (absent pulse, blanched skin, capillary refill, diminished sensation, extremely cold to the touch).
E. ◈*During extrication, administer 1000 - 2000 cc fluid bolus LR, then maintain at 500 cc/hr.
F. ✱Monitor cardiac rhythm for signs of hyperkalemia throughout patient contact as feasible. If present, treat per Hyperkalemia protocol.
G. Wound care:
    1. Remove all restrictive dressings (clothing, jewelry, etc.).
    2. Monitor distal pulse, motor and sensation in involved extremity.
    3. Bandage all open wounds (irrigate if needed).
    4. Stabilize all protruding foreign bodies (impaled objects).
    5. Splint/immobilize injured areas.
    6. For suspected pelvic crushing injuries, follow the Pelvic Immobilization procedure if indicated.

Drowning

TREATMENT:

A. Universal Patient Care protocol.
B. Protect cervical spine if diving accident.
C. Establish and maintain airway
    1. Clear mouth and pharynx, suction liberally with tonsil tip.
    2. Advanced Airway management prn.
D. Monitor lung sounds frequently.
    1. Institute CPAP or PEEP for pulmonary edema.
E. Altered Mental Status patient protocol, as indicated.

GENERAL CONSIDERATIONS:

A. All drowning patients should be transported to the hospital for evaluation.
B. Protect against and/or treat hypothermia per protocol

Heat Syndromes

TREATMENT :

A. Treat per Universal Patient Care Protocol.
B. Heat Cramps, Heat Exhaustion
C. Obtain oral or axillary temperature.
    1. Move to cooler environment, remove excess clothing. Tepid compresses to forehead, neck, extremities.
    2. Oral fluids, if possible.
    3. ◈*Initiate IV with LR if unable to take oral fluids or if hypotensive. Fluid challenge with 200-500 ml rapidly.
    4. Transport as necessary.
D. Heat Stroke
    1. Move to cooler environment, remove clothing, aggressive cooling with wet sheets, cool packs, evaporative airflow.
    2. ◈*IV with LR / fluid challenge with 200 ml over 20 minutes unless pulmonary edema develops.
    3. ✱**Midazolam** 0.05-0.1 mg/kg IV/IM max of 10 mg for seizures or to control shivering when cooling.
    4. Treat cardiac dysrhythmias per protocols. Rapid transport to hospital.
    5. Altered mental status protocol, as indicated.

Hemorrhage Control

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. External bleeding - Control with direct pressure and elevation.
    1. If direct pressure not effective or practical, apply commercially available tourniquet. Utilize improvised tourniquets only if commercially designed tourniquets are unavailable.
        a. Apply tourniquet as per manufacturer's recommendation.
        b. Note time and date on the tourniquet label.
        c. Do not remove tourniquet prior to arriving at definitive care unless conversion is appropriate.
            1. The patient is not in shock
            2. You can monitor the wound closely for bleeding
            3. The tourniquet isn't being used to control bleeding from an amputation
            4. The tourniquet has been in place for less than six hours.
    2. If direct pressure and tourniquet application ineffective or impractical, i.e. junctional wound/bleeding, follow procedure for wound packing.
    3. If amputation, follow Amputation Protocol.
    4. If shock, follow Shock Protocol.

Hyperkalemia

RECOGNITION, SIGNS & SYMPTOMS:

A. Suspect in known renal failure or dialysis patient.
B. Other patients who are predisposed to hyperkalemia are those who have muscular dystrophy, paraplegia/quadriplegia, crush injury, prolonged immobilization or patients who have sustained serious burns > 48 hours.
C. Obtain a 12-lead ECG.
D. Signs/Symptoms: tingling, numbness, paresthesias, flaccid weakness, EKG changes (peaked T waves, prolonged P-R interval, wide QRS, PVCs, Bigeminy, VT, VF).

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. ◈*Establish IV)
C. ✱**Calcium Gluconate** 10 ml slow IV/IO may repeat as needed every 2-5 minutes. Flush tubing
E. ✱**Albuterol** 5 mg via continuous Med Neb Max 20mg.
F. ✱**Dextrose 10%** 25 g IV/IO if the patient is non-diabetic
G. Follow protocols for dysrhythmias.
H. Rapid transport to PHSW or other hemodialysis capable facility (Emanuel, Providence Portland, Kaiser Sunnyside or OHSU)

Hypothermia/Cold Exposure

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Gently remove wet clothes and protect patient from further environmental exposure.
C. Assess ABC's. Allow up to 30 seconds to confirm respiratory arrest, pulseless cardiac arrest or bradycardia that is profound enough to require CPR.
D. Obtain oral or axillary temperature.

PATIENT PERFUSING:

A. Monitor ECG and pulse oximetry. Handle patient gently to avoid VF.
B. Institute rewarming procedures:
    1. HPMK (hypothermia prevention and management kit), O2 warmed and humidified, warm packs, heated blankets, warmed ambulance, etc.
    2. Truncal rewarming:
        a. ◈*Warmed IV fluids (200 – 300 ml); avoid over-hydration
        b. Heat packs to groin, axilla

CARDIAC ARREST:

A. Begin CPR, Treat per Cardiac Arrest Guidelines.
    1. The hypothermic heart may be unresponsive to cardiovascular drugs, pacer stimulation or defibrillation. Rewarming is paramount.
    2. ✱Limit of two doses of pressors and two doses of antiarrhythmics until rewarmed to 86° F, 30° C degrees.
B. Continue rewarming procedures during transport.

OTHER TREATMENT CONSIDERATIONS:

A. Unconscious patient:
    1. Altered Mental Status and Coma protocol.
B. Frostbite present:
    1. Protect with dry dressings, do not rub frostbitten areas, and permit only gradual warming by room temperature out of hospital.
C. At-risks groups for hypothermia include trauma victims, alcohol and drug abuse patients, homeless persons, elderly, low-income families, infants and small children, and entrapped patients.
D. Hypothermia may be preceded by other disorders (alcohol, trauma, OD) look for and treat any underlying conditions while treating the hypothermia.
E. If death in the field is suspected, consult online Medical Control prior to DIF determination.

Newborn Resuscitation

TREATMENT:

A. Prevent heat loss from the infant.
    1. Quickly dry infant, remove wet linens from contact with the infant.
    2. Maintain warm environment, place in mother's arms if condition warrants.
B. Airway.
    1. Wipe nose and mouth if needed.
C. Breathing Control:
    1. Stimulate respirations by gently flicking heels, rubbing spine.
    2. Face mask with 6 L O2 or Blow-by O2
    3. Positive pressure ventilation for:
        a. Apnea or gasping respirations - APGAR score 5 or less – HR < 100.
    4. ✱Intubation for persistent apnea, HR < 100, or APGAR < 5 after 10 minutes.
D. At 30 to 60 seconds after delivery, clamp and cut the umbilical cord about 6 inches from infant. If resuscitation is needed, cord may be clamped and cut as soon as necessary.
E. CPR if heart rate < 60 bpm at ratio of 3:1 compressions to ventilations.

FURTHER CONSIDERATIONS

A. Persistent bradycardia (rate < 60) or asystole despite PPV
    1. ✱**Epinephrine** 0.01 mg/kg (1:10,000), IV, IO, or ✱ ET tube.
B. ◈*Neonatal fluid resuscitation: 10 ml/kg LR.
C. Check blood glucose. CBG <40 for <24 hours treat with ◈* D10 5 ml/kg IV/IO

POST RESUCITATION CARE:

A. Continue to provide assisted ventilation as needed.
B. Closely monitor respiratory effort, heart rate, blood glucose and pulse oximetry.
C. Keep newborn normothermic. Hypothermia significantly increases risk of morbidity.

Obstetrical Emergencies and Childbirth

TREATMENT:

A. Treat per Universal Patient Care Protocol. Start O2 in all abnormal deliveries.
B. Transport third-trimester females in left lateral decubitus (protect spine if indicated).
C. If multiple or precipitous delivery request additional ambulance.

Preeclampsia and Eclampsia OF PREGNANCY:

A. Moderate to Severe Pre-Eclampsia (third trimester or up to six weeks postpartum) Any of the Following:
    1. Hypertension >160 systolic or >110 diastolic
    2. Headache; Cerebral disturbances (changes in behavior)
    3. Visual disturbances (flashes of light)
    4. Epigastric pain
    5. Dyspnea/Cyanosis
B. Eclampsia: any one of the above plus
    1. Seizure or Post-ictal
C. ✱Seizure treatment.
    1. **Midazolam** 0.05-0.1 mg/kg max of 10 mg IV/IM.
    2. **Magnesium Sulfate** 5 g IV slow (over 10 minutes).

NORMAL CHILDBIRTH:

A. Use sterile or clean technique. Guide/control but do not retard or hurry delivery.
B. Delivery:
    1. Check for cord around neck and gently remove if found.
    2. Apply gentle counter pressure to baby's head as it delivers.
    3. Assist delivery of shoulders and rest of body.
C. After delivery, assess infant per Neonatal Resuscitation protocol. If no resuscitation is needed (breathing or crying, good muscle tone), proceed as below.
D. Wipe nose and mouth if copious secretions.
E. Briefly dry infant and place on mother's chest, in skin-to-skin contact. Cover both with a clean, dry blanket.
F. Assess infant using APGAR at one minute after birth and five minutes later. (Documentation should describe infant using criteria rather than giving a numerical score).
G. At 30 to 60 seconds after delivery, clamp and cut the umbilical cord about 6 inches from infant. If resuscitation is needed, cord may be clamped and cut as soon as necessary.
H. Do not delay transport to deliver the placenta. After the placenta has been delivered, gently externally massage uterus to encourage contraction and prevent bleeding.
I. If mother has significant postpartum hemorrhage (> 500 ml), continue uterine massage, treat for shock, and update receiving facility.
J. Unless infant needs treatment, keep on mother's chest for transport.
K. Monitor vital signs of mother and infant during transport.

ABNORMAL CHILDBIRTH:

A. General Considerations
   1. Transport to nearest appropriate hospital, notify early.
   2. Transport in position as described in General treatment above.
   3. Altered Mental Status protocol for newborn.

B. Breech Presentation:
   1. Allow mother to push - do not pull the baby - gently extract.
   2. Support delivered body and extremities on your hand and arm.
   3. If head not delivered, place gloved hand in vagina to form a "V" around baby's mouth and nose should it begin to breathe.

C. Prolapsed Cord:
   1. Place mother in knee-chest position or extreme Trendelenburg.
   2. Insert gloved hand into vagina and gently lift head/body off of cord.
   3. Observe cord for pulsations and continue until relieved by hospital staff.
   4. Rapid transport.

D. Cord Wrapped Around Neck
   1. With two fingers behind baby's neck, try to slip cord forward, over baby's upper (anterior) shoulder and head. If unsuccessful, attempt to slip under lower shoulder and over the head.
   2. If unsuccessful, clamp cord with two clamps, cut between clamps, and carefully unwrap cord from around neck.

E. Abruptio Placentae
   1. Occurs in the third trimester of pregnancy when the placenta prematurely separates from the uterine wall leading to intrauterine bleeding.
   2. The patient experiences lower abdominal pain and the uterus becomes rigid. Shock may develop without significant vaginal bleeding.

F. Placenta Previa
   1. Occurs when the placenta covers the cervical opening, which can result in vaginal bleeding and prevents delivery of the infant through the vagina. The infant needs to be delivered via caesarian section.

G. Postpartum Hemorrhage: Attempt to control bleeding with fundal massage, if unsuccessful ✱**TRANEXAMIC ACID** (TXA) Adult patients only, not for patients <15 y/o (50 kg and above if age is unknown).
   1. Postpartum hemorrhage <1 hour from delivery
   2. SBP <70 mmHg (MAP <55), HR > SBP or both
   3. **TXA** 2 g in 50 ml NS IV/IO over 10 minutes

Pain Control (Acute)

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Determine location of pain and severity using numeric scale 1-10.
C. Consider and treat underlying causes of pain.
D. Use non-pharmacological pain management (i.e., position of comfort, hot/cold pack, elevation, splinting, padding, wound care, therapeutic calming and communication).

PHARMACOLOGIC INTERVENTION

A. **Mild Pain**
   1. ◈**Ibuprofen**
      a. 600 mg PO
      b. Not for cardiac chest pain OR Trauma System patient
   2. ◈**Acetaminophen**
      c. 1000 mg PO
B. **Moderate Pain, especially useful in renal colic**
   1. ✚✱**Ketorolac** (Toradol)
      a. 15 mg IV/IM. DO NOT REPEAT.

Contraindicated in cardiac chest pain, Trauma System Entry, pt. w/ known renal/liver disease, allergy to **ASA/NSAID**, possible pregnancy, anticoagulant use, bleeding disorder, or altered mentation.

C. **Severe Pain**
   1. ✱**Fentanyl**
      a. 1 mcg/kg IV/IO/IM/IN max 100 mcg per dose increments (every 5-10 minutes prn) up to 300 mcg per hour.
      b. Rapid injection may cause respiratory arrest or chest rigidity – administer slowly, over 30-60 seconds.
   2. ✱**Ketamine**
      Adjunct with Opiates, may be used as primary agent in history of allergy, addiction, hemodynamic instability, intoxication or technical rescue:
      a) 0.3 mg/kg IV over 2-3 minutes. Max 20 mg IV/IO/IM, may repeat every 10 minutes PRN.
      b. Severe Pain or Pain with hemodynamic instability:
      a) 0.5 mg/kg IV/IO over 2-3 minutes. Max 25 mg IV/IO/IM. May repeat every 10 minutes PRN to control pain OR patients develops agitation or ventilatory compromise.
      b)Technical Rescue Dose: 0.5 mg/kg IV/IO/IM to a max 50 mg single dose, may repeat 0.5 mg/kg IV/IO/IM to a max 50 mg single dose once in 10 minutes, additional dosing: 0.5 mg/kg IV/IO over 2-3 minutes. Max 25 mg.

FACILITATION FOR PAIN CONTROL:

. ✱**Midazolam** 2 mg IV/IM for muscle spasms associated with pain

PEDIATRIC PATIENTS:

A. ⟐**Ibuprofen** 10 mg/kg PO max of 600 mg
B. ⟐**Acetaminophen** 15 mg/kg PO max of 1000 mg
C. ✚✱**Ketorolac** (age 2-16 years) – 1 mg/kg IM to a max of 15 mg or 0.5 mg/kg IV to a max of 15 mg. Do not repeat.
D. ✱**Fentanyl** (not to exceed adult dose) - 1 mcg/kg max 25 mcg (may be given IN)

Precaution:

1. EtCO2 should be used in all pain control/sedated patients, when available.
2. If opioids cause respiratory depression, **Narcan** 0.1-2 mg IV/IO/IM *(Peds 0.1 mg/kg max of 1 mg).*
3. **Midazolam** may potentiate opiates, consider reversal with **Naloxone** 0.1 - 2 mg q 2 minutes prn.
4. In adults treat **Ketamine** anxiety and agitation side effects with low dose **Midazolam** 0.05 mg/kg IV/IM max of 5 mg.
5. Pain control agents can cause nausea, treat per Nausea Protocol
6. **Ketamine** may cause hypersalivation, consider Atropine 0.5 mg if problematic
7. Push **Ketamine** slowly to prevent laryngospasm.
8. EMS analgesics should not be used to control chronic pain. Follow Pt's prescribed plan.

Contraindications:

1. **Toradol** or **Ibuprofen**: in any suspected bleeding, known allergy to NSAIDs or ASA, childbirth or active labor, renal failure.
2. **APAP** for patients with acute liver failure
3. **Ibuprofen** or **Acetaminophen** if the patient has taken the drug to be administered in the last six hours.
4. **Midazolam** and **Fentanyl** may cause hypotension, avoid in hypotensive patients.

ADULT PAIN SCALE:

PEDIATRIC PAIN SCALE:

Poisoning and Overdose

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Treat shock per Shock Protocol as needed.
C. If patient has decreased mentation, treat per Altered Mental Status protocol.
D. Manage airway per the Airway Management protocol.
E. Contact MC and/or Poison Control (1-800-222-1222) for advice and document instructions in your narrative.

SPECIFIC POISONING/OVERDOSE TREATMENTS:

A. Aspirin or Acetaminophen:
   1. **Activated charcoal** (Actidose) 50 g PO if recommended by Poison Control or Medical Control. Avoid in patients at risk of aspiration
   2. Avoid intubation in ASA overdoses, support patient's respiratory rate.
B. Beta Blocker/Calcium Channel Blocker
   1. ✱**Calcium Gluconate** 1 g or 10 ml slow IV/IO.
   2. ✱**Glucagon** 2-5 mg IV/IO
   3. Treat Bradycardia and/or Shock per protocol.
D. Carbon Monoxide:
   1. CO poisoning suspected (e.g., AMS w/ multiple patients, sick pets at same location):
   2. 100% O2 NRM or CPAP if possible.
   3. Determine CO level w/ commercial device.
   4. SpCO over 3% with neurologic symptoms (HA, dizziness, nausea, syncope, LOC, seizures, coma) – treat and transport to ED.Treat symptoms per protocol (12 Lead indicated to r/o ischemia).
E. Cyanide:
   1. Signs of poisoning: AMS, seizures/coma, tachypnea/apnea, shock, vomiting
      a. ✱**Sodium Thiosulfate** 1.65 ml/kg max of 50 ml of 25% solution IV/IO infused over 10 minutes.
F. Hyperadrenergic (Cocaine, Methamphetamine, MDMA, etc.):
   1. Symptomatic Hyperadrenergic
      a. ✱**Midazolam** 0.05-0.1 mg/kg max of 10 mg IV/IM
      b. Stable V-tach: ✱**Lidocaine** 1.5 mg/kg IV/IO.
G. Organophosphates (Salivation/Lacrimation/Urination/Defecation/GI/Emesis = SLUDGE):
   1. Prepare to handle copious secretions.
   2. ✱Administer **Atropine** 1-2 mg IV/IO every 5 minutes until symptoms improve.
H. Phenothiazine – Dystonic Reaction and/or Akathisia:
   1. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ◈*✚✱ **Diphenhydramine** 1 mg/kg IV/IO max 50 mg
   2. ✱If still symptomatic **Midazolam** 0.05 mg/kg IV/IO/IM max of 5 mg.

I. Tricyclic Antidepressant and/or Benadryl:
   1. ✱If tachycardia > 110, dysrhythmia, widening QRS, or if seizures:
      a. **Sodium Bicarb** 1 mEq/kg slow IV push. 50 mEq added to 1000 ml bag of LR.
      b. **Magnesium Sulfate** 2 g IV, slow push over 5 minutes for prolonged QT or wide QRS unresponsive to Sodium Bicarb.
      c. **Midazolam** 0.05-0.1 mg/kg max 10 mg IV/IO/IM for seizure.

J. Riot Control Agents – (Mace, pepper spray, tear gas, lacrimators):
   1. Move affected individuals from contaminated environment into fresh air if possible.
   2. Irrigation with water or saline may facilitate resolution of symptoms and is recommended for decontamination of dermal and ocular exposure.
   3. Treat for Respiratory Distress as appropriate.
   4. Symptoms begin within seconds of exposure, are self-limited and are best treated by removing patient from ongoing exposure. Symptoms frequently decrease over time (15-45 minutes) after exposure ends.
   5. Exposed individuals who are persistently symptomatic warrant further transport for further intervention.

PEDIATRIC PATIENTS:

A. **Activated Charcoal** 1 g/kg max 50 g PO if recommended by Poison Control or Medical Control. Avoid if at risk for aspiration.
B. ✱**Atropine** 0.02 mg/kg Max 3 mg IV/IO for bradycardia in calcium channel/Beta blocker OD and Organophosphate poisoning.
C. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg, ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ✚✱**Diphenhydramine** 1 mg/kg Max 50 mg IV/IM/IO for dystonia.
D. ✱**Calcium Gluconate** 50 mg/kg (0.5 mEq/kg) max 1 g or 10 ml g IV/IM/IO over 10 minutes.
E. ✱**Magnesium Sulfate** 25 mg/kg max 2 g IV/IO for TCA/Benadryl OD.
F. ✱**Midazolam** 0.1 mg/kg IV/IM max 5 mg single dose for hyperadrenergic syndrome or seizure due to poisoning.
G. ✱**Sodium Bicarb** 1 mEq/kg slow IV push for Tricyclic Antidepressants and/or Benadryl
E. ✱**Sodium Thiosulfate** 1.65 ml/kg max of 50 ml of 25% solution IV/IO infused over 10 minutes.
F. Consider possibility for neglect/abuse.

POISONING AND OVERDOSE TOXIDROME TABLE

Toxidrome	Examples	Clinical Features	Antidotes
Sympathomimetic	Cocaine Methamphetamine	Agitation Diaphoresis Hypertension Hyperthermia Dilated pupils Tachycardia	Midazolam
Opioid	Heroin Hydromorphone Methadone Oxycodone	Depressed mental status Hypoventilation Constricted pupils	Naloxone
Cholinergic (Anti-cholinesterase)	Pesticides • Carbamates • Organophosphates Nerve Agents	SLUDGE (Salivation, lacrimation, urination, diarrhea, emesis, sweating, miosis, small pupils, bradycardia, seizure, bronchospasm	Atropine
Sedative-Hypnotic	Barbiturates Benzodiazepines	Depressed mental status Hypotension Hypothermia	Supportive treatment
Cardiotoxic Drugs	Beta-blockers Calcium channel blockers	Bradycardia Conduction issues Hypotension	Calcium, Glucagon
Anticholinergic	Atropine Jimson Weed Scopolamine Diphenhydramine	Delirium Hyperthermia Tachycardia Warm, dry skin	Supportive treatment

Sodium channel blockade	Tricyclic antidepressants, Benadryl Antiarrhythmics • Type IA – quinidine, procainamide • Type IC – flecainide, propafenone	Altered mental status Hypotension Seizures Wide complex tachycardia	Sodium Bicarbonate

Respiratory Distress

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Follow appropriate Airway Management or Cardiac Dysrhythmia protocol if indicated.

CLINICAL IMPRESSION:

A. Upper Airway Obstruction
   1. Partial Obstruction
      a. Sit patient up and have him/her cough.
      b. Transport if obstruction is not cleared or if suspicious of aspiration.
      c. ✱For stridor of unknown cause, **Racemic Epinephrine** 0.5 ml in 3-5 ml NS by MedNeb and mask. ALTERNATIVE: 0.5 mg **Epinephrine** (0.5 ml of 1:1,000) diluted in 3-5 ml of NS via nebulizer.
   2. Complete Obstruction
      a. AHA protocol for complete obstruction.
      b. ✱If unconscious, laryngoscopy with an attempt to remove with Magill forceps.
      c. ✱If obstruction not removed and unable to ventilate, consider cricothyroidotomy or needle jet insufflation.
B. Asthma
   1. If known asthmatic having recurrent attack:
      a. ◈**Albuterol** 5 mg with **Ipratropium Bromide** 0.5 mg via MedNeb. May repeat prn.
      b. ✱**Solumedrol** 125 mg IV/IM. ALTERNATIVE **Dexamethasone** IV/IM/PO 10 mg.
      c. Consider CPAP 100% FiO2 per protocol
      c. ✱Status asthmaticus: **Epinephrine** 2-10 mcg/minute IV infusion, if unable to start an IV **Epinephrine** 0.3 mg IM.
      d. ✱Status asthmaticus: **Magnesium Sulfate** 2 g in 50-100 ml over 5 minute IV/IO.
C. COPD
   1. If cyanotic or severe respiratory distress: high flow O2 by mask. Be prepared to assist respiration.
   2. Consider CPAP 100% FiO2 per protocol.
   3. ◈**Albuterol** 5 mg with **Atrovent** 0.5 mg via nebulizer. May repeat prn.
   4. ✱**Solumedrol** 125 mg IV. ALTERNATIVE **Dexamethasone** IV/IM/PO 10 mg.
D. Insufficient Respiration Or Respiratory Arrest
   1. Rule out obstruction. Ventilate with bag-valve mask.
   2. ◈**Naloxone** 2.0 mg IN, PRN if opiates possible. EMR may only administer prefilled syringe (IN or IM). ◈*__Naloxone__ 0.1-2 mg IN/IM PRN
   3. ✚✱**Naloxone** 0.1-2 mg IV/IO/IN/IM PRN
E. Pulmonary Edema
   1. Sit patient up if possible.
   2. If patient in extremis: CPAP 100% FiO2. Use PEEP valve if assisting ventilation
   3. If systolic BP > 110:
      a. ✱**Nitroglycerine** 0.4 mg or **Nitrospray** 0.4 mg sublingual every 3-5 minutes prn

b. Caution in Right Sided Myocardial Infarction
c. Contraindicated in patient taking phosphodiesterase inhibitor (Sildenafil, Viagra, Cialis, Levitra)

4. If suspected MI with chest pain treat per protocol.

PEDIATRIC PATIENTS:

A. Upper Airway
1. ✱Patient with audible stridor at rest, **Racemic Epinephrine** 0.5 ml in 3-5 cc NS by MedNeb and mask. ALTERNATIVE: 0.5 mg **Epinephrine** (0.5 ml of 1:1,000) diluted in 3-5 ml of NS via nebulizer
2. AHA protocol for complete obstruction. Treat anaphylaxis per protocol.
3. If the child deteriorates, ventilate with a BVM.
4. ✱If you cannot effectively ventilate with BVM perform intubation.
5. ✱If complete obstruction is present and you cannot effectively BVM ventilate the patient consider needle jet insufflation.

C. Asthma
1. ◈**Albuterol** 5 mg with **Ipratropium Bromide** 0.5 mg via MedNeb. May repeat prn.
2. ✱**Epinephrine** 0.01 mg/kg max 0.3 mg if not improving with MedNeb.
2. ✱**Solumedrol** 2 mg/kg max 125 mg. ALTERNATIVE **Dexamethasone** 0.6 mg/kg IV/IM/PO (Max 10 mg).
3. ✱**Magnesium Sulfate** 25 mg/kg max 2 g IV/IO over 5 minutes.

C. Insufficient Respiration or Arrest
1. Rule out obstruction. Ventilate with bag-valve mask.
2. ◈**Naloxone** 2 mg IN. ◈*__Naloxone__ 0.1 mg/kg max 2 mg IN/IM. ✚✱ **Naloxone** 0.1 mg/kg max 2 mg IV/IO/IM if opiates suspected.

D. Acute Bronchiolitis (< 2 years old)
1. Respiratory distress:
a. O2 via blow-by, nasal cannula or mask to keep SpO2 > 92%. Monitor ETCO2.
b. If wheezing,◈**Albuterol** 2.5 mg via nebulizer. If improvement may use every 10 minutes.
c. Positive pressure ventilation with BVM and intubation for apnea, ETCO2 > 55 mmHg or inability to maintain SpO2 > 85%.

Seizures

TREATMENT:

A. Treat per Universal Patient Care protocol.
B. If patient is in status seizure (continuous seizure or repetitive seizures without regaining consciousness):
    1. ✱**Midazolam** 0.05-0.1 mg/kg max of 10 mg IV/IO/IM. Repeat every 5 minutes until seizure stops.
    2. Monitor patient's respiratory status closely after midazolam administration.
C. Check blood glucose and treat per Altered Mental Status protocol.
D. For Eclampsia ✱**Magnesium Sulfate** 5 g IV over 10-15 minutes, Place patient on their left side for transport.

Place patient on their left side for transport.

PEDIATRIC PATIENTS:

A. If patient is in status seizure (continuous seizure or repetitive seizures without regaining consciousness):
    1. ✱**Midazolam** 0.05-0.1 mg/kg max of 10 mg IV/IO/IM. Repeat every 5 minutes until seizure stops.
    2. Monitor patient's respiratory status closely after Midazolam administration.
B. Febrile seizures are common in children up to age 5 and are usually short in duration.
    1. If seizing ✱**Midazolam** as above
    2. If fever >100.4 Passively cool patient and give ◈*__Acetaminophen__ 20 mg/kg suppository max 1 g.
C. Check blood glucose and treat per Altered Mental Status protocol.

CONSIDERATIONS:

A. BE PREPARED TO MANAGE RESPIRATORY DEPRESSION.
B. Seizure-like activity may be caused by syncope, dysrhythmias, or other serious conditions.

Sepsis

TREATMENT:

A. Treat per Universal Patient Care Protocol
B. Maintain O2 sat above 95%
C. Known or suspected infection with two or more of the following:
    1. Temperature > 100.4° f (38° c) or < 96.8° f (36°c)
    2. Respiratory rate > 20 breaths/min
    3. Heart rate > 100 beats/min
    4. ETCO2 ≤ 25 mmHg
D. If two or more of the above AND:
    1. SBP < 100 (MAP 65)

    Or
    2. Altered Mental Status

Notify receiving facility of "**Septic Shock Alert**" and emergently transport

E. ◈*Give up to 2 liters LR as rapidly as possible or until:
    1. MAP > 65
    2. Neck vein distention develops
    3. Pulmonary rales develop.
F. If not responding to fluid and SBP < 90 (MAP < 65):
    1. ✱ **Norepinephrine** 4 mcg/min IV/IO. If no response, increase every 5 minutes in 4 mcg/min increments to max of 12 mcg/min. Goal is SBP > (MAP > 65)
    2. ✱ ALTERNATIVE **Epinephrine** 2-10 mcg/min IV/IO infusion.
G. IF patient is normotensive and not altered, transport non-emergent and notify hospital of possible sepsis.

Shock

TREATMENT:

A. Hypovolemia/Hemorrhagic:
   1. Control external bleeding. Give up to 2 liters LR as rapidly as possible until BP systolic is 90 (MAP > 65). Use cautiously in patients with CHF, discontinue if pulmonary edema develops.
   2. Shock secondary to penetrating or blunt trauma
      ✱**TRANEXAMIC ACID (TXA)** Adult trauma patients only, not for patients <15 y/o (50 kg and above if age is unknown.
      a. Penetrating or blunt trauma <1 hour from injury
      b. SBP <70 mmHg (MAP <55), HR > SBP or both
      c. **TXA** 2 g in 50 ml NS IV/IO over 10 minutes

B. Anaphylaxis
   1. ◈*Begin 1,000 mL fluid challenge to maintain a systolic BP of > 90 mm/Hg (MAP >65). Repeat once if continued signs of shock and no pulmonary edema.
   2. ✱Consider **Push Dose Epinephrine** 10 mcg IV/IO every 1-5 minutes until Epinephrine drip is administered.
   3. ✱**Epinephrine** 2-10 mcg/minute IV/IO infusion. If no response, increase every 5 minutes in 2 mcg/minute increments to max of 10 mcg/min. Goal is MAP >65.
   4. If refractory: ✱**Norepinephrine** 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to a max of 12 mcg/min. Goal is a systolic blood pressure of > 100 mmHg (MAP >65).

C. Distributive (sepsis, neurogenic):
   1. If septic see Sepsis protocol
   2. ◈*Begin 500- 1,000 mL fluid challenge to maintain a systolic BP of > 90 mm/Hg. (MAP>65) Repeat to max of 2000 mL if signs of shock and no pulmonary edema.
   3. ✱**Norepinephrine** 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to max of 12 mcg/min. Goal is a systolic blood pressure of > 90 mmHg (MAP > 65).
   4. ALTERNATIVE ✱**Epinephrine** 2-10 mcg/min IV/IO infusion.

A. Cardiogenic (STEMI, cardiomyopathy):
   1. Follow appropriate dysrhythmia protocol.
   2. ◈*Give 250 - 500 mL fluid challenge to maintain a systolic BP of > 90 mm/Hg. Repeat once if continued signs of shock and no pulmonary edema. Max of 1,000 ml.
   3. ✱**Norepinephrine** 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to max of 12 mcg/min. Goal is a systolic blood pressure of > 90 mmHg
   4. ✱**Epinephrine** 2-10 mcg/minute IV/IO infusion. If no response, increase every 5 minutes in 2 mcg/minute increments to max of 10 mcg/minute. Goal is MAP >65.

E. Hypoadrenal Shock (Addison's Crisis):
   1. Known Hypoadrenal state (Medic Alert, Parent or caregiver).
   2. Suspected: patient on chronic steroids with acute illness, or abrupt cessation of steroid use

3. ◈*Begin 500-1,000 mL fluid challenge to maintain a systolic BP of > 90 mm/Hg (MAP >65). Repeat once if continued signs of shock and no pulmonary edema.
4. ✱**Solumedrol** 125-250 mg IV/IM/IO. ALTERNATIVE **Dexamethasone** 10 mg IV/IO/IM/PO.

PEDIATRIC PATIENTS:

A. Treat per Universal Patient Care protocol and prepare for rapid transport.
B. General shock treatment as above:
   1. ◈*Pediatric fluid challenge 20 ml/kg repeat x 1 prn to appropriate BP for age or signs of pulmonary edema.
   2. ✱**Epinephrine** 2-10 mcg/minute IV/IO infusion.
   3. ✱**Solumedrol** 2 mg/kg IV (max 125mg) ALTERNATIVE **Dexamethasone** 0.6 mg/kg max 10 mg IV/IM/PO.

GENERAL CONSIDERATIONS:

A. ◈*IV large bore (two lines recommended for trauma/sepsis). Always document time and amount of fluid given.
B. Tachycardia is first sign of shock. Pulse pressure often narrows prior to fall in systolic BP.
C. Changing level of consciousness important clue.

Stroke – CVA

TREATMENT:

A. Treat per Universal Patient Care protocol.
B. If CBG is low, treat per Altered Mental Status guidelines.
C. Conduct Stroke evaluation as per the following:

BE-FAST ASSESSMENT – Positive Findings:	
BALANCE	Sudden loss of balance or coordination
EYES	Loss of vision in one or both eyes
FACE	Lack of facial symmetry when smiling
ARMS	Arm drift or falling when holding arms outstretched
SPEECH	Not able to repeat simple phrase without slurring or memory loss
TIME	Note time last known normal; time awoken; time of symptom onset.

LOS ANGELES MOTOR SCALE (LAMS)			Total: _____
Facial droop	Absent 0	Present 1	
Arm drift	Absent 0	Drifts down 1	Falls rapidly 2
Grip strength	Normal 0	Weak grip 1	No grip 2

D. If bleed suspected, maintain normal ventilation rates and target ETCO2 of 35 mm/Hg
E. Titrate O2 at lowest level to achieve SpO2 94–98%. Maintain ETCO2 35-40mm/Hg
F. Reassure patient if conscious; patient may understand and hear all conversation even though he/she appears comatose or confused.
G. Transport Emergently if the patient meets the following criteria:
   1. ANY positive BE-FAST findings < 24 hours
   2. Critical: profound paralysis, aphasia, comatose.
   3. Notify receiving facility of Code 3 Stroke Alert.

H. Patients meeting stroke/CVA criteria will be transported as follows:

PHSW

1. Any patient with LAMS 4 or 5
2. Symptoms > 3 hours but < 24 hours.
3. Suspected intracranial hemorrhage
4. Signs of profound paralysis, aphasia, or comatose
    a. Always check facility status (VIA OCS or after entering patient into Pulsara) for availability of Neurointerventionalist.
    b. If unavailable, divert to closest appropriate facility Emanuel, Providence Portland, Kaiser Sunnyside or OHSU.
    c. Contact MC if divert not practical due to traffic, etc.

Closest Stroke Center

1. Symptoms 3 hours or less, above criteria not met
2. TIA patient with resolving symptoms. Transport Emergently

GENERAL CONSIDERATIONS:

Ensure family or caregiver available to Stroke Team by phone or in person at hospital. If available, enter contact information into Pulsara.

Syncope

DEFINITION:

A. Syncope is loss of consciousness and postural tone, resolving spontaneously without medical interventions. Laypersons describe as “fainting”.
B. Typically is abrupt in onset and resolves quickly. May find the patient awake and alert on initial evaluation.
C. Pre-syncope is the prodromal symptoms of syncope, described by the patient as “nearly blacking out” or “nearly fainting.”

TREATMENT:

A. Treat per Universal Patient Care Protocol
B. Patient with identified underlying cause for syncope, treat per specific protocol.
    1. Continued neurologic derangement consider Stroke guidelines.
    2. If ongoing mental status changes or coma should be treated per the Altered Mental Status protocol.
C. Should be directed at abnormalities discovered in patient assessment may include management of cardiac dysrhythmias, cardiac ischemia/infarct, hemorrhage, shock, suspected seizure etc.
    a. Manage airway as indicated
    b. Oxygen as appropriate
    c. Evaluate for hemorrhage and treat for shock if indicated
    d. ◈*Establish IV access
    e. ◈*Fluid bolus if appropriate
    f. Cardiac monitor
    g. 12-lead EKG
    h. ✱Monitor for and treat arrhythmias (if present refer to appropriate guideline)

NOTES AND CAUTIONS:

A. All patients suffering from syncope deserve hospital level evaluation, even if they appear normal with few complaints on scene.
B. High risk causes of syncope include the following:
    1. Cardiovascular
        a. Myocardial infarction
        b. Aortic stenosis
        c. Hypertrophic cardiomyopathy
        d. Pulmonary embolus
        e. Thoracic aortic dissection
        f. Lethal dysrhythmia
    2. Neurovascular
        a. Intracranial hemorrhage
        b. Transient ischemic attack or stroke

Termination of Resuscitation

A paramedic may terminate resuscitation of cardiac arrest not responding to ACLS protocols and further efforts are medically futile. Situations that indicate medical futility include:

A. Unwitnessed cardiac arrest with no bystander CPR, and no ROSC after 30 min of ACLS.
B. Non-shockable rhythm with no ROSC after 30 min of ACLS
C. Any cardiac arrest with no ROSC after 60 min of ACLS

Considerations:

1. OLMC consultation is encouraged for any cardiac arrest and should be utilized if any team member has any question as to how to proceed.
2. ROSC at any time during ACLS warrants extending efforts. OLMC consultation is recommended.
3. If hypothermic cardiac arrest, follow Hypothermia Protocol.
4. Persistent or recurrent VF or Pulseless VT warrants extended ACLS, defibrillator vector change and OLMC consultation.
5. ETCO2 < 10 mmHg after 30 minutes of ACLS strongly predicts death, however it can be unreliable and should not be used as the sole determinate for termination of resuscitation.
6. Increasing or persistently high ETCO2 indicates high quality CPR and continuing resuscitation should be considered.
7. PEA with initial narrow QRS may represent profound shock rather than true cardiac arrest and extended ACLS should be considered. Wide complex of agonal PEA predicts unsuccessful resuscitation.

Traumatic Brain Injury

TREATMENT:
Treat per Universal Patient Care Protocol.

A. Patient evaluation should include best GCS to help categorize injury severity.
    1. Mild injury GCS of 13-15
    2. Moderate injury GCS of 9-12
    3. Severe injury GCS 8 or less.
B. Avoid hypoxia at all times. Goal is SPO2 94-98.
C. Prevent hypotension (Goal SBP > 110 [MAP > 80])
    1. ◈*Begin 500-1,000 ml fluid challenge to maintain a systolic BP of > 100 mmHg. Repeat once if continued signs of shock and no pulmonary edema.
    2. If SBP < 100 after 2 L fluid follow Shock protocol.
D. Follow Advanced Airway protocol if patient is unable to protect airway.
E. If the patient has an airway placed, carefully manage ventilations in order to minimize hyperventilation.
    1. Monitor ETCO2 with a goal of 40 mmHg
F. If signs of herniation (blown pupil posturing) maintain ETCO2 35mmHg.

✱**Sodium Bicarb** 1 mEq/kg max of 50 mEq for signs of herniation, blown pupil, posturing.

G. ✱**Tranexamic Acid (TXA)**

Adult trauma patients only; not for patients ≤ 15 y/o (50 kg and above if age unknown) or known pregnancy.

    1. Penetrating or blunt trauma < 3 hours from injury
    2. SBP < 70 mmHg (MAP <55) or HR > SBP or both
    A. OR
    GCS between 3 and 12

✱**TXA** 2 g IV/IO administered over 10-20 minutes.

Vomiting/Significant Nausea

TREATMENT:

A. Treat per Universal Patient Care Protocol
B. ◈*Fluid challenge if hypotensive. Treat per Shock protocol.
C. ◈ **Ondansetron** 8 mg PO orally dissolving tablets (Zofran ODT), ✚✱ **Ondansetron** 4-8 mg slow IV or IM
D. Alternative:
   ✱**Droperidol** 1.25 mg IV/IM may repeat to a max of 2.5 mg, half dose (0.625 mg) for medically frail, elderly, may repeat max of 1.25 mg. Use with caution with other sedating drugs or intoxication.

PEDIATRIC PATIENTS:

A. ◈**Ondansetron** 4 mg PO orally dissolving tablets if the patient is > 40kg, may cut tablet in half for patients 20-40 kg
B. ✚✱**Ondansetron** 0.1 mg/kg max 8mg IV/IM/PO. Children over 1 y/o only, contact MC for dosing <1 y/o

SPECIAL CONSIDERATIONS:

Consider offering patient an **Isopropyl Alcohol** swab and allowing the patient to self-administer the swab by inhalation. Emphasize slow deep inhalation.

PROCEDURE – Airway Management Overview

INDICATIONS:

A. Airway control and protection.
B. Inadequate ventilation and/or oxygenation.

OXYGENATION, MAINTENANCE OF AIRWAY AND VENTILATION:

A. Supplemental oxygen:
    1. A Nasal cannula is useful for small amounts of supplemental oxygen.
    2. Non-rebreather mask (NRB) are recommended when higher flow and concentrations of oxygen need to be delivered.
    3. Blow-by oxygen should be used for infants and toddlers.
B. Nasopharyngeal Airway (NPA) or Oropharyngeal Airway (OPA) should be used for patients who are unable to maintain their own airway.
C. A Bag-Valve-Mask (BVM) should be used when inadequate ventilation is present.
D. CPAP should be considered for MEDICAL patients complaining of moderate to severe respiratory distress meeting ALL the criteria described in Continuous Positive Airway Pressure (CPAP) procedure.
E. End-tidal CO2 shall be utilized on all intubated patients.

NOTES & PRECAUTIONS:

A. Trauma patients: airway maintenance with cervical spine control is the primary concern. If unable to establish or maintain an airway, transport the patient to the closest hospital. This includes patients entered into the Trauma System.
B. If unable to control the airway and/or oxygenation via the above methods, follow the Advanced Airway protocol

PROCEDURE – Advanced Airway

PREPARATION FOR RAPID SEQUENCE INDUCTION:

A. Assess scene safety issues prior to considering emergency RSI.
B. A risk versus benefit analysis considering the relevant medical, environmental and personnel factors must be undertaken prior to RSI. Note and document the patient's GCS and Neurologic exam prior to RSI.
C. Establish adequate access to the patient. Obtain 360 degrees of access. This may require relocation of the patient prior to induction. Do not attempt intubation in confined or cramped conditions unless there is no alternative. Shade the intubator if outside in bright sunlight.
D. Monitoring:
    1. Pulse oximetry
    2. Capnography
    3. Cardiac monitor
    4. BP on arm contralateral to medication injection site. Cycle every 2 minutes.
E. Pre-Oxygenation: Apply a NRB at maximum flow rate in addition to a nasal cannula at 10 LPM for at least 3 minutes prior to intubation.
    1. If SPO2 still < 94%: BVM assist with 100% O2 until >94%.
    2. If unable to obtain Sats > 94%, consider delayed sequence intubation (DSI).
    3. Suction as needed
    4. After induction, turn up Nasal Cannula to 15 LPM for Apneic Oxygenation.
F. ◈*IV/IO secured and flushes easily
G. Position patient head of bed elevated to 15 degrees. Align the ear with the sternal notch, face parallel with the floor/ceiling. In adults, this is best accomplished with small padding under the head; in pediatrics, the shoulders must often be padded. Obese patients may require significant ramping/padding under head/shoulders to achieve optimal positioning.
    1. If C-spine precautions are necessary then the patient should have manual cervical in-line stabilization with the cervical collar open during laryngoscopy.
    2. C-spine precautions are not a contraindication to appropriate positioning as described above.

RAPID SEQUENCE INDUCTION (RSI):

A. ✱The paramedic(s) must brief the procedure with all participating personnel prior to commencing induction. They must assign specific roles to those assisting and check understanding of procedures and drugs. Ensure all personnel are ready prior to commencing. Document vital signs just prior to pushing medications.
    1. ✱Induction medications:
        a. **Ketamine** 2 mg/kg max 200 mg single dose IV/IO (status asthmaticus, reactive airway disease, concern for shock due to trauma, cardiac, septic)
        OR

Midazolam 0.1 mg/kg max 10 mg single dose IV/IO/IM and **Fentanyl** 25 mcg (peds 2 mcg/kg) IV/IO/IM (uncontrolled hypertension, seizures)

2. ✱**Rocuronium** 1 mg/kg IV/IO/IM
3. Turn up nasal cannula to 15 LPM
4. Apply jaw thrust while awaiting paralysis (if no NPA or OPA in place)
5. Routine use of cricoid pressure is NOT recommended.
6. Prepare for continuous suction prn.
7. After **Rocuronium**, wait 60 seconds before proceeding.
8. Visualize the glottic opening via direct or video laryngoscopy using progressive visualization. Bougie use encouraged with direct laryngoscopy.
9. If glottic visualization sub-optimal then do the following to improve view:
   a. Remove cricoid pressure if applied. Perform extra laryngeal manipulation (ELM).
   b. Change operator position or height of the stretcher.
   c. Change patient position or elevate head off the bed with intubator's right hand.
   d. Use additional suction where secretions or blood block the view
   e. The laryngoscope can be inserted deeply and slowly withdrawn until identifiable anatomy is seen.
   f. Consider changing laryngoscope blade size or type
   g. Consider changing operator
   h. Glidescope Go
   i. Bougie preloaded into ETT.
10. ✱For peri-intubation hypotension: **Epinephrine** 10 mcg IV/IO push every 1-5 minutes
11. ✱Treat bradycardia per protocol with **Atropine** 1 mg IV. Temporarily halt intubation as needed, ventilate with BVM and 100% O2.

B. If intubation repeatedly unsuccessful:
   1. ◈*Insert SGA and ventilate.
   2. ✱Perform cricothyroidotomy if unable to oxygenate or ventilate patient, or no other means of airway management appears possible (severe facial trauma, blast, burns, angioedema, etc). Needle jet if patient < 12.

→

Continued:

C. Upon successful intubation, confirm ET tube placement by CAPNOGRAPHY and secure. Ventilate with BVM and 100% O2, maintain ETCO2 35-45mm/Hg. If no ETCO2 reading or deteriorating waveform, check the clinical status of the patient (i.e. pulses, rhythm on monitor, etc.), then verify tube placement by repeat laryngoscopy. If any doubt exists that the tube is in the trachea, pull it and manage airway as above.
D. Post-intubation
   1. Document a repeat set of vital signs as soon as tube is confirmed and secured.
   2. ✱**Ketamine** 1 mg/kg IV/IO max 100 mg q 10 minutes **OR** **Fentanyl** 25-50 mcg(peds 2 mcg/kg) IV/IO and **Midazolam** 0.05-0.1 mg/kg max 10 mg IV/IO/IM q 10 minutes
E. Ventilation Rates:
   1. Once intubated, O2 via Bag-valve-ET at 10-12 per minute (assist peds at normal ventilation rates per age). Maintain SPO2 between 94% - 98%. For the patient with closed head injury maintain BP of 100 systolic (Map 65) and ETCO2 35 mm/Hg.

DELAYED SEQUENCE INTUBATION (DSI):

A. If SpO2 is < 94% after pre-oxygenation (agitated hypoxic/hypercarbic patient or one that will not tolerate conventional pre-oxygenation attempts):
   1. ✱Ketamine 2 mg/kg max 200 mg IV/IO single dose slow push over 60 seconds.
   2. PATIENT BREATHING ADEQUATELY: Apply a BVM with 2 person mask seal at maximum flow rate, ventilate or use CPAP to achieve target SPO2 > 94% for three minutes prior to RSI.
   3. PATIENT NOT BREATHING ADEQUATELY: VENTILATE with BVM O2 at maximum flow rate with OPA/NPA and 2 person mask seal to achieve SPO2 > 94%. May insert SGA if adequate ventilations are not achieved.
   4. Upon reaching SpO2 > 94% begin three-minute countdown to allow for complete denitrogenation: proceed to RSI sequence above beginning with paralytic administration.

   IF UNABLE TO ACHIEVE SpO2 > 94%; Consider use of SGA with or without paralytic.
B. If a difficult airway is anticipated eg: airway burns, stridor, angioedema, anaphylaxis, mass, tracheal deviation, poor Mallampati class, or anatomy indicative of difficult airway:
   1. ✱Ketamine 2 mg/kg max 200 mg IV/IO single dose slow push over 60 seconds.
   2. Pre-Oxygenation: Apply a NRB at maximum flow rate in addition to a nasal cannula at 10L/min for at least 3 minutes prior to intubation.
   3. Turn nasal cannula up to 15 LPM
   4. Insert laryngoscope/Glidescope for a “quick look”, suction as needed and visualize landmarks and vocal cords. If visualization is successful, proceed with ✱Rocuronium 1 mg/kg IV/IO and intubation.
   5. If visualization is unsuccessful, consider BLS airway maneuvers, supraglottic airway, or cricothyrotomy per Airway Management Overview Procedure

CARDIAC ARREST INTUBATION:

A. ✱If the patient is in cardiac arrest, they should be intubated with the preparation above, EXCEPT the 3 minutes of pre-oxygenation and induction/paralytic medications are not required. (Do not interrupt ACLS).
B. Minimum equipment required for this procedure is:
    1. Apneic oxygenation with nasal cannula in place at maximum flow rate
    2. Direct or video laryngoscope (tested)
    3. Suction
    4. Bougie
    5. Endotracheal tube and size smaller
    6. Syringe for cuff
    7. Tube holder
    8. BVM
    9. ETCO2
    10. SGA
C. ✱If the patient has trismus, a paralytic may be administered as above.
    1. Should the patient achieve ROSC later, give sedation and/or analgesic immediately per Post-Intubation guideline.

LONGTERM PARALYTIC

A. Need for longterm paralytic defined:
    1. Unable to ventilate patient due to chest rigidity or patient's asynchronous breathing.
    2. Patient successfully intubated (confirmed by capnography), not responding to maximum sedation/pain medication and risk of losing patent airway exists.
B. ✱**Ketamine** 1 mg/kg max of 100 mg IV/IO q 10 minutes **OR** **Fentanyl** 25 mcg IV/IO and **Midazolam** 0.05-0.1 mg/kg max 10mg IV/IO/IM q 10 minutes
C. ✱**Rocuronium** 1 mg/kg IV (Duration of Action 20-30 minutes)
   ALTERNATIVE: **Vecuronium** 0.1 mg/kg IV (Duration of Action 25-40 minutes)
D. Follow above recommendations for Ventilation Rates. Notify receiving physician of long acting paralytic use.

NOTES & PRECAUTIONS:

A. If unable to establish and/or maintain an adequate airway and ventilations, transport ANY patient (including trauma) to the nearest hospital to obtain definitive airway control.
B. Continuously monitor vital signs, cardiac rhythm, perfusion, and ease of bagging.
C. Be aware that a small pneumothorax can grow quickly once patient is ventilated with positive pressure
D. Recheck and document ET tube placement after every move or change in vital signs.
E. Paralytics do not affect the level of consciousness and should always be used with a sedative and/or pain control.
F. ✱**Pediatric Patients** < 5 y/o will receive **Atropine** 0.02 mg/kg IV/IO. Minimum dose 0.1 mg, maximum 0.5 mg

G. Documentation
    1. Visualization of the cords (if applicable).
    2. Number of attempts.
    3. 5-point check and equal chest expansion.
    4. ETCO2 numeric value and capnography.
    5. Reconfirmation of placement via capnography after patient movement.
    6. GCS and neurologic exam prior to RSI.

PROCEDURE – Advanced Airway Emergency RSI Checklist

Airway Plan Verbalized

Optimal Hemodynamics

Optimal position: Off ground, Occiput elevated, Head up, Shade

Oxygen Source – 2 including 1 for apneic oxygenation

Pre-oxygenation: BVM inflating, PEEP, Nasal Cannula

Suction Available and Functioning. Consider 2nd Suction Unit

ECG, Serial BP (NIBP cycling), SpO2, waveform ETCO2 Recorded

IV Patent

Spare Cannula

Drugs and doses verbalized

C-spine Stabilized PRN

SGA Available

Laryngoscope/Glidescope Go

Tube size and Spare Tube

Syringe

Bougie

ETCO2 Circuit Functional and Ready

ETT Securing Device

Surgical Cricothyrotomy Materials Available

PROCEDURE – Automated External Defibrillator (AED)

TREATMENT:

A. Establish unresponsiveness
B. Identify absence of pulse and respirations.
C. Continuous CPR for 2 minutes if down time estimated at > 5 minutes; if < 5 minutes or if bystander CPR, do CPR until AED/Monitor applied.
    1. Apply EKG Leads/Defib Pads.
    2. Analyze and follow AED instructions or Paramedic interpretation (Defibrillate prn).
    3. Continuous CPR for 2 minutes; rhythm analysis:
        a. ◈*SGA, 100% O2. Capnography throughout.
        b. ◈*IV TKO with LR.
D. Use a weight based system for treatment of pediatric cardiac arrest, i.e. Broselow Tape

DEFIBRILLATION SEQUENCE:

A. If shock advised, defibrillate.
    1. Continuous CPR for 2 minutes then Analyze.
    2. Defibrillate as prompted.
B. Continuous CPR for 2 minutes then Analyze
    1. Defibrillate as prompted.
C. Repeat CPR, analyze, defibrillate sequence until “No Shock Advised” or arrival of ALS personnel.

ROSC:

A. If the patient regains pulse or pulse present during the above sequence:
    1. Assess vital signs.
    2. Support airway and breathing, follow ROSC protocol.

OTHER CONSIDERATIONS:

A. “No Shock Advised” and no pulse present
    1. Resume CPR and Re-Analyze after 2 minutes.
B. If patient not responding to treatment for cardiac arrest, consider Death in the Field.

PROCEDURE – Cardiopulmonary Resuscitation (CPR)

CONTINUOUS CPR DEFINED:

A. 110 compressions per minute for two minute cycles.
   1. Minimize interruptions off chest for analysis and changing rescuers.
   2. Ensure adequate depth of compressions and full chest recoil.
   3. Interpose ventilations, do not interrupt compressions.
   4. Ensure EKG MONITOR in "paddles" mode for proper CPR process recording.

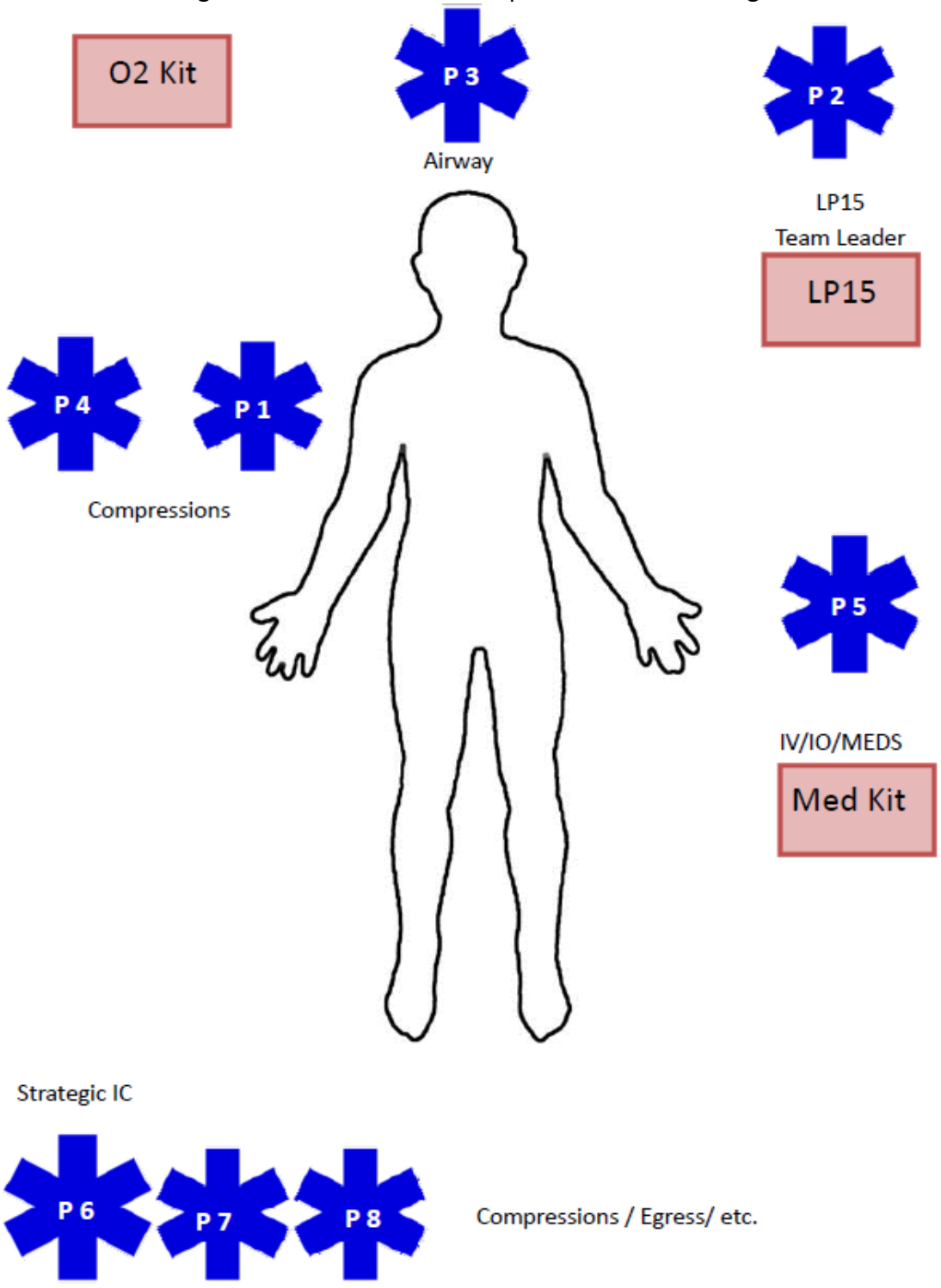
PIT CREW CPR MODEL (Pending enough personnel):

A. Each position is assigned tasks that are listed by priority. If arrival of personnel delayed, the tasks will be accomplished by fewer personnel but in the same order.
   1. Position 1 (Compressions):
      a. Determine cardiac arrest, Expose chest, Begin compressions
      b. Announce compression 180, 190, and 200
   2. Position 2 (Monitor/Defibrillator):
      a. Turn on the Monitor/Defibrillator to time stamp the beginning of CPR.
      b. Start metronome; Apply defibrillation patches.
      c. Monitor compression quality, speed and time intervals
      d. Charge the monitor at compression 190
      e. Interpret rhythm and shock if indicated after compression 200. Dump charge if shock NOT indicated.
      f. Alternate doing compressions if needed until additional resources arrive
   3. Position 3 (Airway):
      a. Place a nasal cannula at 10LPM
      b. Set Up BVM and begin ventilation after the 1st defibrillation
         * ◈*Insert a SGA or ✱Intubate after the 1st or 2nd defibrillation
         * Provide ventilations on the upstroke
      c. Attach ETCO2 monitoring
      d. Provide suctioning as needed
   4. Position 4 (Compressions):
      a. Alternate compressors every 200 compressions (2 minute cycles).
   5. Position 5 (IV/IO/Meds):
      a. ◈*Establish IV or IO access
      b. Administer any required medications
   6. Position 6 (Strategic IC):
      a. Safety
      b. Liaison with family and/or other agencies
      c. Develop egress plan

→

Continued:

7. Position 7 – (Back up):
   a. Assigned as needed
8. Position 8 – (Backup):
   a. Assigned as needed. Additional personnel will be assigned as needed.



PROCEDURE – Continuous Positive Airway Pressure (CPAP)

INDICATIONS:

A. Congestive heart failure/pulmonary edema
B. Noncardiogenic pulmonary edema of any cause
C. Respiratory insufficiency, any; e.g., asthma/COPD/pneumonia/CO poisoning.
D. Submersion injury with hypoxia, shortness of breath, respiratory insufficiency.
E. May use in Peds if able to cooperate and tolerate the procedure

CONTRAINDICATIONS:

A. Absolute - respiratory arrest, agonal respirations, unconscious, pneumothorax, facial anomalies (e.g., burns, fractures, etc.), facial trauma
B. Relative - decreased LOC, claustrophobia, patient intolerance to equipment, tracheostomy (If lacking the adaptor), peds unable to tolerate procedure

HAZARDS:

A. Gastric distention, corneal drying, hypotension, pneumothorax
B. COPD and asthmatic patients do not respond predictably to CPAP;
    1. Higher risk of pneumothorax – frequently assess lung sounds.
    2. Increased intra-thoracic pressure with resultant hypotension – reduce ventilation rate/volume. In asthma should not exceed 5 cmH2O of pressure

PROCEDURE:

A. Place face mask and apply O2 device as per manufacturer recommendation.
B. Pressure should be set at 5 cm/H2O and adjusted prn. Do not exceed 10 cmH2O.
C. Reassess patient every 5-10 minutes.
D. ✱Consider mild sedation prn if patient has difficulty tolerating device.
    1. **Midazolam** 2 mg (preferred in the elderly or hx of CHF/CAD).
    OR
    2. **Ketamine** 0.3 mg/kg Max 25 mg.
E. If unable to maintain SPO2 > 90%, administer PPV via BVM.
F. Remove face mask for suctioning and/or nitroglycerine administration.
G. May use with med-neb attachment for bronchodilator administration

✱PROCEDURE – Gastric Decompression

INDICATIONS OG/NG TUBE:

A. Inability to adequately ventilate due to gastric distention, ETT or SGA in place.
B. Contraindications
    1. Head/face injured trauma patient – orogastric decompression only
    2. Anatomic anomalies preventing correct placement

PROCEDURE:

A. Determine correct size and depth of tube.
    1. Size
        a. Pediatric size consult length-based reference.
        d. Adolescents/Adults 14-18 Fr
    2. Depth
        a. Nasogastric: tip of nose, over ear to xiphoid process
        b. Orogastric: lip, around angle of mandible to xiphoid process
B. Insert tube
    1. Nasogastric:
        a. Pass lubricated tube along nasal floor into stomach.
        b. Instill air into tube w/ 20cc syringe and auscultate epigastrium.
        c. Secure tube.
    2. Orogastric:
        a. Visualize posterior pharynx, pass lubricated tube over tongue into stomach.
        b. Instill air into tube w/ 20 cc syringe and auscultate epigastrium.
        c. Secure tube.
C. Aspirate/suction stomach contents until patient can be adequately ventilated.

PRECAUTIONS/COMPLICATIONS

A. In head trauma patient where gastric decompression would benefit ventilation, gastric tube placement will be through the mouth.
B. Complications associated with NG tube placement
    1. Epistaxis
    2. Intracranial placement
C. Complications associated with NG/OG tube placement
    1. Bronchial placement
    2. Pharyngeal perforation, esophageal obstruction or rupture
    3. Bronchial or alveolar perforation
    4. Pneumothorax
    5. Gastric or duodenal rupture

◈*✚✱PROCEDURE – Intraosseous (IO) Access

DEFINITION:

A. IO cannulation is an alternative for establishing vascular access in critical adult and pediatric patients when peripheral IV access is difficult or time sensitive.

INDICATIONS:

A. If a peripheral IV cannot be established after two attempts or within 60–90 seconds of elapsed time and in:
   1. Cardiac arrest.
   2. Hemodynamic instability.
   3. Imminent respiratory failure.
   4. Status epilepticus > 10 minutes, and refractory to IM anticonvulsants.
   5. Toxic conditions requiring immediate vascular access for antidote.
B. IO placement may be considered prior to peripheral IV attempts in cases of cardiac arrest and critical trauma to prevent delay of life-saving fluids or drugs.

EZ-IO™ PROCEDURE:

A. Determine patient's weight.
B. Assemble all necessary equipment
   1. The 15 mm Red needle can be utilized for patients who weigh 3-39 kg.
   2. The 25 mm Blue needle can be utilized for all patients >3 kg
   2. The 45 mm Yellow needle can be used for adult insertions (larger individuals) where the Blue needle is not adequate. Should be used for all humeral IOs.
   3. EZ-Stabilizer should be used to secure the needle.
C. Site Selection
   1. Proximal humerus is preferred in adult patients to achieve the following:
      a. Increased flow rates
      b. Decreased pain
      c. Closer access to central circulation during cardiac arrest and for resuscitation.
   2. Proximal Tibia
   3. Distal Tibia
D. Site Landmarks
   1. Proximal humerus (contraindicated in children <16 years)
      a. Ensure that the patient's hand is resting on the abdomen and that the elbow is adducted (close to the body).
      b. Insertion site is located directly on the most prominent aspect of the greater tubercle. Slide thumb up the anterior shaft of the humerus until you feel the greater tubercle, this is the surgical neck. Approximately 1 cm (depending on patient anatomy) above the surgical neck is the insertion site.

2. Proximal Tibia
    a. Palpate the landmarks at the proximal tibia (patella and tibial tuberosity).
    b. Insertion site should be approximately one finger width (2 cm) medial to the tibial tuberosity, along the flat aspect of the tibia.
3. Distal Tibia
    a. Two finger widths proximal to the medial malleolus along the tibial midline.

E. Needle Insertion
1. Prep the surface with antimicrobial agent and wipe dry with a sterile gauze pad.
2. Stabilize patient's extremity and begin insertion from a 90-degree angle to the insertion site. Push the needle set through the skin until the tip touches the bone.
3. With the needle tip against the bone, assure adequate needle length by ensuring at least one black line (5 mm) is visible outside the skin.
4. Gently advance the needle set into position–do not force. Stop when you feel the "pop" or "give" on smaller patients.
5. When needle is in proper position, remove stylet, place the EZ-Stabilizer on the hub, but do not secure EZ-Stabilizer yet.
6. Connect tubing, primed with saline, to IO hub.
7. Rapid bolus or "power" flush with approximately 10 ml normal saline (administer
    1. ✱If the procedure is performed on a conscious patient, immediately following placement of the IO needle, administer **Lidocaine** 40 mg over 2 minutes. Wait approximately 30–60 seconds before flushing with normal saline.
    2. If fluids do not flow freely, flush IO site with an additional 2-3 cc normal saline.
8. Confirm the catheter position
    a. Catheter is stable at a 90-degree angle to the bone, able to aspirate blood, and fluids flow without evidence of extravasation.
    b. If insertion fails, leave the needle in place and clamp the EZ-Connect; do not attempt second insertion on same extremity.
9. Secure the EZ-Stabilizer when patency is confirmed.
10. Consider additional bolus of saline if flow rates slower than expected.
11. Utilize a blood pressure cuff or pressure bag around the IV bag to help infuse fluids.
12. Monitor for patency frequently.

PEDIATRIC EZ-IO™ PROCEDURE (patients weighing 3-39 kg)

A. Assemble all equipment
1. The 15 mm Pink needle should be used for patients who weigh < 3 kg (approximately 6 lb.). Primarily used for newborns and neonates.
2. The 25 mm Blue needle can be utilized for pediatric patients who weigh > 3 kg when the 15 mm Pink is deemed inadequate.
3. EZ-Stabilizer should be used to secure the needle.

B. Site Selection (Patients weighing 3-39 kg)
1. Palpate the landmarks at the proximal tibia (patella and tibial tuberosity).
2. Insertion site should be one finger width below and one finger width medial of the tibial tuberosity.

3. If the tibial tuberosity cannot be identified on the child, then the insertion site may be two finger widths below the patella, then medial along the flat aspect of the tibia.

C. Needle Insertion
   1. Prep the surface with antimicrobial agent and wipe dry with a sterile gauze pad.
   2. Stabilize patient's leg and begin insertion from a 90-degree angle to the plane of the tibial plateau. Push the needle set through the skin until the tip touches the bone.
   3. With the needle tip against the bone, assure adequate needle length by ensuring at least one black line (5 mm) is visible outside the skin.
   4. Gently advance the needle into position. Stop when you feel the "pop" or "give".
   5. When needle is in proper position, remove stylet, place the EZ-Stabilizer on the hub, but do not secure EZ-Stabilizer yet.
   6. Connect tubing, primed with saline, to IO hub.
   7. Rapid bolus or "power" flush with approximately 5 ml normal saline.
   8. Confirm the catheter position:
      a. Catheter is stable at a 90-degree angle to the bone, able to aspirate blood, and fluids flow without evidence of extravasation.
      b. If insertion fails, leave the needle in place and clamp the EZ-Connect; do not attempt second insertion on same extremity.
   9. Secure the EZ-Stabilizer when patency is confirmed.
   10. Consider additional bolus of saline if flow rates slower than expected, no more than 2-3 cc normal saline.
   11. Consider a blood pressure cuff or pressure bag to help infuse fluids.
   12. Monitor for patency frequently.

D. Pain Management
   1. ✱If the procedure is performed on a conscious patient, immediately following placement of the IO needle, administer **Lidocaine** 0.5 mg/kg slowly over 2 minutes, not to exceed adult dose of 40 mg. Wait approximately 30–60 seconds before flushing with normal saline.
   2. If fluids do not flow freely, flush IO site with an additional 2-3 cc normal saline.

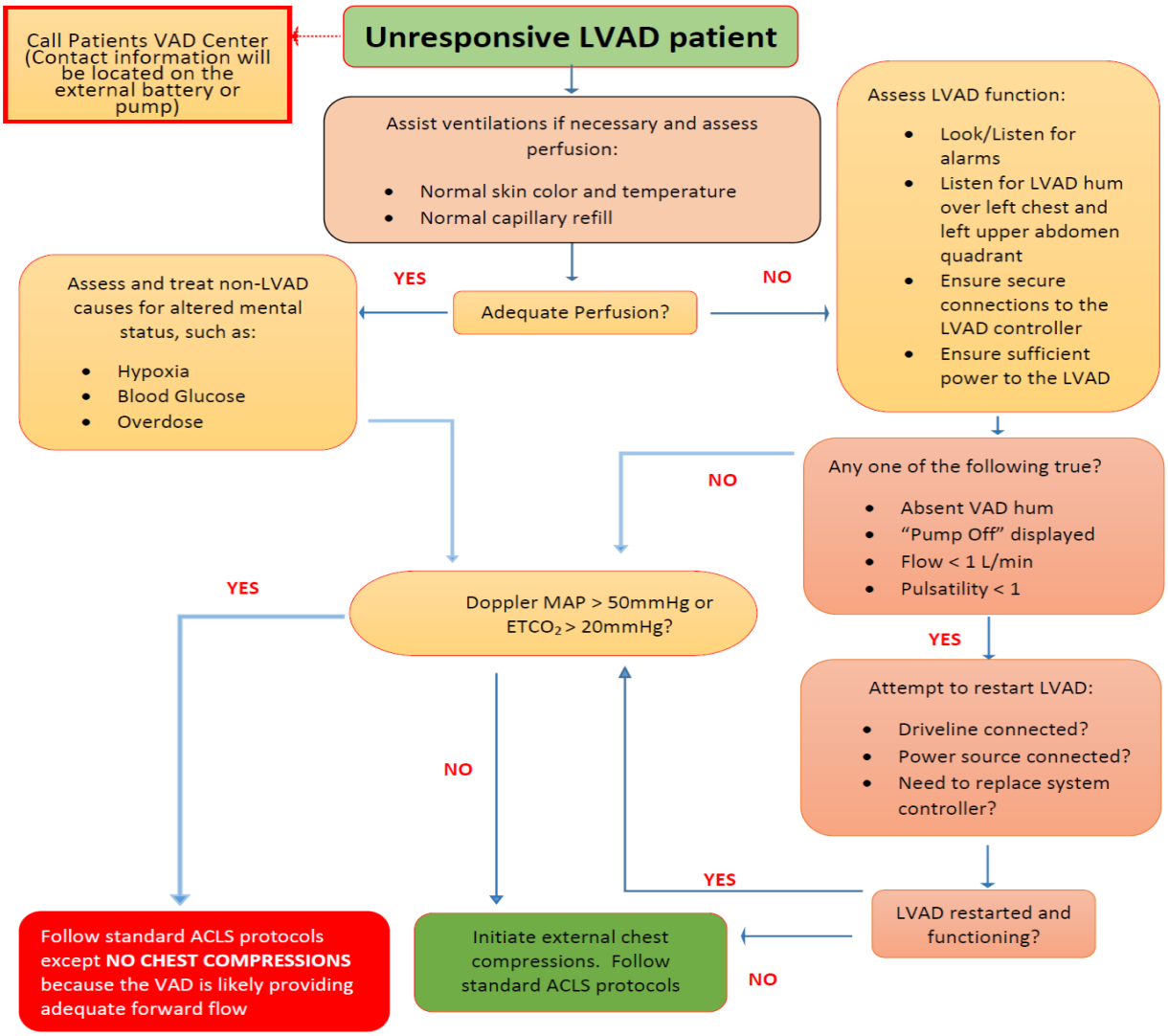
CONTRAINDICATIONS:

A. Suspected fracture of the bone selected for IO insertion.
B. Prior prosthetic joint replacement involving bone selected for IO insertion.
C. Previous significant orthopedic procedures (IO within 48 hours, surgery, etc.).
D. Infection at the site of insertion.
E. Excessive tissue at insertion site with the absence of landmarks.
F. Tibial placement in patients with suspected pelvic fractures.

NOTES & PRECAUTIONS:

A. Osteomyelitis, growth plate injury (in pediatric patients), and extravasation of fluid with compression of popliteal vessels or the tibial nerve may occur.
B. Airway and breathing should be established first in accordance with other protocols.
C. Do not perform more than one attempt in each tibia.

D. Any ALS medication may be administered IO.PROCEDURE – Left Ventricular Assist Device (LVAD)PROCEDURE – Lucas Chest



Compression Device

INDICATIONS:

The LUCAS device may be used in patients who have suffered cardiac arrest, where manual

CPR would otherwise be used.

CONTRAINDICATIONS:

A. Patients who do not fit within the device.
    1. Too small patient: If LUCAS alerts with 3 fast signals when lowering the SUCTION CUP, and you cannot enter the PAUSE mode or ACTIVE mode.
    2. Too large patient: If you cannot lock the upper part of LUCAS to the back plate without
    3. compressing the patient's chest.
B. LVAD or HVAD patients.

PROTOCOL FOR PLACEMENT:

A. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined.
B. Initiate resuscitative measures:
    1. Manual chest compressions should be initiated immediately while the LUCAS device is being placed on the patient.
    2. Limit interruptions in chest compressions to 10 seconds or less.
    3. Do not delay manual CPR for the LUCAS. Continue manual CPR until the device can be placed.
C. While resuscitative measures are being initiated, the LUCAS device should be removed from its carrying case and placed on the patient in the following manner:
    1. Back Plate Placement
        a. The back plate should be centered on the nipple line and the top of the back plate should be located below the patient's armpits.
        b. If the patient is already on the stretcher, place the back plate underneath the thorax. This can be accomplished by log-rolling the back plate under the patient or raising the torso. Placement should occur during a scheduled discontinuation of compressions (e.g., after two minutes of uninterrupted compressions). This is also the time to apply a posterior therapy pad/electrode.
    2. Position the Compressor
        a. Turn the LUCAS device on (the device will perform a three second self-test).
        b. Remove the LUCAS device from its carrying case using the handles provided on each side.
        c. With the index finger of each hand, pull the trigger to ensure the device is set to engage the back plate. Once this is complete, you may remove your index finger from the trigger loop.
        d. Approach the patient from the side opposite the person performing manual chest compressions.
        e. Attach the claw hook to the back plate on the side of the patient opposite from where compressions are being provided.
        f. Place the LUCAS device across the patient, between the arms of the person who is performing manual CPR.

g. At this point the person performing manual CPR stops and assists attaching the claw hook to the back plate on their side.
h. Pull up once to make sure that the parts are securely attached.

3. Adjust the Height of the Compression Arm
   a. Use two fingers (V pattern) to make sure that the lower edge of the SUCTION CUP is immediately above the end of the sternum. If necessary, move the device by pulling the support legs to adjust the position.
   b. Press the ADJUST MODE BUTTON on the control pad labeled #1 (this will allow you to easily adjust the height of the compression arm).
   c. To adjust the start position of the compression arm, manually push down the SUCTION CUP with two fingers onto the chest (without compressing the patient's chest).
   d. Once the position of the compression arm is satisfactory, push the green PAUSE BUTTON labeled #2 (this will lock the arm in this position), then remove your fingers from the SUCTION CUP.
   e. If the position is incorrect, press the ADJUST MODE BUTTON and repeat the steps.
4. Start Compressions
   a. You will be providing continuous compressions: push ACTIVE (continuous) BUTTON.
5. Patient Adjuncts
   a. Place the LUCAS stabilization strap behind the patient's head and attach the straps to the LUCAS device.
      i. This will prevent the LUCAS from migrating toward the patient's feet.
      ii. Place the patient's arms in the straps provided.

USING THE LUCAS DURING RESUSCITATION:

A. Rhythm Analysis
   1. For rhythm analysis, stop the compressions by pushing the PAUSE BUTTON. The duration of interruption of compressions should be kept as short as possible and should not be > 10 seconds. There is no need to interrupt chest compressions other than to analyze the rhythm.
   2. Once the rhythm is determined to require defibrillation, the continuous ACTIVE BUTTON should be pushed to resume compressions while the defibrillator is charging and then the defibrillator should be discharged.
B. Defibrillation
   1. Defibrillation can and should be performed with the LUCAS device in place and in operation. There is no need to stop LUCAS to deliver a shock.
   2. One may apply the defibrillation electrodes either before or after the LUCAS device has been put in position. A-P position is preferred; consider application of posterior therapy pad/electrode before LUCAS back plate placement.
      a. The defibrillation pads and wires should not be underneath the SUCTION CUP.
      b. If the electrodes are already in an incorrect position when the LUCAS is placed, you must apply new electrodes.

B. Pulse Checks/Return of Spontaneous Circulation (ROSC)
   1. Pulse checks should occur intermittently while compressions are occurring.
   2. If the patient moves or is obviously responsive, pause the LUCAS device and evaluate the patient.
   3. If there is a change in rhythm, but no obvious indication of responsiveness or ROSC, a pulse check while compressions are occurring should be undertaken. If the palpated pulse is asynchronous, consider pausing the LUCAS device. If the pulse remains, reassess the patient. If the pulse disappears, immediately restart the LUCAS device.
   4. A sudden change in EtCO2 may indicate ROSC.

C. Disruption or Malfunction of LUCAS Device
   1. If disruption or malfunction of the LUCAS device occurs, immediately revert to manual CPR.

DEVICE MANAGEMENT (POWER SUPPLY, BATTERY OPERATION):

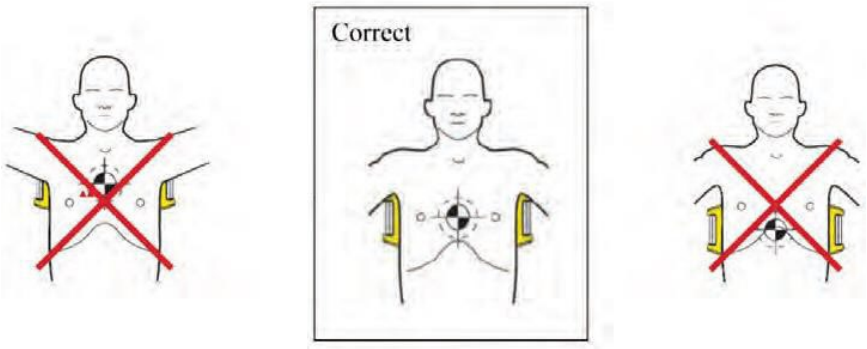
A. Changing the Battery
   1. Push PAUSE to temporarily stop the compressions.
   2. Pull the battery out and then upward to remove it.
   3 Install a fully-charged LUCAS battery. Put it in from above.
   4. Wait until the green PAUSE mode LED illuminates.
   5. Push ACTIVE (continuous) or ACTIVE (30:2) to start chest compressions again. The LUCAS Smart Restart feature remembers the settings and start position for 60 seconds.

B. Other Battery Operations
   1. When fully charged, the Lithium Polymer battery should allow 45 minutes of uninterrupted operation.
   2. There is an extra battery in the LUCAS device carrying case.
   3. The battery is automatically charged when the device is plugged into a wall outlet and not in operation. The device should be stored with the LUCAS device plug installed (make sure that the cord is always with the LUCAS device).
   4. When the orange Battery LED shows an intermittent light, replace the battery or connect to a wall outlet.
   5. Ambulance: LUCAS is connected while stored in the ambulance (always keep a battery installed for the LUCAS device to remain operational).

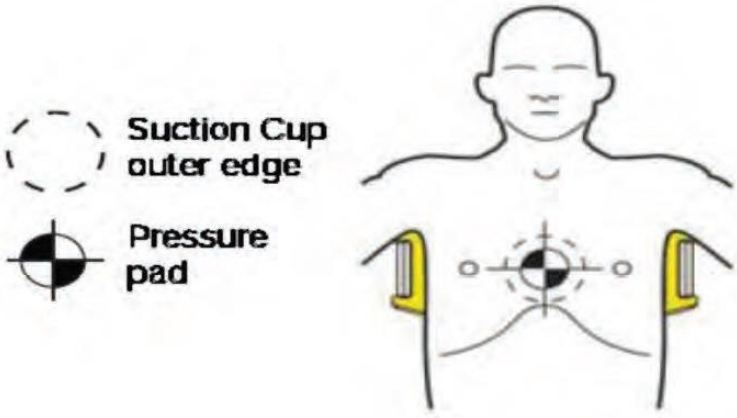
C. Care of the LUCAS Device After Use
   1. Remove the SUCTION CUP and the stabilization strap (if used, remove the patient straps).
   2. Clean all surfaces and straps with a cloth and warm water with an appropriate cleaning agent.
   3. Let the device and parts dry.
   4. Replace the used battery with a fully-charged battery.
   5. Remount (or replace) the SUCTION CUP and straps.
   6. Repack the device into the carrying case.
   7. Make sure that the charging cord is plugged into the LUCAS device.

8. The LUCAS device should be charged thoroughly after use.
9. A battery check to assure it is charged should be completed daily.

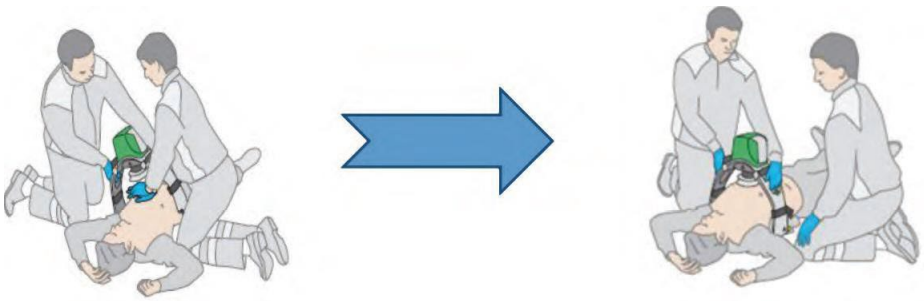
CORRECT BACK PLATE PLACEMENT:



CORRECT PLACEMENT OF SUCTION CUP:



PLACEMENT OF THE LUCAS DEVICE:



PROCEDURE – Orthostatic Vital Signs

INDICATION:

A. Assessment of orthostatic hypotension

MANAGEMENT:

A Baseline VS (HR and BP) should be assessed with the patient in a supine position and all readings for comparison should be measured from the same arm.

B. After the baseline set of VS have been obtained, the patient should be moved to a seated position and maintain that position for two minutes prior to assessing the VS again.

C. After VS are obtained in a seated position, assist the patient to a standing position and maintain that position for two minutes prior to assessing VS again.

NOTES & PRECAUTIONS:

A. A positive finding would include a decrease in systolic BP of 10 mmHg and/or an increase in heart rate of 10 BPM with any position change.

B. If the patient has symptoms of impending syncope/near syncope, the procedure should be discontinued and the patient should be considered to have positive orthostatic changes.

C. Do not leave the patient unattended while assessing orthostatic vital signs and be prepared to assist the patient to a sitting or supine position.

PROCEDURE – Pelvic Immobilization

PURPOSE:
The initial reduction of an unstable pelvic fracture (to lessen ongoing internal bleeding and to ease the pain by splinting the fracture) using either a specifically applied sheet or another approved device.

INDICATIONS:

A. To be applied in all trauma patients who have appropriate mechanism(s) of injury and who present with pelvic instability.
B. Consider pelvic wrap in trauma patients who have appropriate mechanism(s) of injury and who are in shock.

PELVIC SLING PROCEDURE (SAM Sling):

A. Remove objects from patient's pocket or pelvic area. Place SAM Pelvic Sling gray side up beneath patient at level of trochanters (hips).
B. Place BLACK STRAP through buckle and pull completely through.
C. Hold ORANGE STRAP and pull BLACK STRAP in opposite direction until you hear and feel the buckle click. Maintain tension and immediately press BLACK STRAP onto surface of SAM Pelvic Sling to secure.

PELVIC WRAP PROCEDURE:

A. Fold the sheet smoothly lengthwise to about 9 inches wide (do not roll) and apply underneath the pelvis, centered on the greater trochanters. Assure the patients pockets are empty to avoid placing pressure on the objects into the patient.
B. Tighten the sheet around the pelvis and adjust the tension to try to return the pelvis to normal anatomical position.
C. Secure using a knot or clamps if available.

NOTES & PRECAUTIONS:

A. Always re-check the position of the sheet (in terms of up and down). You should still be able to feel the anterior superior iliac spines after placement. If not, the sheet may be too high on the pelvis and must be repositioned.
B. If the pelvis is unstable on initial exam, do not repeat the exam.
C. Blood loss in a pelvic fracture can be significant. Monitor closely and treat per Shock Protocol.
D. Consider placing prior to extrication from a vehicle if feasible.
E. **The pelvic sling/wrap is contraindicated for suspected isolated hip fractures, i.e., ground level falls.**

PROCEDURE – Positive End Expiratory Pressure (PEEP)

INDICATION:

A. Hypoxia, either prior to or post intubation, despite appropriate bag ventilation with 100% oxygen.

MANAGEMENT:

A. If it is not already applied, apply PEEP to bag device.
B. Dial PEEP valve to 5 cm H2O and bag per usual.
C. Increase PEEP by 5 cm H2O every 3-5 minutes until hypoxia resolves (oxygen saturation > 95%).
D. Maximum Peep is 15 cm H2O
E. Monitor blood pressure during each change in PEEP pressure. If blood pressure decreases after a change in PEEP, return to previous setting.
F. Maintain MAP > 65

NOTES & PRECAUTIONS:

A. Increasing the bagging rate will not necessarily improve oxygenation but can cause hyperventilation, which can result in increased intrathoracic pressure and hypotension.
B. PEEP valve may come out of the package set to five or zero, be aware of valve settings.
C. Maximum PEEP in pediatrics is 5 cm H20.
D. PEEP increases the risk of barotrauma, e.g. pneumothorax.

CONTRAINDICATIONS:

A. During resuscitation of cardiac arrest (okay after sustained ROSC with stable vitals)
B. Relative: hypotension or shock state. May still choose to apply PEEP when preparing to RSI a hypoxic/hypotensive patient.

✱PROCEDURE – Pleural Decompression

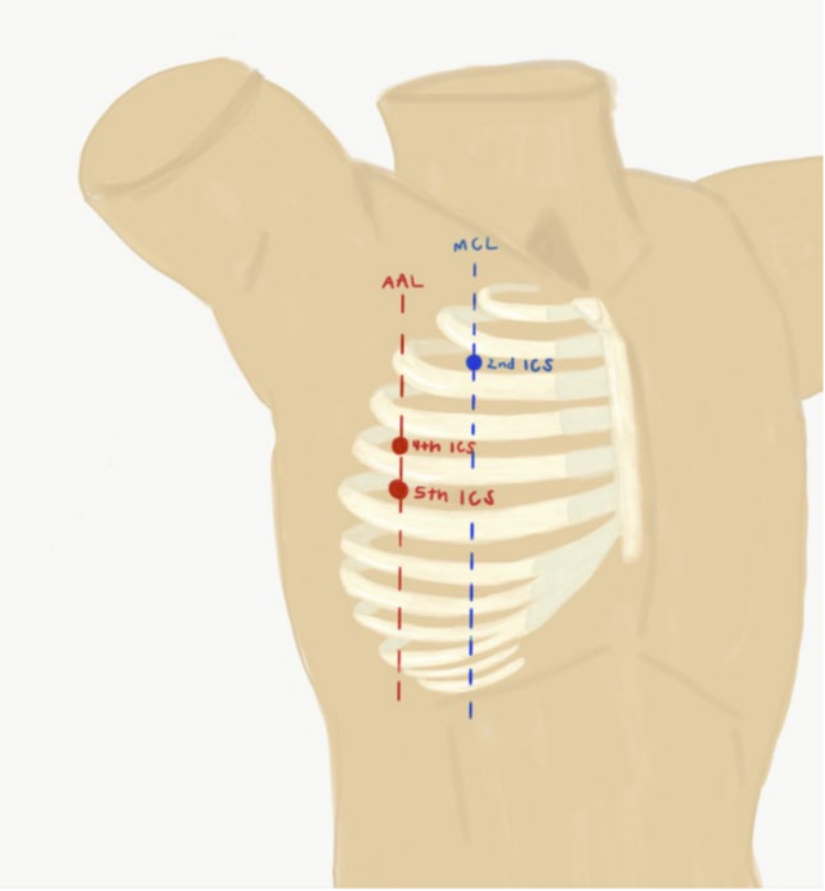
INDICATION:

A. Rapidly deteriorating patient with history of:
   1. Chest trauma, COPD, Asthma with any of the following:
      a. Decreased or absent breath sounds.
      b. Distended neck veins.
      c. Asymmetrical movement on inspiration.
      d. Hyper-expanded chest on affected side.
      e. Hyperresonance to percussion.
      f. Increased resistance to positive pressure ventilation, especially if intubated.
      g. Any of the above and signs of shock.

MANAGEMENT:

A 2nd intercostal space, midclavicular line in average size adults and pediatrics.
OR 4th or 5th Intercostal space, just above midaxillary line (anterior axillary line) if patient large or heavily muscled.

B. Insert large bore, at least 4 inch OTN catheter over superior rib margin.
C. This procedure to be used only in life-threatening situations.
D. Complications include local hematomas, cellulitis, cardiac laceration, pneumothorax.



PROCEDURE – Restraint of Combative Patients

PURPOSE:

A. Should only be used if the patient is a danger to self or responders.

PHYSICAL RESTRAINT:

A. Use the minimum level of restraint required to ensure patient care and safe transport. Call for law enforcement as necessary. Do not endanger yourself or your crew.
B. Avoid placing restraints that preclude evaluation of the patient's medical status.
C. Physical Restraint Procedure:
    1. Place patient face up on LBB or gurney, NOT PRONE. Monitor respiratory status.
    2. Secure ALL extremities (ankles then wrists/arms) to LBB or gurney with soft restraints. NO Handcuffs/Chains unless police in attendance.
    3. May use C-spine precautions to control violent head or body movements.
    4. Secure LBB onto gurney using additional straps if necessary.
    5. ALWAYS evaluate respiratory and cardiac status. Monitor SpO2 if possible.
    6. DO NOT tighten chest straps to the point that they restrict breathing.

SEDATION:

A. Evaluate the personnel needed to safely restrain the patient.
B. Treat medical causes of combativeness.
C. ✱If physical restraint is harming the patient or patient care is being delayed, consider chemical restraint:
    1. **Droperidol** 2.5-5 mg IV/IO/IM.
    2. **Midazolam** 0.05-0.1 mg/kg IV/IO/IM max of 10 mg single dose.
D. ✱ If 10 minutes after administration of the maximum dose of Droperidol or Midazolam, and the patient remains combative, administer a different sedative medication as described above.
E. Record and monitor vitals and EKG after administration every 5 minutes.
F. Treat EPS with ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ✚✱ **Diphenhydramine** 1 mg/kg IV/IO max 50 mg

EXCITED DELIRIUM:

A. ✱**Droperidol** 2.5-5 mg IV/IO/IM, consider **Midazolam** 0.05-0.1 mg/kg IV/IO/IM max of 10 mg single dose.

PEDIATRIC PATIENTS:

A. Follow above guidelines for management of combative patient.
C. ✱**Midazolam** 0.1 mg/kg IV/IO/IM max 5 mg single dose.
D. ◈**Diphenhydramine** 1 mg/kg PO max 50 mg. ◈* **Diphenhydramine** 1 mg/kg IM max 50 mg. ✚✱ **Diphenhydramine** 1 mg/kg IV/IO max 50 mg

PROCEDURE – Spinal Immobilization Algorithm

Patients may have all spinal immobilization omitted if ALL of the following conditions apply:

1. Normal level of consciousness (GCS 15), sober, cooperative, able to communicate effectively.
2. No spine tenderness or anatomic abnormality.
3. No neurologic findings or complaints.
4. No evidence of distracting injury, such as fractures, major burns, crush injuries, severe pain.
5. Penetrating injuries to the head, neck, thorax without neurologic deficit.

If all the above criteria are met have patient move their neck 45 degrees to either side of midline and if still no pain, no immobilization is indicated.

Appropriate patients to be immobilized to vacuum splint or long back board include:

1. Altered mental status from blunt trauma
2. Spinal pain or tenderness
3. Neurological complaint (numbness, tingling, motor weakness)
4. Anatomic deformity of the spine
5. High energy MOI
6. Drug or alcohol intoxication
7. Inability to communicate
8. Distracting injury

Spinal precautions can be maintained by application of a rigid cervical collar and securing the patient firmly to the cot while maintaining inline stabilization for those patients who:

1. Are ambulatory at the scene
2. Must be transported for a prolonged period of time
3. Long Back Board is not otherwise indicated

Long Back Boards and scoop stretchers can be used to extricate patients not requiring full spinal immobilization. Once extricated, patients should be taken off the Long Back Board or scoop stretcher and be placed supine and midline on the cot mattress with a rigid cervical collar in place.

Transfer the patient to the ER bed with use of a transfer tarp or slider board while keeping the patient supine and midline.

The vacuum splint is the preferred device to immobilize most patients. If the patient is to be transferred to an Air Ambulance, a long back board is preferred because of space restraints in the helicopter.

Perform a thorough neurological exam before and after any immobilization procedures. Never force an immobilization device in place or restrain a patient for immobilization. Consider psychological support, motion restriction only, sedation and/or chemical restraint PRN. Monitor airway patency and consider antiemetic for nausea and analgesics for pain.

Patients have the right to refuse aspects of treatment including spinal immobilization. If a patient refuses spinal immobilization after being informed of possible paralysis, do not immobilize them and document the patient's refusal in your MIR.

✱PROCEDURE – Surgical Airway

SEVERE FACIAL TRAUMA AND/OR UNABLE TO VENTILATE AN ADULT:

A. ✱Cricothyroidotomy
   1. Life-threatening upper airway obstructions where other measures to establish an airway and ventilation have failed and endotracheal intubation is not feasible.
   2. Management:
      a. Scalpel and Shiley/Cut down ETT Technique:
         i. Identify cricothyroid membrane with non-dominant hand, incise skin with a vertical incision.
         ii. Make a small (1 cm.) horizontal incision through the cricothyroid membrane, insert gloved little finger or bougie into incision to dilate incision; insert bougie into trachea.
         iii. Place appropriately sized Trach Tube over bougie into trachea.
         iv. Confirm tube placement as per advanced airway protocol.
         v. Maintain normal ventilation rates with BVM.
   3. This procedure to be used only in life-threatening situations.
   4. Complications include hemorrhage, false passage, etc.

   NOT TO BE USED IN PEDIATRIC PATIENT!

SEVERE FACIAL TRAUMA AND/OR UNABLE TO ORALLY INTUBATE IN A CHILD <12 YRS:

A. ✱Needle Jet Cricothyroidotomy
   1. Identify cricothyroid membrane, direct #10-14 gauge over the needle catheter caudally into the trachea.
   2. When the needle is through the membrane, stop and aspirate for air to ensure tracheal entry.
   3. Attach to high-flow O2 source with on/off control device (meconium aspirator with a 3.0 ETT tube connector).
   4. This procedure to be used only in life-threatening situations.
   5. Complications include hemorrhage, false passage, etc. Temporizing airway maneuver. CAN BE USED ONLY IN PEDIATRIC PATIENTS!

PROCEDURE – Taser Dart Removal

DEFINITION:

A. A non-lethal neuromuscular interruption weapon deployed by law enforcement officers designed to create temporary motor skill dysfunction to a violent, combative subject.
    1. A taser works by firing two wire-attached darts that can strike a suspect from up to 15 feet or more. It delivers 50,000 volts of electricity but is not harmful to vital body functions such as heart rhythm, pacemaker function or respirations. However, it should instantaneously incapacitate the person. Each electric discharge can last a total of 5 seconds or more and is controlled by the officer who fires the device.

PROCEDURE:

A. To be done only upon request by law enforcement officers:
    1. Ensure cartridge has been removed from the weapon or wires are cut.
    2. Place one hand on the patient where the probe is embedded and stabilize the skin surrounding the puncture site.
    3. Place your other hand firmly gripping the probe and in one quick, fluid motion pull the probe straight out of the puncture site.
    4. Check probe to make sure entire probe was removed and repeat procedure with remaining probes.
    5. Darts are a sharps hazard – treat as contaminated needle and dispose in sharps container or taser cartridge.
B. CONTRAINDICATIONS to field removal:
    1. Probes embedded in the face, neck, groin or female breast should not be removed in the field. Transport for removal.

SPECIAL CONSIDERATIONS:

A. Transport patients demonstrating any of the following:
    1. Evidence of excited delirium. See Restraint of Combative Patient protocol for treatment.
    2. Persistent, abnormal vital signs.
    3. Abnormal subjective complaints including chest pain, shortness of breath, nausea or headaches.
B. Burn Hazard -- When a TASER is used in the presence of flammable liquid or vapor (e.g., pepper spray), there is a burn hazard. Electrical arcing from imperfect (but effective) dart contact can ignite the propellant.

PROCEDURE – Wound Packing

INDICATIONS:

A. To be used when conventional methods for hemorrhage control have failed, i.e. direct pressure, pressure dressing, tourniquet placement.
    1. May be the most effective method for controlling junctional bleeding (groin, axilla).
    2. Wounds of Head (scalp), Back and Extremities may be gauze-packed.
    3. Neck, Chest, Abdomen and Pelvis should not be gauze-packed.

PROCEDURE:

A. Use direct pressure to stop bleeding:
    1. Gauze roll
    2. Weighted pressure with hand, elbow or knee.
    3. Insert gloved hand into wound to tamponade bleeding source.
B. If not already done, insert gloved hand into wound and apply pressure.
    1. Be cautious in head or extremity injuries if bony fragments possible.
C. Begin packing wound with roll or Z-fold gauze (Combat gauze preferred but not absolute):
    1. Pack gauze around finger and exert force to tightly fill the wound.
    2. Continue packing gauze into wound until wound is filled or bleeding stopped.
D. Apply direct pressure to wound:
    1. Use the remainder of the roll gauze as a bolster to localize pressure to the wound.
E. Bleeding controlled?
    1. Yes: place pressure wrap and continue transport to trauma center.
    2. No: continue packing or apply greater pressure with hand, elbow or knee; continue transport to surgical intervention.

NOTES/PRECAUTIONS:

A. Appropriate PPE is mandatory:
    1. Gloves
    2. Face/Eye protection
    3. Gown
B. If wound continues to bleed or ooze, continue packing and exerting direct pressure.
C. Note the number of gauze rolls used for wound packing and inform the receiving physician.

✱PROCEDURE – Vagal Maneuver (Modified Valsalva Maneuver)

INDICATION:

A. Symptomatic Supraventricular Tachycardia

MANAGEMENT:

A Monitor the patient's ECG throughout the procedure.
B. If tolerable, place the patient is the semi-recumbent position.
C. Give the patient a 10 or 20cc syringe and ask them to try to push the plunger out by blowing into the free end (exerting a strain pressure of approximately 40mmHg); have the patient continue to blow for 15 seconds.
D. After completing the strain pressure for 15 seconds lay the patient supine, then raise the patient's legs to approximately 45 degrees and hold them for 60 seconds.
E. If the rhythm converts to a sinus rhythm, capture the rhythm on the ECG by printing a rhythm strip.
F. If the patient's arrhythmia does not convert, and they are able to tolerate it, repeat the procedure X 1 prior to attempting other therapies.

NOTES & PRECAUTIONS:

D. In general, the potential cardiac complications following a vagal maneuver are simply exaggerations of the expected response from the procedure. Patients may develop prolonged sinus pauses/asystole, atrioventricular block, and/or hypotension, all of which are transient and typically resolve within seconds to minutes. Less commonly, tachyarrhythmias such as atrial fibrillation can be provoked following a vagal maneuver.

✱PROCEDURE – Ventilator

While mechanically ventilating the patient with a BVM prepare the vent:

1. Thread on oxygen tubing to the Gas Input
2. Push the ventilator circuit onto the Gas Output, and thread on/push on flow sensors. (Do Not Attach to Patient Yet).
3. Turn Ventilator On
4. Select Infant, Pediatric, or Adult.
5. Assure ventilator is set to A/CV or SIM/V depending on need.
6. Adjust Vt to patient's required volume and confirm that you want to use additional default settings.
7. Attach ventilator to the inline ETCO2 and on to the ETT.
8. Monitor the patient and adjust setting as appropriate (PaO2 >90%, ETCO2 35-40 mmHg).

If unable to maintain oxygen saturations > 90%, increase PEEP by 5 cmH2O increments to a maximum of 20 cmH2O.

If Alarms are Activated:

1. High Pressure Alarm – verify the correct Vt settings, look for ventilator circuit occlusions, verify lung sounds and correct tube displacement/pneumothorax. If bilateral breath sounds are present, no occlusion is found, and Vt settings are correct, increase the High Pressure by 5 cmH2O increments.

Precaution:

1. PEEP can exacerbate hypotension, use with caution if BP is below 110 mmHg systolic, discontinue if BP is below 90 mmHg systolic
2. Positive Pressure Ventilation can worsen a simple pneumothorax to a tension pneumothorax and cause a pneumothorax in patients with underlying respiratory disease. Assess breath sounds often for patients at high risk.

Special Notes:

1. Default Tidal Volume (Vt) is 500ml for an adult, **Vt should be adjusted 6-8 ml/kg of ideal body weight initially**, may increase Vt to oxygenate/ventilate after rate, PEEP, FiO2 are adjusted without desired effect.
2. Default Ventilatory rate is set at 10 BPM, can be adjusted to maintain Saturations/ETCO2.
3. Minute Volume (Mv) default setting is 2 L.
4. Inspiratory to Expiratory ratio (I:E) default setting is 1:2. (May increase expiratory phase in patients with air trapping)
5. Inspiratory Time (Ti) default setting is 2 seconds.
6. Positive End Expiratory Pressure (PEEP) default setting is 5 cmH20 (may be shut off if patient becomes hypotensive; may be increased if SP02 remains below 90% in reactive airway patients).
7. Trigger Respiration (trig) default setting is 3 LPM (may be shut off if spontaneous respirations are causing hyperventilation, hypocarbia, or road artifact is mistaken for spontaneous respirations).

8. Maximum Pressure (Pmax) default setting is 30 cm/H20. Maximum recommended pressure is 35 cmH20 for adults, 25-30cmH2O for pediatrics.
9. Minimum Pressure (Pmin) default setting is 3 cmH2O.

COPS - County Operating Procedures:

Abandoned Newborns

Introduction:

Washington State Law (RCW 13.34.360) allows for the relinquishment of newborns at hospitals or Fire/EMS stations. Newborns are defined as birth to hospital discharge, typically 72 hours.

Protocol:

1. If EMS is presented with a newborn in extremis:
    a. Provide resuscitation per protocol and transport to the hospital
2. If newborn is presented to EMS and is not in extremis:
    a. Ascertain newborn's medical history as appropriate
    b. Transport to the hospital, notify staff for need of CPS referral.

Circumstance:

1. Maintain confidentiality and provide a nonjudgmental environment.
2. Give the following information to the parent(s) as time allows:
    a. Medical and emotional aftercare
    b. CPS referral

Air Ambulance Transport

Indications:

Air Ambulance is appropriate for the critical medical or trauma patient if transport time can be reduced by at least 20 minutes, versus ground. Consider the following when deciding on air transport:

1. Factors affecting the time reduction include:
   a. ETA of air ambulance
   b. Establishing and transporting to the landing zone
   c. Transfer of patient care to air ambulance personnel
   d. Transport time to hospital by air ambulance
2. In general, incidents occurring within 30 miles of a specialty resource center do not necessitate air transport
3. The use of blood products to treat hemorrhage

Protocol:

1. Air ambulance may be placed on standby by:

   A SCEMS Provider, Physician, Law Enforcement Officer

   a. When an air ambulance is placed on standby, the helicopter is readied but remains available for other requests on a priority basis. If agency requests activation and you have them on standby, they will check with you for activation or stand-down.
   b. An air ambulance should be placed on standby by trained personnel on scene after a patient assessment has been done.
   c. It would be appropriate to place an air ambulance on standby prior to personnel arrival based on the following guidelines:
      i. If the first response unit arrival at the scene will be greater than 10 minutes and the information provided suggests the condition of the patient who will benefit from an air ambulance. Examples of situations:
         1. penetrating trauma
         2. multiple patients
         3. auto-pedestrian
         4. severe burns
         5. major amputation
         6. entrapment
         7. critical medical (CVA, STEMI, Pregnancy)

2. ACTIVATION
   a. The decision to activate air ambulance rests with a responding provider, based on information relayed to the provider by others on scene.
   b. In some cases, air ambulance can be immediately dispatched (activated) to the scene prior to the arrival of a first-in unit, when travel time for the first-in unit will be over 30 minutes and the situation as known supports the type of patient who will benefit from air ambulance.
   c. Where it is known that difficult terrain will be encountered rendering ground access difficult but where the helicopter can get near the patient easily.
   d. Where the reporting party relates some other special circumstance indicating the need for immediate activation.
   e. EMS providers relate the need for activation of air ambulance prior to ground ALS arrival.
   f. The destination hospital shall be indicated to the air ambulance by the SCEMS EMS provider.

3. CANCELLATION

   The Air Ambulance may be canceled by the provider responsible for the patient upon examination of the patient and it is apparent air transport is not necessary. Air ambulances should not be used for cardiac arrests, obvious DOAs, or other situations where the outcome is an obvious fatality.

Crime Scenes

Procedure:

1. Notify appropriate agencies if not already on scene.
    a. Law Enforcement
    b. Medical Examiner
2. Careful documentation of the following
    a. Location and position of patient when originally found
    b. Position of face and any airway obstructions
    c. If in bed, was the patient sleeping alone
    d. Any secretions noted on bedding
    e. Document all evaluation and treatments rendered with emphasis to document all invasive procedures. Be very cognizant of evidence preservation.
        i. Resuscitation take precedence
        ii. Try not to cut through holes
        iii. Do not move weapons unless necessary to safely provide patient care
        iv. Do not clear firearms even if properly trained
        v. Ensure chain of custody of evidence with providers on scene or law enforcement
        vi. Location of patient originally found
        vii. Environment surrounding patient, including clothing, room, witnesses
        viii. Obvious physical abnormalities noted
        ix. Document all skills and procedures performed and do not remove without LE or ME concurrence
        x. Document treatment performed prior to arrival

Death in the Field

Indications

1. Obvious signs of death, which include rigor mortis, decomposition, decapitation, dependent lividity, evisceration of heart or brain and/or incineration.
2. POLST, DNR, or Living Will present and the patient is pulseless and apneic per DNR Order**.**
3. The patient is a pulseless, apneic victim of a multiple casualty incident where resources of the EMS system are required for stabilization of other patients.
4. Victims of trauma should be determined dead and should not be transported when blunt or penetrating trauma and no vital signs (pulseless, apneic, fixed and dilated pupils) are present.
    a. The patient's ECG shows Asystole or PEA and the patient has not responded to approximately 30 minutes ACLS per **Transfer of Care/Time On Scene Operating Protocol**.

Considerations:

1. If any doubt exists about resuscitation of a patient, initiate resuscitation per **Cardiac Arrest Protocol.**
2. Evaluate risk versus benefit of special considerations including hypothermia and trauma
3. Consider the needs of survivors when discontinuing efforts.

Do Not Resuscitate Orders

Definitions

1. Portable Orders for Life Sustaining Treatment (POLST) is the legal document designed for EMS to withhold life sustaining treatment. POLST orders are valid only if signed by patient and physician indicating the patient's preference for life sustaining treatment. Photocopies are acceptable. Document POLST order in MIR.
2. Previously completed and signed EMS-No CPR forms will continue to be honored.
3. Living wills, advanced directives, health care directives, or durable powers of attorney signed by the patient can be honored with Medical Control concurrence.

Procedure

1. When the patient's family, friends or nursing home personnel state that the patient is not to be resuscitated:
   a. Resuscitation will be initiated until a POLST form or other documentation is presented.
   b. Resuscitation should be withheld on a patient who has a confirmed POLST form stating no resuscitation is wanted.
2. If the patient or family revokes the form, initiate care.

Level of Care

1. The level of care the patient receives during transport will be appropriate to the degree of severity as determined by the highest certified provider on scene.
2. AEMTs and EMTs may serve as the Attendant-In-Charge (AIC) of patients in accordance with their scope of practice even if there was a Paramedic assessment performed and no additional ALS skills, procedures, or care is needed. Ensure all assessment findings, diagnostic testing, and skills performed are noted in the MIR and transferred with the patient to definitive care.
3. If the patient warrants Paramedic level care, and a Paramedic is on scene, they are required to serve as the AIC.
4. When a Paramedic is unavailable, and it is deemed the patient cannot appropriately be cared for by an EMT or AEMT, a mutual aid ground or air ambulance will be requested. If no ALS mutual aid ambulance is available, the patient will be transported as soon as possible to the most appropriate facility in accordance with the **Patient Destination County Operating Procedure**.
5. Paramedics and or mutual aid ambulances can also rendezvous with BLS units. The ALS provider, in consultation with the BLS ambulance, will dictate transport code as appropriate for patient's clinical condition.
6. Conditions warranting a Paramedic response may include but are not limited to:
    a. Altered Mental Status
    b. Suspected Cardiac Event
    c. Difficulty Breathing
    d. Critical Trauma
    e. Shock
    f. Stroke
    g. Severe Pain
    h. Active Seizures
    i. Overdose/Poisoning

Medical Control

1. PeaceHealth Southwest Washington Medical Center, 360-514-2044 or 2464
2. Skyline Hospital (non-specialty care), 509-427-4083
3. If diversion to Portland is advised, contact Medical Resource Hospital (MRH), 503-494-7333
4. Medical Control will be contacted as needed for:
    a. Clarification of orders
    b. In cases of disparity between the Patient Care Protocols and the patient's private physician wishes
    c. For physician consultation
    d. Trauma System Entries, Burns, Strokes, STEMIs to confirm patient destination or diversion.
5. In cases where life-threatening conditions exist or when communication is impossible or impractical, Protocols can be followed without Medical Control Physician concurrence.
6. Document all OLMC orders with treatment, time and physician's name in your MIR.

Non Transport of Patients

Patients refusing care and/or transport

1. A person with normal decision making capacity who, after having been informed of risks and benefits of treatment/transport, voluntarily declines further services.
2. All patients are assumed to require a patient evaluation and EMS personnel will use all resources available to have that person treated and transported.
3. Impaired decision making capacity
    a. Inability to understand the nature of their illness/injury
    b. Inability to understand risks or consequences of refusing care/transport
    c. Individuals impaired by:
        i. Alcohol/drugs
        ii. Psychiatric conditions
        iii. Injuries (head, shock, etc.)
        iv. Mental handicap (Alzheimer's, mental retardation, etc.)
        i. Minors (Under 18 unless proof of emancipation)
        ii. Language/communication barrier
4. Criteria for informed refusal for patient or caregiver
    a. Patient is given accurate information about possible medical problems and risk/benefits of treatment or refusal.
    b. Patient is able to understand and verbalize these risks and benefits
    c. Patient is able to make a decision consistent with their beliefs and life goals
5. Documentation of refusal
    a. Refusal Form is required
    b. MIR completed and shall include:
        i. Chief complaint
        ii. Events prior/reason that 911 was called
        iii. Pertinent medical history
        iv. Description of scene if appropriate
        v. Physical exam including vital signs
        vi. Clinical impression
        vii. EMS interventions and patient response
        viii. Consultation with Medical Control if appropriate

ix. Instructions, risks, benefits told to the family by Medical Control and the EMS Provider

6. If the patient is capable of making an informed decision but immediate medical care (in the opinion of the EMS Provider) is needed:
   i. Consultation with Medical Control if possible.
   ii. Solicit assistance from family, friends and other close associates.
   iii. Solicit assistance from law enforcement, mental health professionals or clergy as situation directs.
7. If the patient is not capable of making an informed decision and immediate medical care (in the opinion of the EMS Provider) is needed:
   i. Solicit assistance from family, friends, and/or other close associates to persuade the patient to accept necessary treatment and transport.
   ii. Solicit assistance from law enforcement (police hold), mental health professional (psychiatric hold) and/or clergy as the situation directs.

Patient Destination

Destination Criteria:

Non-life threatening injuries or illness: Hospital destination is at the discretion of patient, family, the patient's physician or closest facility.

Life threatening injuries or illness: Transport to the closest appropriate facility unless diversion criteria apply.

Diversion Criteria:

Medical Diversion - Diversion may occur due to resource, equipment or facility availability or patient request. When this occurs, destination hospital will be determined by Medical Control Hospital, PHSWMC or Skyline. Contact MRH for Oregon diversion for destination.

Trauma System Entry – Code 3 transports to PHSWMC if the patient is at least 15 years old. If diverted to Level 1 Trauma Center, contact MRH for destination. If in Oregon, contact MRH for destination. If patient is under 15 years old, initiate transport to Randall Children's Hospital and contact MRH for destination orders.

STEMI

ALS - Transport Code 3 transport to PHSWMC or closer level 1 PCI (STEMI) center.

BLS/ILS - Transport Code 3 to PHSWMC if transport time does not exceed 30 minutes longer than transport to Skyline. If more than 30 minutes additional transport time required, transport Code 3 to Skyline, or attempt to rendezvous with ALS en route to allow transport to PHSWMC.

Stroke – Transport Code 3 to PHSWMC if symptoms from last normal presentation and estimated arrival time to PHSWMC are less than 24 hours or symptoms present upon awakening. If symptoms are greater than 24 hours, patient may go to facility of choice or closest facility if unstable.

ROSC

Adults - Code 3 transport to PHSWMC.

Pediatrics - Code 3 transport to Randall Children's Hospital, Portland.

Hyperbaric chamber (Severe Carbon Monoxide Poisoning/Decompression Sickness) – Code 3 transport contact Medical Control at PHSWMC for destination.

Burns with associated trauma – Code 3 transport, contact Medical Control at PHSWMC for destination (the Oregon Burn Center is located at Legacy Emanuel Hospital).

Psychiatric (Involuntary Law Enforcement Hold) – PHSWMC, contact Medical Control at PHSWMC for pediatric patients.

Patients on hemodialysis – Transport to PHSWMC or other hemodialysis capable facility (Emanuel, Providence Portland, Kaiser Sunnyside or OHSU)

Suspected upper GI bleed – Transport to PHSWMC or other facility with gastroenterologist availability. (Emanuel, Providence Portland, Kaiser Sunnyside or OHSU)

Private Physician and/or Medical Professional at the Scene

1. When the patient's private physician is in attendance and has identified himself/herself upon the arrival of the EMS provider: The EMS provider will comply with the private physician's instructions for the patient in accordance with their scope of practice and SCEMS Patient Care Protocols. If orders are given, which are inconsistent with established SCEMS Patient Care Protocols, clearance must be obtained through Medical Control.
2. A physician at the scene may:
    a. Request to talk directly to Medical Control to offer advice and assistance.
    b. Offer assistance to the EMS provider but the patient continues to be treated under the SCEMS Patient Care Protocols.
    c. Assume total responsibility for the patient with the concurrence of Medical Control.

If during transport, the patient's condition should warrant treatment other than that requested by the private physician, Medical Control will be contacted for information and concurrence with any treatment.

Reporting

1. **Pre Hospital Notification Report format:**
   a. Unit and Provider identification
   b. Transport code 1 or 3
   c. Age and sex of the patient
   d. Chief complaint, reason for transport, brief medical history and treatment rendered
   e. Vital signs
   a. Request for questions or comments
   b. Estimated time of arrival

2. **Verbal report to Emergency Department Physician and/or Nurse:**
   a. Name, age, sex and patient's physician
   b. Chief complaint and/or injuries
   c. Description of trauma scene if trauma patient
   d. Pertinent medical history
   e. Physical exam findings
   f. Treatments and results

3. **Medical Incident Reports (MIRs)**
   MIRs must be completed by EMS personnel for EMS call resulting in an actual patient contact, which involves an assessment, VS, or PE. This includes refusals. A patient is defined as a person with obvious injury or medical complaints. It will be completed as soon as feasible after the patient contact, no later than the end of the assigned shift. Transport personnel are required to leave a field report at the receiving facility at the time of patient transfer. Final reports are required to be sent to the receiving facility within 24 hours. FD reports are to be completed within 24 hours & forwarded to MPD for review.

Response Modes

All licensed EMS aid vehicles and ambulances will follow the Medical Priority Dispatch System (MPDS) EMS Response Modes as administered by the Skamania County Dispatch.

1. At times deviation from these modes may be appropriate.
2. Any deviations shall be documented in the MIR for review.
3. Code 1 is a no lights or sirens response. Code 3 is a lights and sirens response.
4. Once a call is received by dispatch, licensed EMS aid vehicles and ambulances will respond as rapidly as appropriate and make contact with the requesting party or patient and determine the level of care or treatment required and administer EMS care as needed.

MPDS Response Determinant	**Response**	**Mode**
	Aid Vehicle	**Ambulance**
Alpha (A)	Code 1	Code 1
Bravo (B)	Code 3	Code 3 if no aid / Code 1 if aid
Charlie (C)	Code 3	Code 3
Delta (D)	Code 3	Code 3
Echo (E)	Code 3	Code 3

5. Canceling, Upgrading, Downgrading or Diverting to another call
    a. Canceling of response
        i. Dispatch can cancel a unit at the request of the reporting party or patient.
        ii. A first in EMS unit reports that no patient is present.
        iii. A first in EMS unit reports the patient does not want transport.
        iv. The canceling unit will obtain a Refusal Form.
        v. The ambulance shall have the discretion to continue.

b. Upgrades: Aid vehicles and ambulances may be upgraded to a Code 3 response by EMS units when a patient evaluation has been made and a more efficient response is more appropriate.
c. Downgrades: Aid vehicles and ambulances may be downgraded to a Code 1 response by EMS units when a patient evaluation has been made and a slower response is more appropriate.
d. Diversion: An aid vehicle or ambulance may be diverted to another call when:
    i. It is obvious the second call is a life-threatening emergency and the first call can await a second ambulance and a second ambulance can be dispatched to the first call.
    ii. The first ambulance is decidedly closer to the second call and the response by it to the 2nd call might be vital to the patient's outcome.

TIP (Trauma Intervention Program)

Introduction:
TIP is a group of specially trained volunteers who provide emotional aid and practical support and resources to victims of traumatic events and their families in the first few hours following a tragedy. TIP volunteers are trained to assist family members and friends following a suicide, natural or unexpected death; victims of crime; victims of fires; drownings, people involved in motor vehicle accidents; witnesses to crimes and people who are affected by violent crimes.

Protocol:
Following treatment or termination of efforts of a victim or patient, survivors become the focus of our efforts.
Following a traumatic event, a brief description of what TIP and the services provided are, should be given to the survivors. The description should be given as follows: "TIP is a group of specially trained volunteers who provide emotional aid and practical support and resources to victims of traumatic events and their families in the first few hours following a tragedy."

1. If the survivors request assistance from TIP Volunteers:
    a. Contact Skamania Dispatch and request that TIP is activated to the location that the survivors will be located. Crews do not need to remain out of service until TIP volunteers arrive.

2. If the survivors do not wish for assistance from TIP Volunteers:
    a. Leave the contact phone number for the TIP activation hotline with the survivors: 503-940-7997.

EMS will activate TIP in the following circumstances:

1. Any significant, powerful, overwhelming and distressing event
2. Expected or unexpected death
3. Suicides
4. Homicides
5. Fatality motor vehicle collisions
6. Fire scenes
7. School crisis

Transfer of Care/Time on Scene

When more than one EMS provider is on scene, they will work cooperatively in making care decisions.

1. If a disagreement exists on the correct course of action, the highest certified EMS provider will have the authority to determine patient care.

2. In addition, transfer of patient care from first responders to transport personnel should be orderly and efficient.

3. SCEMS has the first right of refusal to transport should mutual aid first response arrive prior to SCEMS, even if patient care has been initiated.

Scene time benchmarks:

General Medical – 30 minutes

Cardiac Arrest-30 minutes

STEMI/Stroke – 15 minutes

Critical Trauma – 15 minutes once extrication has been accomplished

Document any extenuating circumstances in your MIR.

Trauma System Entry

Indications:

Initial evaluation of patients and scene should be made rapidly to determine need for a trauma center. It cannot be overemphasized that adequate management of the severely injured patient can occur only in the operating room and field care is appropriate to stabilize the patient, maintain perfusion, and to ensure safe transport without further injury. Management priorities include reducing/eliminating hypoxia, hypothermia, and hypotension.

TRAUMA TEAM ACTIVATION (PHYSIOLOGIC /CLINICAL SIGNS)

a) GCS under 13
b) Respirations 10 or less or 29 and greater
c) Pediatrics under 15 years old and BP under 80 or HR over 120
d) Systolic BP under 90
e) Penetrating injury to head, neck, torso, or extremities proximal to elbows or knees
f) Chest wall instability or deformity (pneumothorax, flail chest)
g) Two or more proximal long bone fractures
h) Crushed, degloved, pulseless, or mangled extremity
i) Amputation proximal to wrist or ankle
j) Pelvic Fracture
k) Open or depressed skull fracture
l) Paralysis

Modified Trauma Activation (BIOMECHANICS OF INCIDENT/MECHANISM OF INJURY)

a) Falls over 20ft or for child over 10ft or two times height
b) Crash with intrusion over 12in occupant site or 18in any site
c) Ejection from auto
d) Death of patient in same vehicle
e) Vehicle damage consistent with high energy transfer
f) Auto pedestrian, Auto bike, thrown or run over with 20 MPH impact
g) Motorcycle crash over 20 MPH

These criteria should cause a high index of suspicion that the patient may have sustained a severe injury:

a) Paramedic "gut feeling" of injury severity/provider judgment
b) Extremes of age (Under 12 or over 55 years of age), to include GLFs in the elderly
c) Bleeding disorders and anticoagulants
d) Burns
e) Time sensitive extremity injury
f) End stage renal disease requiring dialysis
g) Pregnancy over 20 weeks

Protocol: Code 3 transport within 15 minutes per **Time on Scene / Transfer of Care and Destination County Operating Procedures**

MEDICATIONS – Acetaminophen

SUPPLIED:

A. 500mg Tablets, 160mg/5ml oral suspension, 120mg and 325 mg suppositories.

PHARMACOLOGY AND ACTIONS:

A. Acetaminophen targets the cyclooxygenase enzymes that produce prostaglandins responsible for pain and fever. It has little anti-inflammatory effect. It is metabolized into toxic and non-toxic products in the liver.
B. Toxicity is multiplied when combined with alcoholic drinks, and very likely in chronic alcoholics or patients with liver damage.

INDICATIONS:

A. Fever.
B. Mild to moderate pain.

CONTRAINDICATIONS:

A. Known liver disease
B. Current alcohol abuse
C. Acute intoxication
D. Has taken acetaminophen in last 6 hours

ADULT DOSING:

A. 1,000mg PO

PEDIATRIC DOSING:

A. 20mg/kg PR not to exceed 1,000mg
B. 15mg/kg PO not to exceed 1,000mg

MEDICATIONS – Activated Charcoal

SUPPLIED:

A. 50 grams / 240 ml bottle.

PHARMACOLOGY AND ACTIONS:

A. Activated charcoal adsorbs toxic substances ingested and inhibits GI adsorption by forming an effective barrier between the particulate material and the gastrointestinal mucosa. The effect is greatest if used within one hour of ingestion.

INDICATIONS:

A. Management of poisoning or overdose of some substances.

CONTRAINDICATIONS:

A. Patients with altered mental status or the inability to maintain their own airway.
B. Patients who have aspirated or with a potential for aspiration.

PRECAUTIONS:

A. Activated charcoal may be ineffective in some ingestions.
B. Milk, ice cream and other dairy products will decrease the adsorption capacity substantially.

SIDE EFFECTS AND NOTES:

A. May cause nausea, vomiting, and constipation.

ADULT DOSING:

A. Poisoning & overdose - 50g PO or NG.

PEDIATRIC DOSING:

A. Poisoning & overdose – 1gm/kg max of 50 g PO or NG

MEDICATIONS – Adenosine (Adenocard)

SUPPLIED:

A. 6 mg / 2 ml vials

PHARMACOLOGY AND ACTIONS:

A. Naturally occurring nucleoside that has the ability to slow conduction through the AV node. Since most cases of PSVT involve AV nodal re-entry, adenosine is capable of interrupting the AV nodal circuit and stopping the tachycardia, restoring normal sinus rhythm. It is eliminated rapidly and has a half-life of < ten seconds.

INDICATIONS:

A. To convert PSVT to a normal sinus rhythm.

CONTRAINDICATIONS:

A. Second or third degree heart block.
B. Sick Sinus Syndrome.
C. Known hypersensitivity.

PRECAUTIONS:

A. When doses larger than 12 mg are given by injection, there may be a decrease in blood pressure secondary to a decrease in vascular resistance.
B. The effects of adenosine are antagonized by methylxanthines such as theophylline and caffeine. Larger doses of adenosine may be required.
C. Adenosine is potentiated by dipyridamole (Persantine) resulting in prolonged asystole.
D. In the presence of carbamazepine (Tegretol), high degree heart block may occur.
E. Adenosine is not effective in converting A fib, A flutter or V tach.
F. Dose of adenosine should be reduced to one-half (50%) in the following clinical settings:
    1. History of cardiac transplantation.
    2. Patients who are on carbamazepine (Tegretol) or dipyridamole (Persantine).
    3. Administration through any central line.
G. Use with caution in patients with asthma as it may cause a reactive airway response.

SIDE EFFECTS AND NOTES:

A. May cause facial flushing, SOB, chest pressure, nausea, headache and lightheadedness.

ADULT DOSING:

A. 6 mg rapid IV. May repeat with 12 mg IV if patient fails to convert after 6 mg dose. Use a large proximal IV site with fluid bolus flush.

PEDIATRIC DOSING:

A. 0.1 mg/kg rapid IV. May repeat with 0.2 mg/kg once if patient fails to convert after first dose. Use a large proximal IV site with fluid bolus flush. Max single peds dose 12mg.

MEDICATIONS – Albuterol (Proventil, Ventolin)

SUPPLIED:

A. 2.5 mg/3 ml vial individually or 3 mg packaged with 0.5 mg ipratropium (Duo-Neb).

PHARMACOLOGY AND ACTIONS:

A. Potent, relatively selective beta-2 adrenergic bronchodilator. Relaxation of bronchial smooth muscle and inhibition of release of mediators of immediate sensitivity from cells, especially mast cells. The onset of improvement in pulmonary function is within 2 – 15 minutes after the initiation of treatment and the duration of action is from 4 – 6 hours. Albuterol has occasional beta-1 overlap with clinically significant cardiac effects.

INDICATIONS:

A. To treat bronchospasm/wheezing due to asthma, COPD, anaphylaxis, etc.
B. To treat hyperkalemia.

CONTRAINDICATIONS:

A. None in the prehospital setting.

PRECAUTIONS:

A. The patient's rhythm should be observed for arrhythmias. Stop treatment if frequent PVC's develop or any tachyarrhythmias, other than sinus tachycardia, appear or if heart rate increases by more than 20 beats/minute.
B. Paradoxical bronchospasm may occur with excessive administration.

SIDE EFFECTS AND NOTES:

A. Clinically significant arrhythmias may occur, especially in patients with underlying cardiovascular disorders such as coronary insufficiency and hypertension.

ADULT DOSING:

A. 5mg Nebulized (mixed w/Atrovent) repeat prn to sx resolution.
    1. Hyperkalemia - 5mg continuous to a max of 20mg nebulized.

PEDIATRIC DOSING:

A. 2.5mg nebulized repeat PRN,

MEDICATIONS – Amiodarone (Cordarone)

SUPPLIED:

A. 150 mg / 3 ml pre-filled syringe or vial.

PHARMACOLOGY AND ACTIONS:

A. Amiodarone depresses automaticity of the SA node. It slows conduction and increases refractoriness of the AV node. Amiodarone increases atrial and ventricular refractory period and prolongs the QT interval. When given IV it is rapidly distributed.

INDICATIONS:

A. V fib, pulseless V tach.
B. V tach with pulses.

CONTRAINDICATIONS:

A. None in cardiac arrest.
B. Long QT (Torsades)

PRECAUTIONS:

A. In high concentrations (> 3 mg/ml), amiodarone can cause phlebitis. Infusion concentrations should not exceed 2 mg / ml.
B. Amiodarone will precipitate if administered in the same IV line as sodium bicarbonate.

SIDE EFFECTS AND NOTES:

A. In perfusing patients, may cause hypotension, prolonged QT interval, pro-arrhythmic effects (Torsades and ventricular fibrillation), severe bradycardia and AV block.

ADULT DOSING:

A. V Fib, pulseless V Tach - 300 mg IV/IO. May repeat once with 150 mg.
B. V Tach with a pulse – 150 mg IV/IO slow IV push over 3 minutes.

PEDIATRIC DOSING:

A. V Fib, pulseless V Tach - 5 mg/kg IV/IO. May repeat once with 2.5 mg/kg.
B. V Tach with a pulse - 2.5mg/kg IV/IO slow IV push over 3 minutes.

MEDICATIONS – Aspirin

SUPPLIED:

A. 81 mg chewable tablets

PHARMACOLOGY AND ACTIONS:

A. Aspirin inhibits prostaglandins and disrupts platelet function for the life of the platelet. It is also a mild analgesic and anti-inflammatory agent.

INDICATIONS:

A. In unstable angina and acute myocardial infarction, aspirin has been shown to lower mortality and is indicated in patients with suspected ischemic chest pain.

CONTRAINDICATIONS:

A. Allergy to aspirin or aspirin induced asthma.
B. History of bleeding disorder (i.e. hemophilia)
C. Current ulcer or GI bleeding.
D. Suspected aortic dissection.

SIDE EFFECTS AND NOTES:

A. High doses of aspirin can cause ringing in the ears.
B. May cause heartburn, nausea and vomiting.

ADULT DOSING:

A. Chest pain (acute myocardial infarction) 324 mg orally.

PEDIATRIC DOSING:

A. Contact OLMC.

MEDICATIONS – Calcium Gluconate

SUPPLIED:

A. 10% solution (1 g)/ 10 ml vial.

PHARMACOLOGY AND ACTIONS:

A. Calcium is the most common cation in the human body. The majority of the body stores of calcium are located in bone. It plays an important role in many physiologic functions and is essential for proper nerve and muscle function.

INDICATIONS:

A. Suspected calcium channel blocker overdose.
B. Hyperkalemia.
C. Cardiac arrest (PEA, Asystole) from suspected hyperkalemia.

CONTRAINDICATIONS:

A. Hypercalcemia and hypercalciuria (hyperthyroidism, Vitamin D overdose, bone metastases).
B. Patients on digoxin.

PRECAUTIONS:

A. Extravasation of calcium salts will cause necrosis of tissue. The IV should be secured and free blood return into the syringe should be checked 2-3 times during administration. If extravasation does occur, immediately stop administration.
B. Administer slowly (no faster than 2ml/min) and stop if patient complains of distress. Inject using a small needle in a large vein.
C. Calcium gluconate will precipitate if mixed with sodium bicarbonate. Flush catheter completely before administering one medication after another.

SIDE EFFECTS AND NOTES:

A. Rapid injection of calcium gluconate may cause vasodilatation, decreased blood pressure, bradycardia, cardiac arrhythmias, syncope or cardiac arrest.
B. One vial of 10 ml calcium gluconate 10% contains 1 gram of calcium gluconate salt (= 93 mg elemental calcium or 4.6 mEq calcium or 2.3 mmol calcium).

ADULT DOSING:

A. 10 ml slow IV/IO, Hyperkalemia, calcium channel blocker overdose.

PEDIATRIC DOSING:

A. Hyperkalemia, calcium channel blocker overdose - 0.5 ml/kg slow IV/IO. Max dose 10 ml.

MEDICATIONS – Calcium Chloride

SUPPLIED:

A. 1 g/10 ml Preloaded Syringe.

PHARMACOLOGY AND ACTIONS:

A. Calcium is the most common cation in the human body. The majority of the body stores of calcium are located in bone. It plays an important role in many physiologic functions and is essential for proper nerve and muscle function.

INDICATIONS:

A. Suspected calcium channel blocker overdose.
B. Hyperkalemia.
C. Cardiac arrest (PEA, Asystole) from suspected hyperkalemia.

CONTRAINDICATIONS:

A. Hypercalcemia and hypercalciuria (hyperthyroidism, Vitamin D overdose, bone metastases).
B. Patients on digoxin.

PRECAUTIONS:

A. Extravasation of calcium salts will cause necrosis of tissue. The IV should be secured and free blood return into the syringe should be checked 2-3 times during administration. If extravasation does occur, immediately stop administration.
B. Administer slowly (no faster than 100mg/min except in emergent situations) and stop if patient complains of distress.
C. Calcium chloride will precipitate if mixed with sodium bicarbonate. Flush catheter completely before administering one medication after another.

SIDE EFFECTS AND NOTES:

A. Rapid injection of calcium chloride may cause vasodilatation, decreased blood pressure, bradycardia, cardiac arrhythmias, syncope or cardiac arrest.
B. Rapid injection may cause feeling abnormal, tingling sensation, hot flashes, chalky taste in mouth, GI upset, and local tissue necrosis following extravasation.

ADULT DOSING:

A. 250-500mg slow IV/IO, Hyperkalemia, calcium channel blocker overdose

PEDIATRIC DOSING:

A. Hyperkalemia, calcium channel blocker overdose – 20mg/kg slow IV/IO. Max dose 500mg.

MEDICATIONS – Dexamethasone (Decadron)

SUPPLIED:

A. 10% solution / 10 ml vial.

PHARMACOLOGY AND ACTIONS:

A. Dexamethasone is a long-acting synthetic adrenocorticoid with intense anti-inflammatory activity.

INDICATIONS:

A. Asthma, COPD.
B. Anaphylaxis.
C. Croup.
D. Addisonian Crisis

CONTRAINDICATIONS:

A. Acute infections.

PRECAUTIONS:

A. GI ulceration, renal disease, diabetes, hypothyroidism, myasthenia gravis, CHF, cirrhosis, seizures.

SIDE EFFECTS AND NOTES:

A. Readily absorbed through the GI tract with a rapid onset. Peak affect seen in 1-2 hours with a half-life of 3-4.5 hours.

ADULT DOSING:

A. 10mg IV/IO/IM/PO.

PEDIATRIC DOSING:

A. 0.6mg/kg to a max of 10mg.

MEDICATIONS – Dextrose 10% (D10)

SUPPLIED:

A. 25g/250 ml bag 10%.

PHARMACOLOGY AND ACTIONS:

A. Glucose is the body's basic fuel. It produces most of the body's quick energy. Its use is regulated by insulin which stimulates storage of excess glucose outside the bloodstream, and glucagon, which mobilizes stored glucose into the bloodstream.

INDICATIONS:

A. Hypoglycemia.
B. Altered patient when history is unobtainable.

CONTRAINDICATIONS:

A. Hyperglycemia
B. Diabetic Ketoacidosis

PRECAUTIONS:

A. Extravasation may cause necrosis of tissue. Secure patency of the IV.
B. Report any extravasation to receiving hospital personnel and document on the Prehospital Care Report.

SIDE EFFECTS AND NOTES:

A. Hyperglycemia may complicate or worsen a number of medical conditions (e.g. myocardial infarction and stroke). Dextrose should be given whenever hypoglycemia is documented by glucometer. If these findings are not available, the EMT should use judgement based on signs and history.

ADULT DOSING:

A. Hypoglycemia/Altered mental status – 100ml D10 (10g) IV/IO. May repeat 50ml D10 (5g) to Max 25g prn.

PEDIATRIC DOSING –

A. For infants < 10 kg (birth to 1 year) with CBG < 40 mg/dl and children 10 kg – 35kg with CBG < 60 mg/dl give:
    1. Dextrose 10% - 5 ml/kg IV by infusion to a maximum dose of 250 ml
    2. Dextrose 12.5% - 4 ml/kg by infusion to a maximum dose of 200 ml (if diluting D50)

MEDICATIONS – Diltiazem

SUPPLIED:

A. 25 mg (5 mg/ml)

PHARMACOLOGY AND ACTIONS:

A. IV calcium-channel blocker; primarily used for ventricular rate control in AFIB; slows AV conduction; vasodilatory properties; less negative inotropic effects than verapamil or nifedipine.

INDICATIONS:

A. Atrial fibrillation, Atrial flutter with rapid ventricular response.
B. Paroxysmal supraventricular tachycardia (PSVT) refractory to Adenosine

CONTRAINDICATIONS:

A. Patients with acute myocardial infarction and pulmonary congestion and should not be used in patients with acute myocardial infarction and associated left ventricular dysfunction or congestive heart failure.
B. Cardiogenic shock, any hypotensive state.
C. Heart block
D. Wide complex tachycardia due to WPW.

PRECAUTIONS:

A. Decreases peripheral resistance and can worsen hypotension. Should not be used in patients with systolic blood pressures of less than 90 mm Hg (i.e., severe hypotension) and used with caution in patients with mild to moderate hypotension.
B. Blood pressure should be monitored carefully in all patients receiving diltiazem.

DOSING:

A. 0.25 mg/kg (maximum 20 mg) given slow over 2 minutes. After 10 minutes may repeat at 0.35 mg/kg (maximum 25 mg). If target rate is met 5-10 mg/hr infusion IV
B. Infusion: 10mg in 50cc bag of NS; use 60 gtt set and run at 1 gtt/2 sec for 5 mg/hr, 1 gtt/sec for 10 mg/hr

MEDICATIONS – Diphenhydramine (Benadryl)

SUPPLIED:

A. 50 mg / ml vial, 25 mg tablet

PHARMACOLOGY AND ACTIONS:

A. Antihistamine which blocks the action of histamines released from cells during an allergic reaction. It has direct CNS effects, which may be stimulant, or more commonly depressant, depending on individual variation. Diphenhydramine also has an anticholinergic and antiparkinsonian effect which is used to treat acute dystonic reactions to antipsychotic drugs (e.g. Haldol®, Thorazine®, Compazine®, Inapsine®). These reactions include oculogyric crisis, acute torticollis, and facial grimacing.

INDICATIONS:

A. The second-line drug in anaphylaxis and severe allergic reactions (after epinephrine).

B. To counteract acute dystonic and dysphoric reactions due to medication. The most likely medications are antipsychotic and antiemetics.

CONTRAINDICATIONS:

None

PRECAUTIONS:

A. May have an additive effect with alcohol or other CNS depressants.
B. Although useful in acute dystonic reactions, it is not an antidote for anti-psychotic toxicity or overdose.
C. May cause hypotension when given IV.

ADULT DOSING:

A. 1 mg/kg IV/IM max 50 mg

PEDIATRIC DOSING:

A. 1 mg/kg IV/IM to a max of 50 mg.

MEDICATIONS – Droperidol (Inapsine)

SUPPLIED:

A. 5 mg / 2 ml vial

PHARMACOLOGY AND ACTIONS:

A. Pharmacologically related to Haloperidol. Antagonizes emetic effects of morphine-like analgesics and other drugs that act on chemo-receptor trigger zone. Mild alpha-adrenergic blocking activity and direct vasodilator effect may cause hypotension. Acts primarily at subcortical level to produce sedation. Sedative properties reduces anxiety and motor activity without necessarily inducing sleep.

INDICATIONS:

A. Sedation of combative patients to facilitate restraint.
B. Antiemetic

CONTRAINDICATIONS:

A. Known allergy.
B. Prolonged QT or history of Torsades de Pointes

PRECAUTIONS:

A. Hypotension may occur, manage as appropriate.
B. Use caution when administering droperidol to patients who have taken other CNS depressant drugs (barbiturates, tranquilizers, alcohol).
C. Droperidol may induce Torsades de Pointes. Monitor the patient's ECG Q-T interval following use.
D. Parkinson's disease, liver disease, kidney disease, cardiac disease.

SIDE EFFECTS AND NOTES:

A. The most common side effects are hypotension and tachycardia, which usually responds to a fluid bolus.
B. Dysphoric (restlessness) and dystonic reactions have been reported following administration. These symptoms can be treated with the administration of diphenhydramine.

ADULT DOSING:

A. Patient restraint
    1. 2.5-5 mg IV/IO/IM. May repeat to a maximum 5mg.
B. Nausea/Vomiting
    1. 0.625-2.5 mg IV/IO/IM

PEDIATRIC DOSING:

A. Do not administer to pediatrics

MEDICATIONS – Epinephrine

SUPPLIED:

A. 1:1,000 – 1 mg / 1ml vials or 30 mg / 30 ml vial
B. 1:10,000 – 1 mg / 10 ml pre-filled syringe

PHARMACOLOGY AND ACTIONS:

A. Catecholamine with alpha and beta effects resulting in increased heart rate, increased myocardial contractile force, increased systemic vascular resistance, increased arterial blood pressure, increased myocardial oxygen consumption, increased automaticity. Epinephrine is also a potent bronchodilator.

INDICATIONS:

A. Cardiac arrest; Anaphylaxis; Status Asthmaticus; Profound Bradycardia.

CONTRAINDICATIONS:

A. None

PRECAUTIONS:

A. Epinephrine increases cardiac work load and can precipitate angina, MI, or major dysrhythmias in individuals with ischemic heart disease.

SIDE EFFECTS AND NOTES:

A. May cause anxiety, tremor and headache.
B. Cardiac side effects include tachycardia, PVC's, angina and hypertension.

ADULT DOSING:

A. Cardiac Arrest:
    1. 1mg IV/IO every 3-5 minutes
B. Hypotension/profound bradycardia/status asthmaticus Anaphylaxis
    1. 2-10mcg/minute IV/IO infusion. Titrate to response.
    2. 0.3mg IM if unable to start IV and patient in extremis.
    3. 10 mcg IVP

PEDIATRIC DOSING:

A. Cardiac Arrest:
    1. 0.01 mg/kg 1:10,000
B. Hypotension/profound bradycardia/status asthmaticus Anaphylaxis
    1. 0.1 mcg/kg/minute.
    2. 0.01 mg/kg IM if unable to start IV and patient in extremis.

PUSH DOSE EPI: 1 mg of epinephrine in 250 ml of NS (4 mcg/ml), 2.5 ml = 10 mcg.

EPINEPHRINE DRIP: 1 mg of epinephrine in 250 ml of NS (4 mcg/ml); use 60 gtt set, 1 gtt/2 seconds = 2 mcg/minute, 1gtt/second = 4 mcg/minute

MEDICATIONS – Etomidate (Amidate)

SUPPLIED:

A. 40 mg/20ml pre-filled syringe or 2 mg/ml in 40 mg vial

PHARMACOLOGY AND ACTIONS:

A. Etomidate is a hypnotic drug without any analgesic activity. Intravenous injection of Etomidate produces hypnosis characterized by rapid onset of action; usually within one minute. Duration of hypnosis is dose dependent but relatively brief, usually 3-5 minutes.

INDICATIONS:

A. As an induction agent for use in rapid sequence intubation.

CONTRAINDICATIONS:

A. Etomidate is contraindicated in patients who have a known hypersensitivity to the drug.
B. Pediatric patient in Septic Shock

SIDE EFFECTS AND NOTES:

A. The most frequent adverse reactions are transient injection site pain and transient skeletal muscle movements (myoclonus).
B. Etomidate may also cause nausea and/or vomiting.

ADULT DOSING:

A. Induction agent for rapid sequence intubation:
    1. 0.3 mg/kg max of 20 mg IV/IO slow push.

PEDIATRIC DOSING:

A. Same as adult

MEDICATIONS – Fentanyl

SUPPLIED:

A. 100 mcg/2ml vial

PHARMACOLOGY AND ACTIONS:

A. Synthetic opioid analgesic that produces analgesia and sedation. It is about 50-100 times more potent than morphine on a weight basis. Onset of action when given is 2-3 minutes. Peak effect occurs at 3-5 minutes and lasts 15-45 minutes.

INDICATIONS:

A. Pain due to musculoskeletal injury or burns.
B. Suspected ischemic chest pain.

CONTRAINDICATIONS:

A. Known allergy to fentanyl.
B. Moderate to severe respiratory depression.

PRECAUTIONS:

A. Fentanyl can cause respiratory depression that is reversible with naloxone. Respiratory depression can also be exacerbated by underlying lung disease and the use of other respiratory depressant drugs. Have naloxone and respiratory support available.
B. If administered rapidly and in very large doses, fentanyl can cause muscle spasm and chest wall rigidity. The only reliable treatment for this is neuromuscular blockade.
C. The action of fentanyl is prolonged and its elimination is slower in the elderly. Smaller maintenance doses are advisable.

SIDE EFFECTS AND NOTES:

A. If hypotension develops, it is usually responsive to naloxone administration and Trendelenburg position. If hypotension continues, follow Shock protocol.
B. Check and document vital signs and patient response after each dose.
C. The goal of fentanyl administration is patient comfort, not the total elimination of pain but the reduction in the perception of pain by the patient.

ADULT PAIN DOSING:

A. 25-50 mcg. IV/IO May repeat every 5 minutes as needed.

PEDIATRIC DOSING:

A. 1-2 mcg/kg IV/IO/IN. Do not exceed adult dose.

MEDICATIONS – Glucagon

SUPPLIED:

A. 1 mg vial of powder / 1 ml vial of diluent

PHARMACOLOGY AND ACTIONS:

A. Glucagon is a hormone that causes glucose mobilization in the body. It works opposite to insulin, which causes glucose storage. It is released at times of insult or injury when glucose is needed and mobilizes glucose from body glycogen stores. Return to consciousness should be within 20 minutes of an IM dose if patient is hypoglycemic.

INDICATIONS:

A. Known hypoglycemia (preferably demonstrated by blood glucose determination) when patient is confused or comatose and dextrose is not available or an IV cannot be started.

CONTRAINDICATIONS:

A. None

PRECAUTIONS:

A. IV Dextrose is the treatment of choice for hypoglycemia in the patient who cannot tolerate oral glucose. The use of glucagon is restricted to patients who are seizing, comatose, combative, or with collapsed veins and in whom an IV cannot be started.

SIDE EFFECTS AND NOTES:

A. Nausea and vomiting may occur with administration.
B. Persons with no liver glycogen stores (malnutrition, alcoholism) may not be able to mobilize any glucose in response to glucagon.

ADULT DOSING:

A. 1 mg IM.

PEDIATRIC DOSING:

A. 0.5mg IM

MEDICATIONS – Haloperidol (Haldol)

SUPPLIED:

A. 5 mg / 1 ml vial

PHARMACOLOGY AND ACTIONS:

A. Neuroleptic agent, produces marked tranquilization and sedation. It allays apprehension and provides a state of mental detachment and indifference while maintaining a state of reflex alertness. It produces mild alpha-adrenergic blockade, peripheral vascular dilation, reduction of the pressor effect of epinephrine, and has an anti-emetic effect. Onset of action is from 5-15 minutes following administration, and the peak effect may not be apparent for up to 30 minutes. Duration is generally from 2-6 hours.

INDICATIONS:

A. Sedation of combative patients to facilitate restraint.

CONTRAINDICATIONS:

A. Known allergy.

PRECAUTIONS:

A. Hypotension may occur, manage as appropriate.
B. Use caution when administering haloperidol to patients who have taken other CNS depressant drugs (barbiturates, tranquilizers, alcohol).
C. Haloperidol may induce Torsades de Pointes. Monitor the patient's ECG Q-T interval following use.

SIDE EFFECTS AND NOTES:

A. The most common side effects are hypotension and tachycardia, which usually responds to a fluid bolus.
B. Dysphoric (restlessness) and dystonic reactions have been reported following administration. These symptoms can be treated with the administration of diphenhydramine.
C. Use with caution in patients with a seizure disorder or condition that causes seizures; other similar neuroleptics are known to lower the seizure threshold.

ADULT DOSING:

A. Patient restraint -
    1. 5-10 mg IV, IO, IM. May repeat to a maximum of 20mg.

PEDIATRIC DOSING:

A. Patient restraint –
    1. 0.1mg/kg IV, IO, IM

MEDICATIONS – Hydroxocobalamin (Cyanokit)

SUPPLIED:

A. Reconstitute the 5 gram vial of hydroxocobalamin with 200 mL of diluent. Preferred diluent is 0.9% Sodium Chloride.

PHARMACOLOGY/ACTIONS:

A. Hydroxocobalamin (Vitamin B12a) is an effective antidote in the treatment of cyanide poisoning based on its ability to bind cyanide ions. Each hydroxocobalamin molecule can bind one cyanide ion to form cyanocobalamin (vitamin B12), which is then excreted in the urine.
B. Cyanide is an extremely toxic poison. In the absence of rapid and adequate treatment, exposure to a high dose of cyanide can result in death within minutes due to inhibition of cytochrome oxidase resulting in arrest of cellular respiration.

INDICATIONS:

A. Cyanide poisoning or smoke inhalation with suspected cyanide poisoning due to the presence of coma, persistent hypotension or cardiorespiratory arrest.

DOSING:

A. 5 g over 15 minutes. If no improvement may repeat 5 g.
B. Pediatric dose: 70 mg/kg. May repeat x 1.

SIDE EFFECTS/NOTES:

A. The most frequently occurring side effects are chromaturia (red-colored urine) and erythema (skin redness) which occur in nearly all patients.
B. Other reported serious side effects include allergic reactions, temporary increases in blood pressure, nausea, headache and infusion site reactions.
C. Because of its deep red color, hydroxocobalamin has been found to interfere with certain laboratory tests based on light absorption including co-oximetric measurements of carboxyhemoglobin, methemoglobin and oxyhemoglobin.
D. If patient has suspected cyanide poisoning, consider obtaining SpCO, if available, before administration of Cyanokit.

MEDICATIONS – Ibuprofen (Motrin)

SUPPLIED:

A. 200 mg tablets, 100 mg/5ml oral suspension

PHARMACOLOGY AND ACTIONS:

A. Prototype of the propionic acid inhibitor with nonsteroidal anti-inflammatory activity and significant antipyretic and analgesic properties. Blocks prostaglandin synthesis.

INDICATIONS:

A. Fever
B. Mild to moderate pain.

CONTRAINDICATIONS:

A. Ingestion of other NSAIDs within 6 hours
B. Known allergy to NSAIDs or Aspirin.
C. History of GI bleeding or other bleeding disorders.
E. Impaired Renal or Kidney function
F. On anticoagulant, such as vitamin K antagonists (e.g. warfarin) or directing agents such as rivoraxaban, apixaban, edoxaban, lovenox, and dabigatran.
G. Suspected cardiac chest pain.
H. Any trauma system entry patient.
I. Stroke like symptoms

SIDE EFFECTS AND NOTES:

A. Nausea and vomiting
B. Dizziness
C. Headache
D. Itching
E. Flushing

ADULT DOSING:

A. Pain management
   1. 600 mg PO
B. Fever
   1. 600 mg PO

PEDIATRIC DOSING

A. Pain management
   1. 10 mg/kg to a max of 600 mg PO
B. Fever
   1. 10 mg/kg to a max of 600 mg PO

MEDICATIONS – Ipratropium Bromide (Atrovent)

SUPPLIED:

A. 0.5 mg / 2.5 ml vial individually or 0.5 mg packaged with 3 mg albuterol (Duo-Neb).

PHARMACOLOGY AND ACTIONS:

A. Ipratropium is an atropine derivative used for inhalation therapy. For severe asthma, Ipratropium taken in addition to a short acting beta agonist (such as Albuterol) can provide greater bronchodilation and clinical benefit than the beta agonist alone. It has no anti-inflammatory effects and does not decrease bronchial hyper-responsiveness.

INDICATIONS:

A. As a supplement to albuterol in patients with asthma and COPD.

CONTRAINDICATIONS:

A. Do not use in patients with severe glaucoma.

SIDE EFFECTS AND NOTES:

A. Dry mouth.
B. Pharyngeal irritation.
C. Increased intra-ocular pressure in glaucoma patients.

ADULT DOSING:

A. Asthma/ COPD - 0.5 mg via DuoNeb (albuterol/ipratropium) May repeat twice every 20 minutes if needed.

PEDIATRIC DOSING:

A. Same as adult dosing

MEDICATIONS – Ketamine

SUPPLIED:

A. 500 mg/10 ml vial.

PHARMACOLOGY AND ACTIONS:

A. Ketamine is a dissociative anesthetic agent, structurally similar to phencyclidine (PCP), which interrupts the connection between the thalamo-neocortical tracts and the limbic system. In addition, it stimulates many different receptors, including the opioid and catecholamine receptors. It is unique among sedative agents in that it also provides analgesia in addition to the amnestic and sedative effects. The sympathomimetic effects cause an increase in heart rate, blood pressure, and cardiac output. It is also a bronchodilator, and thus may be beneficial in patients with bronchospasm requiring intubation.

INDICATIONS:

A. As an induction agent for use in rapid sequence intubation.
B. Pain control refractory to standard treatment with fentanyl.

CONTRAINDICATIONS:

A. Eye pain or trauma.
B. Known pregnancy.
C. Non-traumatic chest pain.

SIDE EFFECTS AND NOTES:

A. Increased blood pressure due to catecholamine release.
B. Emergence reaction can occur in 5-30% of patients. Duration of action is 10-20 minutes and continued sedation must be provided before the induction agent has worn off when used for RSI.

ADULT DOSING:

A. Rapid sequence intubation:
    1. 2 mg/kg IV/IO/IM slow push for induction, 1 mg/kg IV/IO/IM for continued sedation q 10 minutes
B. Severe Pain or pain with shock:
    1. 0.3 mg/kg max of 20 mg IV/IO/IM .
C. Sedation for CPAP, Pain Control adjunct
    1. 0.3 mg/kg max 20 mg IV/IO/IM.
D. Technical Rescue Dose
    1. 0.5 mg/kg max of 50 mg IV/IO/IM.

PEDIATRIC DOSING:

A. Same as adult.

MEDICATIONS – Ketorolac (Toradol)

SUPPLIED:

A. 30 mg /1 mL vial

PHARMACOLOGY AND ACTIONS:

A. Ketorolac works by inhibiting cyclooxygenase-1 and 2 enzymes to block the synthesis of prostaglandins and reduces inflammation and pain.

INDICATIONS:

A. Musculoskeletal pain.
B. Flank pain from suspected kidney stone.

CONTRAINDICATIONS:

A. Age < 2 or > 64.
B. History of renal disease or kidney transplant.
C. History of liver disease.
D. Allergies to aspirin or other NSAIDs.
E. Pregnancy, or lactating females.
F. On anticoagulant, such as vitamin K antagonists (e.g. warfarin) or directing agents such as rivoraxaban, apixaban, edoxaban, lovenox, and dabigatran.
G. Bleeding or clotting disorder or history of ulcer.
H. Suspected cardiac chest pain.
I. Any trauma system entry patient.
j. Altered mental status.

SIDE EFFECTS AND NOTES:

A. Burning or pain at the injection site
B. Nausea and vomiting
C. Dizziness
D. Headache
E. Itching
F. Flushing

ADULT DOSING:

A. Pain management -
    1. 30 mg IM or 15 mg IV. Single dose only

PEDIATRIC DOSING (age 2-16 years):

A. Pain management –
    1. 1 mg/kg IM to a max of 30 mg or 0.5 mg/kg IV to a max of 15 mg.

MEDICATIONS – Lidocaine

SUPPLIED:

A. 100 mg / 5 ml of 2% solution in pre-filled syringe

PHARMACOLOGY AND ACTIONS:

A. Lidocaine depresses the automaticity of Purkinje fibers, raising stimulation threshold in the ventricular muscle fibers which makes the ventricles less likely to fibrillate. It has little antiarrhythmic effect on the atrial muscle. Local anesthetic properties.

INDICATIONS:

A. Recurrent V fib, V tach, WCT.
B. RSI sequence in patient with reactive airway disease.
C. Pain management following insertion of IO needle.

CONTRAINDICATIONS:

A. Do not use in perfusing pts in the following situations:
    1. Systolic BP is < 90 mmHg.
    2. Heart rate is < 50 beats per minute.
    3. Periods of sinus arrest are present.
    4. Second or third degree heart block are present.

PRECAUTIONS:

A. Lidocaine is not recommended in the treatment of supra-ventricular arrhythmias.
B. If the patient begins seizing, stop the Lidocaine dosing and treat per Seizure protocol.

SIDE EFFECTS AND NOTES:

A. CNS side effects include sleepiness, dizziness, disorientation, confusion, and convulsions.
B. Hypotension
C. Lidocaine is metabolized in the liver and, therefore, patients with hepatic disease, shock or congestive heart failure will have decreased metabolism. All doses after the initial dose must be decreased to one-quarter of the initial dose.
D. Toxicity is more likely in elderly patients.

ADULT DOSING:

A. V Fib/Pulseless VT WCT:
    1. Bolus dose - 1.5 mg/kg IV/IO. Repeat to a max of 3 mg/kg if needed.
    C. WCT Stable:
    1. Bolus dose – 0.75 mg/kg IV/IO. Repeat to a max of 3 mg/kg if needed
    D. WCT Unstable
    1. Bolus dose – 1.5 mg/kg IV/IO.
    2. Recurrent dose – 0.75 mg/kg IV/IO. Repeat to a max of 3 mg/kg if needed
    E. Pain management for IO placement:

1. 40 mg slow bolus.

PEDIATRIC DOSING:
Same as adult for V-Fib/Pulseless VT, PVC's.
Pain management for IO placement- 0.5 mg/kg slowly, not to exceed 40mg.

MEDICATIONS – Magnesium Sulfate

SUPPLIED:

A. 1 gram (50%) / 2 ml vial

PHARMACOLOGY AND ACTIONS:

A. Magnesium is a cation that is present in human cells and intercellular fluids. It acts as an antiarrhythmic agent and is useful in the treatment of polymorphic ventricular tachycardia due to an underlying prolonged QT interval, ventricular fibrillation and ventricular tachycardia. Also has bronchial smooth muscle relaxation properties.

INDICATIONS:

A. Polymorphic Ventricular Tachycardia (Torsades de Pointes).
B. For the treatment of seizures in women with pre-eclampsia/eclampsia.
C. In severe asthma as a smooth muscle relaxant and inhibitor of histamine.
D. Tricyclic antidepressant (TCA) and Benadryl overdose.
E. Seizures associated with alcohol (ETOH) withdrawal.

CONTRAINDICATIONS:

A. None in the emergency setting.

PRECAUTIONS:

A. Hypotension, bradycardia, decreased reflexes and respiratory depression.

ADULT DOSING:

A. Wide complex, irregular tachycardia (Torsades), TCA/Benadryl OD:
   1. 2 g IV over 5 minutes.
B. WCT, Asthma
   1. 2 g IV over 5 minutes.
   F. Eclampsia
   1. 5 g IV over 10-15 minutes

PEDIATRIC DOSING:

A. Asthma
   1. 25-50 mg/kg over 5 minutes. Max 2 g.

MEDICATIONS – Midazolam (Versed)

SUPPLIED:

A. 5 mg / 1 ml vial

PHARMACOLOGY AND ACTIONS:

A. Midazolam is a benzodiazepine with potent sedative, anti-anxiety, and anticonvulsant properties. It also causes significant antegrade amnesia when administered IV.

INDICATIONS:

A. Status seizure.
B. Relieve anxiety and produce amnesia during cardioversion, pacing or paralytic intubation.
C. To facilitate restraint in patients whose cause of agitation is likely drug ingestion (especially stimulants), withdrawal, or from a postictal state.
D. Hyperadrenergic toxicity, Excited Delirium.

PRECAUTIONS:

A. Midazolam causes respiratory depression and/or hypotension especially if administered rapidly. Monitor patient closely.

SIDE EFFECTS AND NOTES:

A. Drowsiness, hypotension, respiratory depression or apnea. These are more likely to occur in the very young and the elderly.
B. Respiratory depression is more likely in patients who have taken other CNS depressant drugs such as opioids alcohol and barbiturates, or when given rapidly.
C. Midazolam is metabolized in the liver and excreted by the kidney. Doses should be adjusted accordingly in patients with underlying hepatic or renal diseases and low flow states such as congestive heart failure.

ADULT DOSING:

A. Seizures, hyperadrenergic toxicity, chemical restraint, procedural sedation:
    1. 0.05-0.1 mg/kg max of 10 mg IV/IO/IM.
B. RSI sedation
    1. 0.1 mg/kg max of 10 mg IV/IO/IM
C. Post RSI sedation
    1. 0.05-0.1 mg/kg max of 10 mg IV/IO/IM q 10 minutes.
C. CPAP Facilitation/Narcotic potentiation
    1. 2mg IV/IO/IM

PEDIATRIC DOSING: Same as adult with the exception of:

A. Narcotic potentiation
    1. 0.1 mg/kg max of 2mg

MEDICATIONS – Methylprednisolone (Solumedrol)

SUPPLIED:

A. 125 mg solution / 2 ml Actovial.

PHARMACOLOGY AND ACTIONS:

A. Intermediate-acting synthetic adrenal corticosteroid with similar glucocorticoid activity. An anti-inflammatory agent in the management of acute and chronic inflammatory diseases.

INDICATIONS:

A. Asthma, COPD.
B. Anaphylaxis.
C. Croup.
D. Addisonian Crisis

CONTRAINDICATIONS:

A. Acute infections.

PRECAUTIONS:

A. Caution in Cushing's syndrome, GI ulceration, hypertension, diabetes.

SIDE EFFECTS AND NOTES:

A. Do not mix with dextrose, calcium gluconate, or ondansetron.

ADULT DOSING:

A. 125 mg IV/IO/IM.

PEDIATRIC DOSING:

A. 2 mg/kg to a max of 125 mg.

MEDICATIONS – Morphine Sulfate

SUPPLIED:

A. 10 mg/ml

PHARMACOLOGY AND ACTIONS:

A. Binds to various opioid receptors, producing analgesia and sedation (opioid agonist)

INDICATIONS:

A. Pain control

PRECAUTIONS:

A. Respiratory depression
B. Hypotension

SIDE EFFECTS AND NOTES:

A. Respiratory depression is the primary risk, occurs more frequently in elderly or debilitated patients and in those suffering from conditions accompanied by hypoxia, hypercapnia, or upper airway obstruction, in whom even moderate therapeutic doses may significantly decrease pulmonary ventilation.
B. Prepare to manage respiratory depression.
C. Rapid intravenous administration may result in chest wall rigidity.

ADULT DOSING:

A. 2-10 mg IV/IO/IM bolus.

PEDIATRIC DOSING:

A. Peds 0.1-0.2 mg/kg (max 2 mg single dose)

MEDICATIONS – Naloxone (Narcan)

SUPPLIED:

A. 2 mg / 2 ml pre-filled syringe

PHARMACOLOGY AND ACTIONS:

A. Naloxone is an opioid antagonist which competitively binds to opioid receptor sites but which exhibits almost no pharmacologic activity of its own. Duration of effect is 1-4 hours.

INDICATIONS:

A. Reversal of opioid effects, particularly respiratory depression, due to opioid drugs either ingested or injected or administered in the course of treatment.
B. Diagnostically in coma of unknown etiology to rule out or reverse opioid depression.

PRECAUTIONS:

A. In patients physically dependent on opioids, violent withdrawal symptoms may occur. Be prepared to restrain the patient.
B. Some opioid intoxications may require up to 8 mg of naloxone to reverse symptoms (e.g. Methadone, designer drugs).

SIDE EFFECTS AND NOTES:

A. The duration of some opioids is longer than naloxone, repeat doses may be necessary. Monitor the patient closely. Patients who have received naloxone must be transported to the hospital because coma may reoccur when naloxone wears off.
B. Side effects are rare. Do not hesitate to use if indicated.
C. If no effect is seen from naloxone administration, consider other causes of coma.

ADULT DOSING:

A. Reversal of opioid effects:
    1. 0.1-2 mg IV/IO/IM/IN PRN. If no IV, give 2 mg IM/IN.
    2. 2 mg IN.
    3. No max dose.

PEDIATRIC DOSING:

A. Reversal of opioid effects:
    1. 0.1 mg/kg to a max of 2 mg IV/IO/IM/IN

MEDICATIONS – Nitroglycerine

SUPPLIED:

A. 0.4 mg metered dose spray, 0.4 mg tablets, Nitropaste

PHARMACOLOGY AND ACTIONS:

A. Nitroglycerin is an organic nitrate and is a vasodilating agent. Its cardiovascular effects include: reduced venous tone (causing pooling of blood in the peripheral veins and decreased return of blood to the heart), decreased peripheral resistance, and dilation of coronary arteries. It also is a general smooth muscle relaxant.

INDICATIONS:

A. Chest pain thought to be related to cardiac ischemia.
B. Pulmonary edema.

CONTRAINDICATIONS:

A. Blood pressure < 100 mmHg systolic.
B. Do not give to patients with an inferior myocardial infarction.
C. Patients taking phosphodiesterase inhibitor: Viagra® (sildenafil citrate), Levitra® (vardenafil HCl), Cialis® (tadalafil).

PRECAUTIONS:

A. Generalized vasodilatation may cause profound hypotension and reflex tachycardia.
B. IV should be established prior to administration in patients who have not taken Nitroglycerin previously, or who have a potential for hemodynamic instability.

SIDE EFFECTS AND NOTES:

A. Common side effects are headache, flushing or dizziness.
B. Because nitroglycerin causes generalized smooth muscle relaxation, it may be effective in relieving chest pain caused by esophageal spasm.

ADULT DOSING:

A. Chest pain, pulmonary edema -
    1. 0.4 mg SL every 5 minutes until pain is relieved or relief of dyspnea as long as systolic BP is > 100 mmHg.
    2. 2 inches applied transdermal to chest

MEDICATIONS – Norepinephrine (Levophed)

SUPPLIED:

A. 4 mg/4ml ampules or vials

PHARMACOLOGY AND ACTIONS:

A. Norepinephrine stimulates alpha receptors in the peripheral vasculature, producing vasoconstriction related increase in systemic blood pressure. Concurrent beta receptor stimulation may produce increases in heart rate and mild bronchodilation.

INDICATIONS:

A. Obstructive, cardiogenic and distributive shock unresponsive to fluid administration.

CONTRAINDICATIONS:

A. Hypovolemic shock.

PRECAUTIONS:

A. Norepinephrine should be given in a large, patent vein (i.e. antecubital or larger). Do not administer through a hand or leg vein, as these are more likely to be affected by vaso-occlusive diseases and more prone to ischemic complications.
B. Extravasation of norepinephrine into tissue may cause necrosis. The IV should be checked for patency prior to administration and monitored continuously.
C. Norepinephrine is a potent vasoconstrictor and may cause hypertension. The rate of flow should be carefully monitored and blood pressures checked often.
D. Consider hypovolemia and treat this with appropriate fluids before administration of norepinephrine.

SIDE EFFECTS AND NOTES:

A. Symptoms may include headache, palpitations, tachycardia, chest pain and eventual hypertension.
B. Reflex bradycardia can result from an increase in blood pressure.

ADULT DOSING:

A. Cardiogenic/Distributive/Obstructive shock:
    1. Begin at 4 mcg/minute. If no response, increase every 5 minutes in 4 mcg/minute increments to max of 12 mcg/minute. Goal is a systolic blood pressure of > 90 mmHg.

PEDIATRIC DOSING:

A. Begin at 0.1 mcg/kg/minute. If no response in 5 min, increase to 0.2 mcg/kg/minute. If still no response after 5 more minutes may increase to 0.4 mcg/kg/minute. Goal is age appropriate systolic blood pressure.

MEDICATIONS – Ondansetron (Zofran)

PHARMACOLOGY AND ACTIONS:

A. Ondansetron is a potent, highly selective serotonin (5-HT3) receptor agonist. Its precise mode of action in the control of nausea is not known. Pharmacologic agents and other triggers may cause release of 5-HT3 receptors. Ondansetron blocks the initiation of this reflex. Ondansetron is commonly used in the treatment of nausea in patients who are receiving chemotherapy or as a postoperative nausea treatment. Peak plasma concentrations of the drug occur 10 minutes after IV administration, and 40 minutes after IM injection. Both routes have the same elimination half-life of 4 hours.

INDICATIONS:

A. Prevention and control of uncomplicated nausea and vomiting.
B. Prevention of anticipated nausea with Fentanyl administration.

CONTRAINDICATIONS:

A. Known hypersensitivity to Zofran or similar medications.
B. Children >2 years old.

PRECAUTIONS:

A. Patients with bowel obstruction should be monitored closely following administration.
B. Ondansetron may precipitate if mixed with alkaline solutions.
C. ECG changes including QT interval prolongation and Torsades de Pointes have been observed in patients receiving ondansetron. Monitor pts ECG closely.

SIDE EFFECTS AND NOTES:

A. The most common side effects include headache, dizziness, drowsiness, constipation and shivers.
B. Body aches, agitation, dysuria, hypotension and rash have also been reported in a very small number of patients.

ADULT DOSING:

A. Nausea and vomiting –
    1. 4-8 mg tablet IV/IM/PO. Give slowly over two minutes if giving IV.

PEDIATRIC DOSING:

A. Nausea and vomiting
    1. >2 years and/or >20 kg, 0.1 mg/kg IV/IM do not exceed adult dose.
    2. >40 kg 4mg ODT

MEDICATIONS – Rocuronium (Zemuron)

SUPPLIED:

A. 100 mg in 10 mL vial

PHARMACOLOGY AND ACTIONS:

A. Non-depolarizing neuromuscular blocking agent. Rocuronium produces a pure reversible competition between antagonist molecules and acetylcholine (Ach) for occupancy at the Ach binding site. Neuromuscular blockade occurs within 90 seconds for induction dose and 1 to 3 minutes for maintenance dose. Time to recovery is 20 to 30 minutes. Metabolism is 5 to 35% renal and the remainder by the liver.

INDICATIONS:

A. For sustained neuromuscular blockade in the intubated patient.
B. For induction intubation (RSI) in the patient when succinylcholine is contraindicated or unavailable

PRECAUTIONS:

A. Use of pulse oximetry is required.
B. Rocuronium does not substantially affect heart rate or rhythm, systolic or diastolic blood pressure, mean arterial pressure, cardiac output or systemic vascular resistance.
C. Rocuronium has no effect on consciousness and must be used with a sedative or induction agent.
D. Rocuronium should not be administered simultaneously with furosemide, methylprednisolone, or sodium bicarbonate.

ADULT AND PEDS DOSING:

A. 1 mg/kg IV/IO.

MEDICATIONS – Sodium Bicarbonate (NaHCO3)

SUPPLIED:

A. 50 mEq / 50 ml pre-filled syringe

PHARMACOLOGY AND ACTIONS:

A. Sodium bicarbonate is an alkalotic solution which neutralizes acids found in the blood. Acids are increased in the blood when body tissues become hypoxic. Acidosis depresses cardiac contractility and cardiac response to catecholamines and makes the heart more likely to fibrillate and less likely to defibrillate. In the non-perfusing patient sodium bicarbonate has been shown to increase the intracellular acidosis and worsen acid/base balance, thus it is not recommended in the routine cardiac arrest sequence.

INDICATIONS:

A. To control arrhythmias or asystole in TCA/Benadryl overdose or hyperkalemia.
B. Acidosis caused by prolonged cardiac arrest.

PRECAUTIONS:

A. Addition of too much bicarbonate may result in alkalosis that is difficult to reverse and may cause as many problems in resuscitation as acidosis.
B. May increase cerebral acidosis, especially in diabetics who are ketonic.
C. Do not mix sodium bicarbonate with calcium preparations. Slowly flush one drug from the catheter before administering the other.

SIDE EFFECTS AND NOTES:

A. Each amp of sodium bicarbonate contains 50 mEq of sodium. This may increase intravascular volume and hyperosmolarity resulting in cerebral impairment.

ADULT DOSING:

A. 1 mEq/kg IV/IO max 50 mEq single dose.
   1. For TCA/Benadryl OD, mix 50mEq in 1000ml slow drip.
B. Hyperkalemia:
   1. 50 mEq/50 ml NS.

PEDIATRIC DOSING:

A. 1 mEq/kg IV/IO max 50 mEq single dose.

MEDICATIONS – Sodium Thiosulfate

SUPPLIED:

A. 12.5 grams / 50 ml vial

PHARMACOLOGY AND ACTIONS:

A. Sodium Thiosulfate is used as an antidote for cyanide poisoning. The primary mechanism of cyanide detoxification involves the conversion of cyanide to the thiocyanate ion, which is relatively non-toxic. This reaction involves the enzyme rhodanese which is found in many body tissues but with the major activity in the liver. The body has the capability to detoxify cyanide, however, the rhodanese enzyme system is slow to respond to large amounts of cyanide. The rhodanese enzyme reaction can be accelerated by supplying an exogenous source of sulfur. This is commonly accomplished by administering sodium thiosulfate.

INDICATIONS:

A. Cyanide poisoning.

CONTRAINDICATIONS:

A. Do not administer to a patient who has been given hydroxocobalamin (Cyano-Kit).

PRECAUTIONS:

A. It is not known whether Sodium Thiosulfate can cause fetal harm when administered to a pregnant woman and should only be administered in this setting if clearly needed.

ADULT DOSING:

A. 50 ml 25% solution IV over 10 minutes.

PEDIATRIC DOSING:

A. 1.65 ml/kg slow IV over 10 minutes.

MEDICATIONS – Succinylcholine

SUPPLIED:

A. 200 mg / 10 ml vial

PHARMACOLOGY AND ACTIONS:

A. Succinylcholine is a short acting motor nerve depolarizing skeletal muscle relaxant. It competes with acetylcholine to combine with cholinergic receptors in the motor end plate causing depolarization inhibiting neuromuscular transmission. After intravenous injection, paralysis is obtained within 1-2 minutes and persists for approximately 4-6 minutes. Effects then start to fade and return to normal. Succinylcholine is hydrolyzed by plasma pseudocholinesterase and is excreted by the kidneys.

INDICATIONS:

A. To achieve temporary paralysis where endotracheal intubation is indicated.

CONTRAINDICATIONS:

A. Hypersensitivity to the drug.
B. Major burns and crush injuries between 48 hours and 6 months old.
C. Neuromuscular disease (e.g. muscular dystrophy, multiple sclerosis).
D. Suspected hyperkalemia (e.g. end-stage renal disease patients who have missed dialysis).

PRECAUTIONS:

A. Succinylcholine shall not be administered unless personnel trained and authorized in this procedure are present and ready to perform the procedure.
B. Oxygen, ventilation equipment and resuscitation drugs should be readily available.
C. Succinylcholine produces paralysis but does not alter a person's level of consciousness. Sedation will be provided to the patient during the procedure.

SIDE EFFECTS AND NOTES:

A. In rare individuals, because of pseudocholinesterase deficiency, paralysis may persist for a prolonged period of time. Be prepared to continue to assist ventilations as needed.

ADULT/PEDIATRIC DOSING:

A. Rapid sequence intubation:
    1. 1.5 mg/kg IV/IO x 2 prn. Max 200 mg single dose.

MEDICATIONS – Vecuronium (Norcuron)

SUPPLIED:

A. 10 mg vial of powder and 10 ml vial of diluent solution

PHARMACOLOGY AND ACTIONS:

A. Vecuronium is a non-depolarizing neuromuscular blocking agent causing skeletal muscle relaxation. It reversibly binds the acetylcholine receptor, blocking the action of acetylcholine. Neuromuscular blockade occurs within 2-3 minutes. Time to recovery is 30-45 minutes. Vecuronium metabolism is 5-35% renal with the remainder done in the liver.

INDICATIONS:

A. For sustained neuromuscular blockade in the intubated patient.

PRECAUTIONS:

A. Patients with renal or hepatic failure may experience prolonged paralysis.
B. Vecuronium has no effect on consciousness and must be used with a sedative or induction agent.

SIDE EFFECTS AND NOTES:

A. Vecuronium exhibits minimal side effects and does not substantially affect heart rate or rhythm, systolic or diastolic blood pressure, mean arterial pressure, cardiac output, or systemic vascular resistance.

ADULT/PEDIATRIC DOSING:

A. Rapid Sequence Induction:
    1. 0.1 mg/kg IV/IO.

MEDICATIONS – Verapamil

PHARMACOLOGY AND ACTIONS:

A. Calcium ion influx inhibitor (slow-channel blocker) that exerts its pharmacologic effects by modulating the influx of ionic calcium across the cell membrane of the arterial smooth muscle as well as in myocardial cells. Decreases rate and systemic vascular resistance.

INDICATIONS:

A. NARROW complex supraventricular tachycardia.
B. Alternative medication to Diltiazem

CONTRAINDICATIONS:

A. Hypotension, wide complex tachycardias.
B. WPW, presence of delta wave.
C. Severe left ventricular dysfunction.

PRECAUTIONS:

A. Patients taking beta blockers at higher risk for hypotension.
B. Use with caution in patients with liver failure, congestive heart failure.

SIDE EFFECTS:

A. Hypotension – treat with calcium gluconate per protocol. If refractory, treat per shock protocol.

ADULT DOSING:

A. 5 mg IV slow over 2-3 minutes. May repeat 5 mg every 15 minutes prn to max of 20 mg.

MEDICATIONS – Ziprasidone (Geodon)

SUPPLIED:

A. 20 mg single dose vial when reconstituted

PHARMACOLOGY AND ACTIONS:

A. Antipsychotic.
B. The mechanism of action of ziprasidone is unknown. However, it is thought to be through blocking of dopamine and serotonin receptors producing sedation and tranquilization.
C. Onset of action of a single IM dose is from 15 to 30 minutes and duration of action is 2-4 hours. The peak effect may not be apparent for up to 2 hours.

INDICATIONS:

A. Chemical restraint in combative patients.

CONTRAINDICATIONS:

A. Known allergy.

PRECAUTIONS:

A. May cause hypotension. Treat shock per protocol when feasible.
B. Use caution when administering ziprasidone to patients who have taken other CNS depressant drugs (e.g. sedative-hypnotics, alcohol). Consider reduced doses in these cases.
C. May induce Torsades de Pointes. Monitor ECG and Q-T interval following use.
D. Extrapyramidal symptoms have been reported. If severe, treat with diphenhydramine 50 mg.
E. Use with caution in patients with a seizure disorder or condition that causes seizures.

NOTES & PRECAUTIONS:

A. Somnolence, dizziness, headache, nausea have occurred following administration. These are not life threatening and generally do not require treatment.

ADULT DOSING:

A. Patient Restraint:
    1. 10 - 20 mg IM. (IM ONLY) Do not repeat.

REFERENCE – Abbreviations, Approved

COMMON ABBREVIATIONS

ABD	Abdomen
AED	Automated External Defibrillator
AFib	Atrial fibrillation
ALS	Advanced life support
AMA	Against medical advice
AMI	Acute myocardial infarction
ASA	Aspirin
ATF	Arrived To Find
ASHD	Arteriosclerotic heart disease
BID	Twice a day
BBB	Bundle Branch Block
BGL	Blood glucose level
Bk	Back
BLS	Basic life support
BP	Blood pressure
BS	Breath sounds,
BALANCE SALT SOLUTION	Balance Salt Solution
BVM	Bag-valve-mask
c/o	Complaining of
Ca	Cancer/carcinoma
CAOx4	Conscious, Awake, Oriented x 4 (Person, place, time, event)
CBG	Capillary Blood Glucose
cc	Cubic centimeter
C/C	Chief Complaint
CHF	Congestive heart failure
CO	Carbon monoxide
CO2	Carbon dioxide
COPD	Chronic obstructive pulmonary disease (emphysema, chronic bronchitis)
CP	Chest pain
CPAP	Continuous positive airway pressure
CPR	Cardiopulmonary resuscitation
CSF	Cerebrospinal fluid
CVA	Cerebrovascular accident
Cx	Chest
d/c	Discontinue
DM	Diabetes mellitus
DNR	Do not resuscitate
DOA	Dead on arrival
DOB	Date of birth
Dx	Diagnosis

ECG	Electrocardiogram
e.g.	For example
EKG	Electrocardiogram
ETA	Estimated time of arrival
ETCO2	End-tidal carbon dioxide
ETT	Endotracheal Tube
Ext	Extremity
FAST	Stroke findings: Facial, Arm, Speech, Time
FROM	Full range of motion
Fx	Fracture
GCS	Glasgow Coma Score
GI	Gastrointestinal
g	Gram
GSW	Gunshot wound
gtt.	Drop
gtts	Drops
GU	Genitourinary
GYN	Gynecologic
hr.	Hour
H/A	Headache
HEENT	Head, ears, eyes, nose, throat
Hg	Mercury
h/o	History of
HPI	History of present illness
HTN	Hypertension
Hx	History
ICP	Intracranial pressure
ICU	Intensive Care Unit
IDDM	Insulin dependent diabetes mellitus
IM	Intramuscular
IN	Intranasal
IO	Intraosseous
IV	Intravenous
JVD	Jugular venous distension
kg	Kilogram
KVO	Keep vein open
L	Left or Liter
lac	Laceration
LAMS	Los Angeles Motor Score
lbs	Pounds
LBB	Long back board
LBBB	Left bundle branch block
LE	Law enforcement
LLQ	Left lower quadrant

LOC	Level of consciousness
LS	Lung sounds
LSC	Legacy Salmon Creek
LUQ	Left upper quadrant
LZ	Landing zone
mcg	Micrograms
MC	Medical Control
mg	milligram
MgSO4	Magnesium Sulfate
MI	Myocardial infarction
MRH	Medical Resource Hospital
MS	Morphine sulphate, multiple sclerosis
NAD	No apparent distress
NaHCO3	Sodium Bicarbonate
NC	Nasal cannula
NIDDM	Non Insulin Dependent Diabetes Mellitus
NKA	No known allergies
NKDA	No known drug allergies
NPO	Nothing by mouth
NRB	Non-rebreather mask
NS	Normal saline
NSAID	Non Steroidal Anti-inflammatory Drug
NSR	Normal sinus rhythm
NTG	Nitroglycerin
N/V	Nausea / vomiting
O2	Oxygen
OB	Obstetrics
OD	Overdose
OPA	Oropharyngeal airway
OR	Operating room
PCN	Penicillin
PEA	Pulseless electrical activity
PEEP	Positive end expiratory pressure
PERL	Pupils equal and reactive to light
PHSW	Peace Health Southwest
PID	Pelvic inflammatory disease
PMHx	Past medical history
PMD	Personal Medical Doctor
PND	Paroxysmal nocturnal dyspnea
PO	Per os (by mouth)
POV	Per own vehicle
PRN	As needed
PSM	Pulses, Sensation, Movement
PSVT	Paroxysmal supra ventricular tachycardia

Pt	Patient
PTA	Prior to arrival
PVC	Premature ventricular contraction
q.h.	Every hour
QID	Four times a day
R	Right
r/o	Rule out
RLQ	Right lower quadrant
ROC	Resuscitation Outcomes Consortium
ROM	Range of motion
ROSC	Return of Spontaneous Circulation
RUQ	Right upper quadrant
RVH	Right ventricular hypertrophy
RVR	Rapid ventricular response
Rx	Prescription
SaO2	Pulse Oximetry
SIDS	Sudden Infant Death Syndrome
SL	Sublingual
SNT	Soft, non-tender
SOB	Shortness of breath
STAT	immediately
SVT	Supraventricular tachycardia
Sx	Symptoms
TCC	Trauma Communications Center
TIA	Transient ischemic attack
TID	Three times a day
TKO	To keep open
Tv	Tidal volume
Tx	Treatment
Trnx	Transport
VF	Ventricular fibrillation
VT	Ventricular tachycardia
V.S.	Vital signs
WNL	Within normal limits
WPW	Wolf-Parkinson-White
Wt.	Weight
x	Times
y/o	Year(s) old
$\bar{a}$	Before
$\underline{p}$	After
@	At
$\underline{c}$	With
$\underline{s}$	Without
Δ	Change

↑	Increasing
↓	Decreasing
>	Greater than
<	Less than
~	Approximate
+	Positive
-	Negative
♂	Male
♀	Female

REFERENCE – Glasgow Coma Scale Adult and Infant

	Adult		Infant
EYES	*Spontaneous*	**4**	*Spontaneous*
	To Speech	**3**	*To Speech*
	To Pain	**2**	*To Pain*
	No Response	**1**	*No Response*
MOTOR	*Obeys verbal command*	**6**	*Normal movements*
	Localizes pain	**5**	*Localizes pain*
	Flexion- w/draws from pain	**4**	*Flexion- w/draws from pain*
	Flexion- abnormal	**3**	*Flexion- abnormal*
	Extension	**2**	*Extension*
	No response	**1**	*No response*
VERBAL	*Oriented and converses*	**5**	*Coos, babbles*
	Disoriented & converses	**4**	*Cries but consolable*
	Inappropriate words	**3**	*Persistently irritable*
	Incomprehensible sounds	**2**	*Grunts to pain, restless*
	No response	**1**	*No response*

REFERENCE – Rule of Nines