Cowlitz County EMS 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 Cowlitz 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 Cowlitz County.
B. Provide the EMS providers 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 EMS providers 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 and advanced life support procedures. ALS procedures will be identified by a ⊕ preceding the procedure. BLS identified procedures are in green text. A ➤ is intended to identify an ALS therapy to be used only with Medical Control Physician concurrence.
F. Identify Pediatric specific treatment, procedures, and medications. EMS providers should consult Pediatric length-based guides to ensure appropriate dosing of medications.
G. 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 EMS providers; it is assumed that each EMS provider 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 physicians.
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 Technicians working within Cowlitz 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

Approved Procedures and Skills for Certified EMS Providers

EMS Scope of Practice Guidance- In general EMS scope of practice includes: 1) Environment of practice (RCW 18.73.030)(10)(12), (WAC 246-976-182); 2) Medical Direction (RCW 18.71, 18.73), (WAC 246-976-182, 246-976-144); 3) Training, skills and procedures (RCW 18.73.081), (WAC 246-976-182); and 4) EMS service affiliation (RCW 18.73), (WAC 246-976-182). Certified EMS providers are authorized to provide care under the authority of the EMS county Medical Program Director (MPD), in a pre-hospital emergent environment unless participating in CARES programs authorized under RCW 35.21.930 or with recognized Emergency Medical Services Supervisory Organizations (ESSOs) in accordance with RCW 18.73.081(10)(12). Certified EMS providers are authorized to perform skills and procedures listed in this guidance document if they have received training and a department approved MPD patient care protocol is in place. 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 skills competency 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	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 CombiTube, King LT, i-gel)		W/W**	N	N

Airway	EMR	EMT	AEMT	PARA
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				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 & 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
Pulse Oximetry	W*	N	N	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), Patient Restraint, 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 - 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				
Intramuscular - Auto Injector	N	N	N	N
Intramuscular - Syringe and needle – Draw medication using a needle from a vial into a syringe.		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 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 or fever)			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 OTC for pain or fever		N	N	N
Antidotes for chemical / hazardous material / nerve agent exposures (autoinjector)	N	N	N	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
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
Depolarizing Agents for Pharmacological Facilitation of Intubation				N
Diphenhydramine (AEMT limited to IV, PO, IM with specialized training)		W*	W*	N
Diphenhydramine EMT (limited to PO with specialized training)		W*	W*	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
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 (AEMT IV, IM, PO)			N	N
Ondansetron (EMT limited to 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
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 EMT, AEMT and paramedic may administer vaccine for influenza and COVID-19 in adult and pediatric populations in a declared emergency when all of the following exist: 1) there is a local or state declaration of an emergency under the provisions of chapter 38.52 RCW; 2) EMS personnel have completed any MPD-approved specialized training and have received approval from the MPD to perform the skill. 3)The EMS personnel are acting under the medical oversight and direction of a county MPD or MPD delegate physician such as the local health officer and a department approved MPD protocol is in place. 4) The EMS personnel are affiliated with a licensed EMS service, and the EMS service is coordinating the activity with appropriate organizations authorized to conduct the community surveillance of infectious disease. 5) The vaccines are managed in accordance with applicable local, state, and federal requirements.
Conducting nasopharyngeal swabbing for COVID-19 EMT, AEMT and paramedic may conduct nasal swab testing for COVID-19 in a declared emergency when all of the following exist: 1) there is a local or state declaration of an emergency under the provisions of chapter 38.52 RCW; 2) EMS personnel have completed any MPD-approved specialized training and have received approval from the MPD to perform the skill. 3) The EMS personnel are acting under the medical oversight and direction of a county MPD or MPD delegate physician such as the local health officer and a department approved MPD protocol is in place. 4) The EMS personnel are affiliated with a licensed EMS service, and the EMS service is coordinating the activity with appropriate organizations authorized to conduct the community surveillance of infectious disease. 5) The nasopharyngeal swabbing processes are managed in accordance with applicable manufacture, local, state, and federal requirements.
AEMT and Paramedics may administer monoclonal antibodies for COVID-19 in a declared emergency when all of the following exist: 1) there is a local or state declaration of an emergency under the provisions of chapter 38.52 RCW; 2) EMS personnel have completed any MPD-approved specialized training and have received approval from the MPD to perform the skill. 3) The EMS personnel are acting under the medical oversight and direction of a county MPD or MPD delegate physician such as the local health officer and a department approved MPD protocol is in place. 4) The EMS personnel are affiliated with a licensed EMS service, and the EMS service is coordinating the activity with appropriate organizations authorized to conduct the community surveillance of infectious disease. 5) The medications are managed in accordance with applicable manufacture, local, state, and federal requirements. 6) Quality assurance activities in accordance with their department approved MPD quality assurance plan is conducted by the MPD.
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.
EMT and higher-level providers may transport medical devices and equipment that can be managed by the patient or patient's caregiver 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.
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 physician to be a BLS level transport and a department approved MPD protocol is in place. EMTs are not authorized to establish an IV unless 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.
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 sending physician 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.
Paramedic personnel may transport patients with medications infusing if a department-approved MPD protocol is in place and providers 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.
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 medications are in place.
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 flow and 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 passive oxygenation 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.

SW Region Approved Medication List

Medication	Dose	Indication
Acetaminophen Suppositories/PO	Peds 20mg/kg	Fever >103°F
Activated Charcoal	50 gm PO Peds 1-2g/kg Max 50gm	Ingestion
Adenosine (Adenocard)	6 mg, 12mg Peds 0.1mg/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)	3-5 mg Nebulized repeat prn to sx resolution Peds <15kg 2.5-5mg >15kg 5-10mg	-Bronchospasm/wheezing -Hyperkalemia
Amiodarone (Cordarone)	a) 300 mg IV/IO may repeat 150 mg in 3-5 min. b) 150 mg over 10 min x 2 prn Peds 5 mg/kg bolus Max 150mg	a) VF/pulseless VTach b) Stable V Tach
Aspirin	162-324mg PO	Chest Px. Possible MI
Atropine	a) 0.5 mg max 3 mg b) 1-2 mg q 5 min. Peds 0.01-0.02mg/kg Max 2mg	a) Bradycardia b) Organophosphate poisoning c) RSI peds <6
Ipratroprium Bromide (Atrovent)	0.5 mg/2.5 mL Nebulized repeat prn to sx resolution Peds <5 yo ½ adult dose	Bronchospasm/wheezing due to asthma, COPD, anaphylaxis, inhalation
Calcium Gluconate 10%	10 ml (1gm) Peds 0.5 ml/kg Max 10 mL	Hyperkalemia, Calcium Channel blocker OD
Calcium Chloride	a) 500 mg IV/IO, max 500mg b) 250-500 mg IV/IO Peds 20 mg/kg (max 500mg)	a) Hyperkalemia b) Calcium Channel blocker OD
Dexamethasone (Decadron)	10 mg IV/IO/IM/PO Peds 0.6mg/kg Max 10mg	Asthma, COPD, Anaphylaxis, Croup
Dextrose D10 D50 alternative	10 gm (100 mL) repeat 5 gm prn to normal BGL max 25 gm Peds 0.1gm/kg Max 25 gm 10 gm D50W (20 ml) IV. May repeat prn to total 25 gm.	ALOC, Hypoglycemia
Diltiazem	0.25 mg/kg Max 20mg given slow over 2 mins. After 15mins may repeat at 0.35mg/kg (max) 25mg.	Atrial fibrillations, Atrial flutter with rapid ventricular response. Paroxysmal supraventricular tachycardia (PSVT) refractory to Adenosine.
Diphenhydramine (Benadryl)	1 mg/kg IV/IM Max 50mg	Allergy, Anaphylaxis, EPS

Medication	Dose	Indication
Epinephrine	a) 1 mg (1:10,000) q 3-5 min. Peds 0.01mg/kg Max 1mg b) 2-10 mcg/min IV infusion Peds 0.1mcg/kg/min c) 0.3 mg (1:1,000) IM Peds 0.01 mg/kg Max 0.3 mg d) 0.25-0.5 ml via nebulizer	a) Cardiac Arrest b) Hypotension/profound Bradycardia/status asthmaticus Anaphylaxis c) If unable to start IV in Anaphylaxis d) - Croup/Epiglottitis
Etomidate (Amidate)	0.3 mg/kg max 20 mg IV	Sedation during RSI
Fentanyl	25-50 mcg IV, IO, IM max 3 mcg/kg (no more than 200 mcg/hr) Peds 1-2 mcg/kg IV, IO, IN max 200 mcg	- Chest pain - Musculoskeletal pain
Glucagon	1 mg SC, IM Peds 0.5mg	Hypoglycemia
Haloperidol (Haldol)	2 mg – 5 mg IV/IM. May repeat q 15min to total 10mg max dose. Peds 0.1 mg/kg Max 5mg	Chemical Sedation
Hydroxocobalamin (Cyanokit)	5 g IV/IO Bolus over 15 min, max 10g Peds 70 mg/kg IV/IO over 15 min (max 5g)	Cyanide poisoning
Ketamine	a) 2 mg/kg IV/IO max 200 mg b) 0.4 mg/kg IV/IO max 50 mg 1mg/kg IM max 75 mg c) 4 mg/kg IM max 300 mg	a)- Sedation of RSI b)- Sedation for CPAP, Pain c)- Control adjunct, combative patients
Ketorolac (Toradol) NOT FOR TRAUMA SYSTEM PATIENTS	30 mg IM OR 15 mg IV Peds 1 mg/kg IM OR 0.5 mg/kg IV do not exceed adult dose	Non-Cardiac pain management
Lidocaine	a) 1–1.5 mg/kg repeat 0.5-0.75 mg/kg prn to 3 mg/kg max b) 40 mg slow IO Peds 1 mg/kg	a) VF, VT, WCT b) local pain control after IO insertion
Magnesium Sulfate	a) 2-4 gm over 5-10 min b) 2-4 gm over 5-10 min c) 2-4 gm over 5-10 min Peds 25-50 mg/kg Max 2gm	a) Torsades VT; TCA OD, Eclampsia b) WCT, status asthmaticus c) ETOH Seizure
Methylprednisolone (Solumedrol)	125 mg IV Peds 2 mg/kg Max 125mg	- Asthma - Anaphylaxis - Addisonian Crisis
Midazolam (Versed)	2.5-10 mg IV, IN, Deep IM Peds 0.1-0.2 mg/kg IV, Deep IM Max 10 mg	- Seizures - Sedation (RSI, pacing, cardioversion) - Cocaine, meth, MDMA, hyperadrenergic toxicity - Chemical sedation

Medication	Dose	Indication
Morphine Sulfate	2-10 mg IV/IO/IM Bolus Max 20 mg Peds0.1-0.2mg/kg(max 2mg singledose)	Pain management
Naloxone (Narcan)	0.5-2 mg x2 prn IV, IM, IN, IO Peds 0.1mg/kg to max of 2mg	- Narcotic OD w/ respiratory depression - ALOC w/ respiratory depression
Nitroglycerine	0.4 mg (spray) SL 0.4 mg (tablet) SL	- Chest pain - CHF/PE
Norepinephrine	4 mcg/min. increase 4 mcg/min q 5 mins to max of 12 mcg/min. Peds 0.1 mcg/kg/min. May increase to 0.2 mcg/kg/min then to max of 0.4 mcg/kg/min every 5 mins prn	- Shock (not hypovolemic)
Ondansetron (Zofran)	4-8 mg IV, PO Peds >2 years (20kg) 0.1 mg/kg donotexceed adult dose	- Nausea/Vomiting Prevent N/V with **Fentanyl** administration
Racemic Epinephrine	Peds 0.5 mL if Peds 20-40kg 0.25 mL if Peds <20kg Mix in 5 ml NS via Med Neb	- Croup/Epiglottitis
Rocuronium	1 mg/kg IV	Facilitate intubation; long term paralytic
Sodium Bicarbonate	a) 1 mEq/kg IV (add 1 amp to IV bag in TCA OD) b) 50 mEq/5 mL IV	a) Cardiac Arrest, VF in hypothermia, TCA/**Benadryl** OD, near drowning. b) Hyperkalemia
Sodium Thiosulfate	50 ml 25% solution IV over 10 mins. Peds - 1.65 mL/kg IV/IO infused over 10 to 20 minutes.	Cyanide Poisoning
Succinylcholine	1.5 mg/kg IV x 2 prn max single dose 200mg	Facilitate intubation
Vecuronium (Norcuron)	0.1 mg/kg IV	Long Term Paralytic After confirmed intubation
Verapamil	5 mg IV may repeat q 15 min max 30 mg	Afib, Aflutter with rapid ventricular response
Ziprasidone (Geodon)	10-20 mg IM ONLY	Chemical Sedation

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. IOPQRST/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 when administering medications to pediatric patients.
   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)
D. Critical Patient Care:
   1. For critical patient care scenes, i.e., Cardiac Arrest, trauma system patient, high acuity medical issue, every effort to perform an inter-agency review (hotwash) should be made as soon as possible after delivery of the patient.

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, follow Shock protocol and initiate rapid transport. If patient has a suspected abdominal aortic aneurysm, titrate IV to maintain 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:

A. Consider non-accidental trauma.
B. Closely monitor vital signs; blood pressure may drop quickly.
C. If systolic BP is inappropriate for age, treat per shock protocol. Lowest normal pediatric systolic blood pressure by age:
    1. < one month: > 60 mmHg.
    2. One month to 1 year: > 70 mmHg.
    3. > 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 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. EMS providers are mandated to report suspected abuse of children and vulnerable adults:

F. Child Protective Services: 1-866-363-4276

G. Adult Protective Services: 1-800-532-6078

Altered Mental Status and Coma

TREATMENT:

A. Treat per Universal Patient Care Protocol.

B. Treat underlying cause if known.

1. HYPERGLYCEMIA
   a) Monitoring:
      - Check blood glucose level. Typical reading HI or well above normal.
   b) If glucose > 250 mg/dL with symptoms of dehydration, vomiting, abdominal pain, or altered level of consciousness:
      - Fluid challenge BSS: 1 L bolus IV; reassess and re-bolus 1L if indicated.
2. HYPOGLYCEMIA
   a) Determine blood glucose level. If < 60 mg/dl (or <80mg/dl in a known diabetic patient):
      - If patient can protect their own airway, give oral glucose.
      - ⊕ If patient is unable to protect their own airway infuse **Dextrose (D50)** 25 gm or **Dextrose (D10)** 10 gm (repeat 5 gm as needed to total 25 gm).
   b) Check BGL after 5 minutes and repeat as above if blood sugar remains low and patient remains symptomatic.
      - ⊕ If no IV can be established, **Glucagon**, 1 mg (unit) IM.
3. SUSPECTED OPIOID OVERDOSE w/ Respiratory Depression
   a) If BLS provider OR difficult IV access, give **Naloxone** 2 mg IM/IN every 5 minutes up to 8 mg.
   b) ⊕ **Naloxone** 0.5 - 2 mg IV. May repeat every two minutes up to 2 mg titrating to respiratory rate. If no improvement, repeat **Naloxone** 2 mg every 3-5 minutes up to a maximum of 8 mg total. Consider larger doses if Methadone overdose.

C. If patient is combative, consider sedation per Patient Restraint protocol.

PEDIATRIC MEDICATIONS:

A. ⊕ **Dextrose (D10)** – For infants < 10 kg (birth to 1 year) with BGL < 40 mg/dl and children 10 kg – 35kg with BGL < 60 mg/dl give:
   1. **Dextrose (D10)**, 5ml/kg by infusion not to exceed 250 ml total.

B. ⊕ **Glucagon** 0.02 mg/kg IM to a maximum of 1 mg.

C. ⊕ **Naloxone** 0.1 mg/kg IV/IO/IM/IN every 3-5 minutes to a maximum of 2 mg per dose. Max total dose 8mg. Do not give to newborns.

D. ⊕ Pediatric fluid challenge: 20ml/kg repeat x 1 prn.

Allergic Reaction and Anaphylaxis

TREATMENT

A. Treat per Universal Patient Care Protocol.
   1. MILD REACTION - (Generalized Itching, Hives, Skin signs ONLY)
      a) ⊕ **Benadryl** 1mg/kg IV (IM if unable to start IV)/PO max 50mg.
   2. SEVERE REACTION - (Dyspnea, Wheezes, Laryngospasm, Angioedema, Shock)

B. BLS provider OR IV delayed and critical situation:
   1. **Epinephrine** 1:1000 - 0.3 mg IM. OR **Epi Autoinjector** per manufacturers guidelines. May repeat after 5 mins as needed.
      a) ⊕ Begin Epi infusion as below when IV established, titrate to response.
   2. ⊕ **Epinephrine** infusion - Start at 2 mcg/min IV drip and increase 2 mcg every 1 minute, prn. (titrate to clinical response).
   3. ⊕ Fluid challenge for shock, as needed.

C. ⊕ **Benadryl** 1mg/kg IV (IM if unable to start IV)/PO max 50mg.

D. ⊕ **Albuterol** 5mg MedNeb for wheezes.

E. ⊕ **Solumedrol** 125 mg IV. ALTERNATIVE **Dexamethasone** IV/IM/PO 10 mg.

F. ⊕ If refractory shock:
   1. **Norepinephrine** 4 mcg/min. Increase 4 mcg/min q 5mins to max of 12 mcg/min as needed.

PEDIATRICS

A. Treat per Universal Patient Care Protocol.

B. ALS Care as indicated above.
   1. MILD REACTION - (Generalized Itching, Hives, Skin signs ONLY)
      a) IV - balanced salt solution - EKG monitor
   2. ⊕ **Benadryl** 1mg/kg IV (IM if unable to start IV)/PO max 50mg.
   3. SEVERE REACTION - (Dyspnea, Wheezes, Laryngospasm, Angioedema, Shock)

C. BLS provider OR IV delayed and critical situation:
   1. **Epinephrine** 1:1000 - 0.01mg/kg IM max 0.3mg OR **Epi Autoinjector** per manufacturers guidelines
   2. ⊕ Begin **Epinephrine** infusion when IV established, titrate to response.

D. ⊕ **Epinephrine** infusion - Start at 2 mcg/min IV drip and increase 2 mcg every 1 minute, prn. (Titrate to clinical response).

E. ⊕ Fluid challenge 20ml/kg IV/IO for shock, as needed.

F. ⊕ **Benadryl** 1mg/kg IV (IM if unable to start IV)/PO max 50mg.

G. ⊕ **Albuterol** Patient weight <15kg 2.5-5mg. >15kg 5-10mg MedNeb for wheezes.

H. ⊕ **Solumedrol** **2mg/kg** IV (Max 125 mg). ALTERNATIVE **Dexamethasone** 0.6 mg/kg IV/IM/PO (Max 10 mg).

I. ⊕ If refractory shock:
   1. **Norepinephrine** 0.1 mcg/kg/min. May increase by 0.1 mcg/kg/min every 5 mins prn to max of 0.4 mcg/kg/min.

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 Activation criteria.

Behavioral Emergency

PROCEDURE:

A. Assess and assure scene safety. Utilize the "come to us" approach if the individual is in a building or enclosed area.
B. Approach the individual in a calm, slow, reassuring and honest manner. Have one direct point of contact with the individual, multiple people attempting to intervene may increase the patient's confusion and agitation. Remaining responders should quietly stand back and be ready to intervene as necessary.
C. Protect the individual, bystanders and rescuers from injury. Follow Restraint of combative patient procedure below, if indicated.
D. Obtain history, physical and mental status examination if safe to do so
E. **Assess and treat any medical conditions per EMS protocol**
F. All individuals will be assessed and evaluated by EMS, if safe to do so, regardless of transport status.

EMERGENCY MENTAL HEALTH RESOURCES:

A. Can respond to any call from EMS or law enforcement for consultation, phone or on-site as determined to appropriate. Call the number, identify yourself, and request an emergency consultation and/or response.
    1. Columbia Wellness Crisis Line: 360-425-6064 (24/7)
    2. Great Rivers BH-ASO Crisis Line 800-803-8833 (24/7)

SPECIFIC PRECAUTIONS:

A. Red Flags that this might **not** be a psychiatric condition:
    1. Waxing and waning level of consciousness
    2. Abnormal vital signs
    3. Dilated or pinpoint pupils
    4. First psychotic episode over the age of 30
    5. Acute onset over hours/days (consider substance abuse)
B. Psychiatric signs/symptoms.
    1. Mood disorder: depression, mania, suicide ideation, anxiety
    2. Thought disorder: hallucinations, pressured speech, racing thoughts, grandiose or paranoid ideation, delusions.
C. Medical illnesses including hypoglycemia, hypoxia, stroke, head injury, CNS infection may mimic psychiatric illness. Do not assume the patient's condition is purely psychiatric.

MANAGEMENT OF AGGRESSIVE/VIOLENT PATIENT

A. Law enforcement will intervene only when an individual poses a threat to others or themselves or has brought harm to others or has committed a criminal offense. LE will focus upon using the least force necessary to secure the situation and may elect to disengage from the scene. EMS responders need to treat these encounters with the understanding that their and other responder's personal safety is paramount and cannot always rely on LE backup.
B. Use all means necessary to de-escalate the situation. If restraint is necessary and safe to do so, follow Restraint of combative patient procedure below,
C. If at any time the individual becomes aggressive or violent and your and/or other responder's safety is at risk, remove yourself and fellow EMS/Fire responders from the scene. Notify LE via Cowlitz 911 that the individual is violent and it is unsafe to continue evaluation and treatment. Request LE assistance prior to further contact. If none is forthcoming, see Unsecured Scene below.
D. YOUR SAFETY IS PARAMOUNT. Document all encounters on the patient care report and reasons for leaving scene.

Behavioral Emergency (continued)

UNSECURED SCENE

A. If law enforcement does not respond or will not engage in the incident:
    1. Contact your Supervisor or Battalion Chief (BC). Request additional resources (may include additional units, crisis line, designated crisis responder, etc. Two-person crews will not attempt to manage incidents where safety is in doubt.
    2. Supervisor/BC will review and confirm risk assessment and use this protocol and the Cowlitz County EMS Behavioral Emergency Field Checklist to guide further actions.
B. If safe and appropriate, request a phone number from dispatch to call and ask the reporting person and/or patient to come outside or meet EMS personnel at a location that provides a greater margin of safety for contact. Any contact with involved persons (e.g., phone, verbal, etc.) must be fully documented.
C. Treat/Transport patient ONLY if safe to do so.
D. If the Supervisor/BC identifies you may not safely enter (or remain on) the scene or safely contact the individual, the Supervisor/BC will attempt to update the reporting party. Contact with the reporting party will be attempted prior to leaving the area if no patient contact can be attempted. Cowlitz 911 will be notified upon implementation of the decision to leave the scene and terminate the call. It is not necessary to notify medical control of intent to leave the situation.
E. Any response that is terminated for crew safety shall be reported to the agency's EMS supervisor within 24 hours for internal review. Agency EMS supervisors shall forward the patient care report to the MPDs office for review within 72 hours for their review.

DOCUMENTATION REQUIREMENTS:

A. In all cases of non-compliance with treatment and care, a complete and detailed health record will be written by the primary patient care provider. The minimum documentation requirements for such an encounter include:
    1. Disposition: Patient Refused Service
    2. Include the following elements in the narrative of the patient care report:
        a) Descriptive overview of physical characteristics of the scene (e.g., "Responded to an unconscious person in a vehicle at intersection or street name")
        b) A complete description of the danger or safety elements involved
        c) List and describe the measures used to attempt to engage the patient
        d) List and describe measure used to attempt to create safety.
        e) Describe the reasons why safety could not be established
        f) Describe specifics of the exposure to violence or threats of violence to EMS response personnel. Whenever possible include specific quotes from the individual.
        g) Specify that Law Enforcement was requested to respond. Document that Law Enforcement did not respond or responded and chose not to engage with the individual.
        h) If medical control was contacted, name of the medical control physician and time of contact.
        i) When lack of capacity is identified, specific findings that contributed to that determination will be documented in the patient care report (e.g., history of dementia confirmed by family, excessive exposure to heat conditions, slurred speech due to excessive alcohol intake, etc.).

Behavioral Emergency (continued)

SIGNS OF IMPENDING VIOLENCE	DE-ESCALATION (IF NEEDED TO MAKE SAFE WITHDRAWAL FROM THE SCENE)
Display/threat of a weapon Clenched fists Wild/staring eyes Clenched fists Threatening Posture Threatening Gestures Muscle tension around jaw Gritted teeth Reddened face Bulging neck veins	Remove irritating stimuli Discuss situation calmly/establish rapport Express understanding of situation Reinforce positive aspects of situation Explore patient's feelings Convey respect, don't judge Listen Develop a solution, ask: What helped with the last crisis? What would help now? Can I step outside?

Restraint of Combative Patient Procedure

PURPOSE: 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 patients 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 cause of patient's agitation is unknown or suspected to be psychiatric:
    1. **Ketamine** 4 mg/kg IM max dose 300 mg OR
    2. **Haldol** 2 – 5 mg IV/IM. May repeat q 15min to total 10mg max dose.
    3. ALTERNATIVE – **Geodon** 10 mg IM ONLY may repeat 10 mg IM prn max 20 mg
D. If cause of agitation is drug ingestion, withdrawal, or postictal state:
    1. **Versed** 2.5–5.0 mg IV or 5.0 mg IM. May repeat prn to max 10 mg.
E. If 10 minutes after administration of the maximum dose of **Ketamine**, **Haldol**, Geodon or **Versed**, and the patient remains combative, administer a different sedative medication as described above.
F. Do NOT use **Geodon** and **Haldol** concurrently.
G. Record and monitor vitals and EKG after administration every 5 minutes.
H. Treat EPS with **Benadryl** 12.5-25mg IV/IM

Behavioral Emergency (continued)

EXCITED DELIRIUM:

A. Versed 10 mg IM followed by Haldol 10mg IM to achieve and maintain sedation. Geodon 20mg IM may be substituted for Haldol.

PEDIATRIC PATIENTS:

A. Follow above guidelines for management of combative patient.
   1. Haldol 0.1mg/kg Max 10mg.
   2. Versed 0.3mg/kg IM/IN; 0.1mg/kg IV max 5mg single dose.
   3. Benadryl 1mg/kg IV/IM Max 25mg.

Behavioral Emergency – Transport to Alternative Care

Only available in jurisdictions with State approved mental health or substance abuse care facility

INCLUSION C R I T E R I A :

A. 9-1-1 Dispatch
B. Age 18 - 55
C. Voluntary/willing to go to alternative destination
D. Cooperative and non-combative
E. Normal level of consciousness
F. No dementia
G. Patient able to perform activities of daily living.

EXCLUSION CRITERIA:

A. NO new onset of mental illness
B. NO overdose
C. NO trauma requiring more treatment than bandaging
D. NO loss of consciousness or seizure in the last 24 hours
E. NO pregnancy
F. NO evidence of acute medical or traumatic problem
G. NO anticoagulants

VITAL SIGNS:

All must be within the given range:

- HR (50 - 100)
- BP systolic (100 - 180)
- BP diastolic (< 100)
- RR (12 - 24)
- SPO2 (> 92%)
- Temp (97 - 100.3°)
- Blood glucose (70mg/dl – 300mg/dl)

PROCEDURE:

A. Assess and assure scene safety.
B. Approach the patient in a calm, slow, reassuring and honest manner. Multiple people attempting to intervene may increase the patient's confusion and agitation.
C. Protect the patient, bystanders and rescuers from injury. Consider restraint and follow Restraint Protocol, if indicated.
D. Obtain history, physical and mental status examination.
E. Assess and treat any medical conditions per EMS protocol and then determine if patient is eligible for transport to closest Emergency Department.
F. Contact the receiving facility and advise them you have an EMS patient for consideration and establish they can accept the patient.
G. Contact medical control for confirmation of assessment findings and appropriateness of transport to a non-medical facility.
H. Document inclusion criteria and provide to receiving facility.
I. All patients will be assessed and evaluated by EMS regardless of transport status.

SPECIFIC PRECAUTIONS:

A. Red Flags that this might not be a psychiatric condition:
    1. Waxing and waning level of consciousness
    2. Abnormal vital signs
    3. Dilated or pinpoint pupils
    4. First psychotic episode over the age of 30
    5. Acute onset over hours/days (consider substance abuse)
B. Psychiatric signs/symptoms.
    1. Mood disorder: depression, mania, suicide ideation, anxiety
    2. Thought disorder: hallucinations, pressured speech, racing thoughts, grandiose or paranoid ideation, delusions.
C. Medical illnesses including hypoglycemia, hypoxia, stroke, head injury, CNS infection may mimic psychiatric illness. Do not assume the patient's condition is purely psychiatric.

Blast Injuries

INJURY PATTERN:

A. Primary:
   1. Injury from over-pressurization force impacting the body surface.
   2. Tympanic membrane (TM) rupture, pulmonary damage and air embolization, hollow viscus injury.

B. Secondary:
   1. Injury from projectiles (bomb fragments, flying debris).
   2. Penetrating trauma, fragmentation injuries, blunt trauma.

C. Tertiary:
   1. Injuries from displacement of victim by the blast wind.
   2. Blunt/penetrating trauma, fractures, and traumatic amputations.

D. Quaternary:
   1. All other injuries from the blast.
   2. Crush injuries, burns, asphyxia, toxic exposures, exacerbations of chronic illness.

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.

Brief Resolved Unexplained Event - BRUE

DEFINITION:

1. Event lasting <1 minute in an infant <1 year of age associated with at least one of the following:
    a) Cyanosis or pallor
    b) Absent, decreased, or irregular breathing
    c) Marked change in muscle tone (hypertonia or hypotonia)
    d) 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.
B. If systolic BP < 90 mmHg (MAP <60) follow Shock Protocol.
C. Remove jewelry and clothing that is smoldering or is non-adherent.
D. Cool burned areas then cover with sterile dressing. Discontinue cooling if patient begins to shiver. Leave unbroken blisters intact.
E. Treat pain per Pain Management protocol.
F. ➤ If the patient has the following, contact MC and request instructions for transport destination:
    1. Partial thickness burns > 10% total body surface area (TBSA).
    2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
    3. Third degree 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. In such cases, if the trauma poses the greater immediate risk, the patient may be initially stabilized in a trauma center before being transferred to a burn unit.
    9. Burned children in hospitals without capability for the care of children.
    10. Burn patients who require special social, emotional, or rehabilitative intervention.
G. If chemical burn:
    1. Consider Haz-Mat response.
    2. Protect yourself from contamination.
    3. Flush contaminated areas with copious amounts of water.
    4. If chemical is dry, carefully brush off prior to flushing.
H. If electrical burn:
    1. Apply sterile dressings to entry and exit wounds.
    2. Treat any dysrhythmias per appropriate Cardiac Dysrhythmia protocol.
I. If Inhalation Injury:
    1. If Cyanide Toxicity or Carbon Monoxide poisoning is suspected based on scene (closed space fire, plastic or wool combustibles, industrial site, etc.) patient findings (soot in mouth, nose or oropharynx) and patient is comatose, in cardiac or respiratory arrest, or has persistent hypotension despite fluid resuscitation:
    2. ⊕ **Sodium Thiosulfate** 50 mL of 25% solution IV/IO infused over 10 to 20 minutes.
    3. ⊕ ALTERNATIVE: **Cyanokit**; 5 gm over 15 mins. If no improvement may repeat 5 gm.
    4. Treat other presenting symptoms per appropriate protocol.
    5. Initiate emergent transport to appropriate facility.

Burns (Continued)

PEDIATRIC PATIENTS:

A. Treat pain per Pain Management protocol.

B. Consider possibility of non-accidental cause in children.

C. **Sodium Thiosulfate** dose is 1.65 mL/kg IV/IO infused over 10 to 20 minutes. Do not exceed adult dosing.

   1. ALTERNATIVE: **Cyanokit**; 70 mg/kg gm over 15 mins. If no improvement may repeat to maximum 10 gm.

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

   Lowest normal pediatric systolic blood pressure by age:

   1. < one month: > 60 mmHg.
   2. One month to 1 year: > 70 mmHg.
   3. > 1 year: 70 + 2 x age in year

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 EKG Leads/Defib Pads.
    2. Analyze and follow AED instructions or Paramedic interpretation (Defibrillate prn).
    3. Continuous CPR with rhythm analysis and pulse check every 2 minutes
        a) SGA, 100% O2. Capnography throughout.
        b) IV TKO with balanced salt solution.
    4. Application of mechanical CPR device when determined to be beneficial based on the situation and equipment available.
        a) Mechanical CPR devices are agency specific, and their use is based on manufacturer's instructions.
        b) Best to transition at a 2-minute rhythm and pulse check.
        c) Minimize non-CPR time as much as possible during application.
D. Use a weight-based system for treatment of pediatric cardiac arrest, i.e., Broselow Tape, SW Regional Pediatric field guide
E. 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 1.0 mg IV/IO.
B. If asystole persists, continue two-minute cycles of CPR and rhythm analysis.
C. ⊕ Continue **Epinephrine** 1:10,000 1 mg IV/IO every 3-5 minutes.

PEDIATRIC PATIENTS:

A. Follow adult algorithm.
B. ⊕ **Epinephrine** 1:10,000 - 0.01 mg/kg IV/IO as soon as possible after cardiac arrest is recognized. Repeat every 3-5 minutes.

NOTES & PRECAUTIONS:

A. If unwitnessed arrest and no obvious signs of death, proceed with resuscitation and get further information from family/bystanders.
    1. If obvious signs of death, POLST form or history of traumatic event, follow Death in the Field protocol
B. Minimize interruptions to CPR when securing the airway. Preferred initial airway is SGA.
C. Continuously monitor effectiveness of CPR and oxygenation. Avoid hyperoxygenation, maintain O2 sat of 94-96% if ROSC.

TREAT OTHER POSSIBLE CAUSES:

A. Acidosis - **Sodium bicarbonate** 1 mEq/kg IV. (Ketoacidotic arrest, 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. Tri-cyclic antidepressant OR **Benadryl** overdose – **Sodium bicarbonate** 1 mEq/kg.

Cardiac Arrest – PULSELESS ELECTRICAL ACTIVITY (PEA)

TREATMENT: – Determined by the Paramedic:

A. ⊕ **Epinephrine** 1:10,000 1.0 mg IV/IO.
B. If PEA persists, continue two-minute cycles of CPR and rhythm analysis.
C. ⊕ Continue **Epinephrine** 1:10,000 1 mg IV/IO every 3-5 minutes.
D. ⊕ Administer BSS up to 2L 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 3-5 minutes.
C. Administer BSS up to 20ml/kg bolus infusion. May repeat prn to Max 60ml/kg.

NOTES & PRECAUTIONS:

A. If unwitnessed arrest and no obvious signs of death, proceed with resuscitation and get further information from family/bystanders.
    1. If obvious signs of death, POLST form or history of traumatic event, follow death in the field per Death in the Field protocol.
B. Minimize interruptions to CPR when securing the airway. Preferred initial airway is SGA.
C. Continuously monitor effectiveness of CPR and oxygenation. Avoid hyperoxygenation, maintain O2 sat of 94-96% if ROSC

TREAT OTHER POSSIBLE CAUSES:

A. Acidosis - **Sodium bicarbonate** – Adults 50mEq (1amp) – Peds 1 mEq/kg IV Max 50mEq. (Ketoacidotic arrest, 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. Tri-cyclic antidepressant OR **Benadryl** overdose – **Sodium bicarbonate** 50 mEq (1 amp) – Peds 1 mEq/kg Max 50 mEq.

Cardiac Arrest – VFIB/PULSELESS VTACH

TREATMENT: – Determined by Paramedic:

A. Defibrillate.
   1. **Epinephrine** 1 mg 1:10,000 IV/IO.

B. Immediately continue CPR for two minutes.

C. Assess heart rhythm; Defibrillate if Vfib, pulseless Vtach.
   1. **Amiodarone** 300 mg IV/IO (NOT in Torsades).
      a) ALTERNATIVE: **Lidocaine** 1.5 mg/kg IV/IO
      b) If either **Lidocaine** or **Amiodarone** contraindicated, use alternative drug.
   2. If multifocal WCT (Torsades) or Magnesium deficiency suspected, **Magnesium Sulfate** 2 grams bolus IV (dilute in 50cc BSS wide open).

D. Immediately continue CPR for two minutes.

E. Assess heart rhythm; Defibrillate if Vfib pulseless Vtach.
   1. **Epinephrine** 1 mg 1:10,000 IV/IO.

F. Immediately continue CPR for two minutes.

G. Assess heart rhythm; Defibrillate if Vfib pulseless Vtach.
   1. **Amiodarone** 150 mg IV/IO OR **Lidocaine** 0.75 mg/kg IV/IO. (Use initial antidysrhythmic).

H. Immediately continue CPR for two minutes.

I. If VFib/pulseless VTach persists, continue two-minute cycles of CPR, rhythm analysis and defibrillation.
   1. Continue **Epinephrine** 1 mg1:10,000 IV/IO every 3-5 minutes.
   2. Transport if not already initiated.

J. Continue above until ROSC or DIF criteria apply. If ROSC, target O2 sat of 94-96%, ETCO2 of 30-40 and monitor waveform. Follow ROSC protocol.

PEDIATRIC PATIENTS:

A. Follow adult algorithm flow. Use the following dosing:
   1. Defibrillation: 4J/kg
   2. Drugs:
      a) **Epinephrine** – 1:10,000 – 0.01 mg/kg IV/IO
      b) **Amiodarone** – 5 mg/kg IV/IO. May repeat once with 2.5 mg/kg IV/IO.
      c) **Lidocaine** – Follow adult dosing.
      d) **Sodium bicarbonate** - Follow adult dosing. For children < 10 kg (1 yr), dilute by one-half with normal saline prior to administration.

NOTES & PRECAUTIONS:

A. Airway should be addressed with minimal interruption to CPR. Ventilation rate should be 8-10 breaths per minute.

B. If patient remains in persistent VF/pVT (> three shocks) reposition defibrillation pads anterior/posterior.

C. **Sodium bicarbonate** is not recommended for the routine cardiac arrest sequence but should be used early in cardiac arrest of known cyclic antidepressant overdose or in patients with hyperkalemia. It may also be considered after prolonged arrest. If used:
   1. Administer 1 mEq/kg IV/IO.
   2. May be repeated at 0.5 mEq/kg every 10 minutes.

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. A 5- 10-minute time while packaging and loading will be adequate.

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** 0.5 mg IV, repeat every 2-5 minutes as needed (max 3 mg) to maintain rate 60/min.; discontinue **Atropine** if chest pain increases.
   2. If no response to **Atropine**: **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) Sedate as needed with **Midazolam** 2.5 mg IV, or 5 mg IM. Max 10 mg prn.
      d) 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.

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. Regular Rhythm.
      a) Attempt vagal maneuvers.
      b) If refractory, **Adenosine** 6 mg rapid IV.
      c) If refractory, **Adenosine** 12 mg rapid IV.
   2. Irregular Rhythm:
      a) Monitor patient, consider causes of NCT (Sepsis, shock, dehydration, etc.).
      b) If acute onset Afib, Aflutter rate >140 (symptomatic but not unstable):
         - **Diltiazem** 0.25 mg/kg (maximum 20 mg) given slow over 2 mins. after 15 mins. may repeat at 0.35 mg/kg (maximum 25 mg). Consult with Medical Control prior to administration suggested.
         - ALTERNATIVE: **Verapamil** 5 mg IV slow over 2-3 mins. May repeat 5 mg every 15 min prn to max of 20 mg. Consult with Medical Control prior to administration suggested.
D. ⊕ Wide complex QRS (> 0.12 sec) WIDE COMPLEX TACHYCARDIA (WCT):
E. Regular Rhythm and QRS Monomorphic:
   1. **Amiodarone** 150 mg IV/IO over 10 min if Vtach suspected.
   2. If no conversion, repeat **Amiodarone** 150 mg IV/IO over 10 min.
F. Irregular Rhythm:
   1. If possible, Torsades give **Magnesium Sulfate** 2 grams IV over 1-2 minutes
   2. If acute onset Afib, Aflutter rate >140 (symptomatic but not unstable):
      a) **Diltiazem** 0.25 mg/kg (maximum 20 mg) given slow over 2 mins. after 15 mins. may repeat at 0.35 mg/kg (maximum 25 mg). Consult with Medical Control prior to administration.
      b) ALTERNATIVE: **Verapamil** 5 mg IV slow over 2-3 mins. May repeat 5 mg every 15 min prn to max of 20 mg. Consult with Medical Control prior to administration.
      c) Calcium channel blockers contraindicated in WIDE COMPLEX TACHYCARDIA associated with known WPW. Consult with Medical Control if question.
   3. Other wide complex irregular rhythms, monitor patient consider causes.
G. Obtain post treatment 12-lead ECG.

Cardiac Dysrhythmia – STABLE TACHYCARDIA (continued)

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 maneuvers
        b) **Adenosine** 0.1 mg/kg Max 6 mg rapid IV
        c) If no conversion may repeat **Adenosine** once at 0.2 mg/kg Max 12 mg rapid IV
    2. Probable Sinus Tachycardia Infants: HR < 220; Children: HR <180
        a) Monitor patient, consider causes
D. ⊕ D. Wide complex QRS (> 0.09 sec)
E. If regular and QRS monomorphic, consider **Adenosine** 0.1 mg/kg Max 6 mg rapid IV
F. Possible VTach: **Amiodarone** 2.5mg/kg IV/IO Max 150 mg over 10 minutes.
    1. If no conversion, repeat **Amiodarone** 2.5mg/kg IV/IO Max 150 mg over 10 minutes

NOTES & PRECAUTIONS:

A. All doses 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, Aggrenox).
    3. Administration through any central line.
B. Do not use **Adenosine** in patients with Wolff-Parkinson-White syndrome in atrial fibrillation with wide complex. May initiate rapid ventricular response (V Tach/V Fib).
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 history of AFib/AFlutter evaluate for possible causes of tachycardia, such as shock, Sepsis, dehydration, hypovolemia, blood loss etc.
E. Calcium Channel blockers do not treat AFib/AFluttter but decrease ventricular rate. Consider underlying causes before using a rate reduction drug.

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. (**Versed** can be provided after cardioversion if not given prior)
    1. **Versed** 2.5-5 mg IV/IM prn.
C. ⊕ Repeat cardioversion if refractory.
D. ⊕ NO Conversion:
    1. **Amiodarone** 150 mg IV/IO slow push over 3 mins. ALTERNATIVE: **Lidocaine** 1.5 mg/kg IV/IO slow push
    2. Repeat synchronized cardioversion x 2 prn.
    3. If recurrent; **Amiodarone** 150 mg IV/IO slow push over 3 mins. ALTERNATIVE:
        a) **Lidocaine** 0.75 mg/kg IV/IO
    4. If multi-focal (Torsades): **Magnesium Sulfate** 2 gm IV slow.
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 4 J/kg; If patient is conscious, consider sedation. Do not delay cardioversion for sedation.
    1. **Versed** 0.2 mg/kg IM/IV/IN. Max 2.5 mg.
C. ⊕ Repeat cardioversion if refractory
D. ⊕ NO Conversion:
    1. **Amiodarone** 2.5 mg/kg IV/IO Max 150 mg slow push over 3 mins.
    2. Repeat synchronized cardioversion at 4 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 treatment.
D. **Aspirin** 324 mg PO. Contraindicated in known allergy, active bleeding ulcer, severe liver failure or severe systemic disease.
E. If systolic BP > 110
    1. **Nitroglycerine** 0.4 mg 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 Nitro.
    2. ⊕ **Fentanyl** 25-50 mcg IV; may repeat titrating to effect to total 3 mcg/kg.
    ALTERNATIVE: **Morphine** 2-5mg IV/IM/IO to max of 20mg.
F. If hypotensive, follow Shock protocol.

STEMI ALERT

When a patient is encountered with signs and symptoms concerning for Acute Myocardial Infarction and they have a 12 lead EKG with ST segment elevation that is consistent with possible Acute Myocardial Infarction they are to alert the receiving emergency department as soon as possible of a “STEMI Alert”.

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 (NS preferred), 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 Wrap procedure if indicated.

Drowning – Near 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 near-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
    1. Move to cooler environment, remove excess clothing. Tepid compresses to forehead, neck, extremities.
    2. Oral fluids, if possible (water, Gatorade, etc.).
    3. Initiate IV with balanced salt solution, if unable to take oral fluids or if hypotensive.
        a) ⊕ Fluid challenge with 200-500 cc rapidly.
    4. Transport as necessary.
C. Heat Stroke
    1. Move to cooler environment, remove clothing, aggressive cooling with wet sheets, cool packs, evaporative airflow.
    2. ⊕ IV with balanced salt solution / fluid challenge with 200 cc over 20 minutes unless pulmonary edema develops.
    3. ⊕ **Versed** 2.5 - 5 mg IV/IM 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.

Highly Infectious Respiratory Illness

ASSESSMENT AND TREATMENT OF POSSIBLE COVID, INFLUENZA AND OTHER HIGHLY INFECTIOUS RESPIRATORY ILLNESS PATIENTS

A. If history and symptoms of the patient is concerning for highly infectious respiratory disease
B. Emergent / Unstable patient
    1. Emergent patients will be treated without delay as soon as PPE is donned. The initial Fire/EMS member in PPE will initiate resuscitation (oxygen, BVM, CPR compressions only) until the rest of the team has donned their PPE.
C. Stable Patient
    1. In order to minimize exposure to personnel, only one provider in proper PPE is needed for direct contact with the patient.
D. Perform initial interview of all patients from at least 6 feet away to determine if personal protective equipment precautions are necessary.
E. Place a surgical (or equivalent) or non-rebreather mask (when oxygen is required) on all patients with suspected influenza/COVID-19 or other HCRD before performing a detail examination. If a nasal cannula is in place, a facemask should be worn over the nasal cannula.
F. Use caution when administering droplet producing procedures including placement of nasal or oral airways, bag-valve-mask (BVM) use, suctioning or endotracheal intubation. If BVMs or other airway interventions are needed, use with HEPA exhalation filters is required.
G. In place of **Albutero**l nebulizer use **Albuterol** HFA 8 puffs with aerochamber/spacer.

APPROPRIATE PPE:

A. A single pair of disposable examination gloves, changing to a new pair if they become torn or heavily contaminated.
B. A disposable isolation gown.
C. Respiratory protection (i.e., N-95 or higher-level respirator).
D. Eye Protection (i.e., Goggles or disposable face shield that fully covers the front and sides of the face.
E. Higher levels of PPE may to be required when determined by the CDC or Washington DOH.

TRANSPORT:

A. During the transport, limit the number of providers in the patient compartment to essential personnel to minimize possible exposures.
B. Family members and other contacts of patients should not ride in the transport vehicle, if possible. If riding in the transport vehicle, they should wear a facemask
C. Isolate the driver from the patient compartment and keep pass-through doors and windows tightly shut.
D. When possible, use vehicles that have an isolated driver and patient compartment that can provide separate ventilation to each area. If the vehicle does not have an isolated driver compartment, open the outside air vents in the driver area and turn on the rear exhaust fans to the highest setting.
E. Alert the hospital of the impending arrival of a possible HCRD.
F. Documentation of patient care should be done after EMS clinicians have completed the transport, removed their PPE, and performed hand hygiene.

Highly Infectious Disease Patient Management Protocol

(Flu/Viral URI/RSV/COVID-19)

Purpose – To identify patients who are safe to remain home and implement self-care without transport to hospital emergency department during widespread infectious disease (e.g. Influenza, COVID-19).

Indication for NON-TRANSPORT – only applicable with MPD approved implementation based on, and for the duration of, peak periods when EMS resources and/or hospital emergency departments have exceeded capacity, and/or during a local, regional, state, or federal declaration of emergency (e.g. pandemic or other public health emergency).

Healthcare provider protection:

- Always utilize appropriate PPE based on the current CDC guidelines for EMS.
- Attempt to ascertain symptoms, history, and information from safe distance (when possible) in well-ventilated/open-space environment.
- Apply a surgical mask to the patient when possible/tolerated to limit exposure.
- Avoid unnecessary contact (limit crew size, limit non-emergency patient interactions, isolate vehicle operators, avoid by-standers or family gathering, etc.).

Assess patient for two or more symptoms consistent with potential viral syndrome. Symptoms could include fever, cough, congestion, runny nose, shortness of breath, fatigue, nausea/vomiting, or diarrhea.
Evaluate to determine exclusion criteria:

- Age <5 or > 60 years of age
- GCS ≤ 14
- Is there chest pain NOT associated with coughing?
- Have there been episodes of syncope witnessed or reported?
- Is the patient cyanotic or is there visible respiratory distress?
- Are there symptoms or issues beyond typical flu, such as trauma, stroke-like symptoms, ischemic cardiac chest pain, neck stiffness, etc.?
- Are there "high risk" conditions such as pregnancy (> 24 weeks), chronic lung disease (asthma, COPD, etc.), CHF, cancer/immunocompromised, severe obesity (BMI > 40)?

If yes to any of the above criteria/questions – utilize appropriate PPE, follow appropriate medical treatment protocol, and transport to appropriate facility. If not, evaluate VS

- Is RR < 8 or > 20, HR < 50 or > 110, or Systolic BP < 100?
- If yes, utilize appropriate PPE, follow appropriate medical treatment protocol, and transport to appropriate facility. If not and patient is ambulatory, perform a brief 10-20' walking test.
- Is the SpO2 < 92% either at rest or after exertion?
- Are there significant changes in BP, HR, RR after exertion?

If yes, follow appropriate medical treatment protocol, transport to appropriate facility.

- Is the patient able to tolerate oral fluids without vomiting?
- Is there an adequate support system to monitor and remain at home?
- Resources to access water, food and phone to call 911 if needed?
- Is patient competent to make decisions?
    - If YES TO ALL – no need to transport. Offer and complete non-transport paperwork.
        - Provide education and patients may elect to remain at home and recover with family/friend support.

Patient Non-Transport Record / Evaluation

This form is an acknowledgement that you have been evaluated by _____ at this time, we feel that your condition is stable and meets the following criteria:

- You are < 60 years of age, awake and alert, in no acute distress,
- Your vital signs are within a normal range and stable with exertion,
- Your pulse oximeter reading is greater than 92% even with exertion,
- There is no evidence of hypoxia (cyanosis, confusion, etc.), and
- You have no co-morbid or "high-risk" conditions in your past medical history.

At this time, it is my professional opinion that you are medically stable enough to remain at home, self-monitor your condition, and be supported by your existing resources.

- You may or may not have COVID, RSV or Influenza virus.
- Transport to an Emergency Department does not guarantee that you will be seen quickly or that you will be tested; if you want to be tested you should contact your primary care physician and/or health department.
- We have confirmed you have a support system that is available to you as you recover.
    - If you are not allergic, you may elect to self-administer Tylenol/acetaminophen and or ibuprofen/Advil according to the packaging instructions for control of fever, aches and pains.
    - You should rest, drink plenty of water, and stay hydrated.
    - If able to monitor oxygen saturations at home, if saturations stay less than 92% seek healthcare.
- We have also confirmed that you understand our evaluation and agree to remain at home.
    - You should stay home and avoid contacting others until symptoms have subsided and you are without a fever (un-medicated) for 48 hours.

If at any time, your symptoms progress and you exhibit any of the symptoms above, or if you improve and then suddenly become worse with shortness of breath, do not hesitate to call 9-1-1. You may receive a follow-up phone call from our agency or the health department in 24 hours to check on your condition. If you would like to contact the Cowlitz County health department directly – 360-414-5599.

Please refer to www.cdc.gov/flu or www.cdc.gov/coronavirus/2019-ncov for information on self-isolation and preventing the spread of a virus. If you would like additional information from the Cowlitz County health department, you can visit their website www.co.cowlitz.wa.us/2660/Novel-Coronavirus-COVID-19.

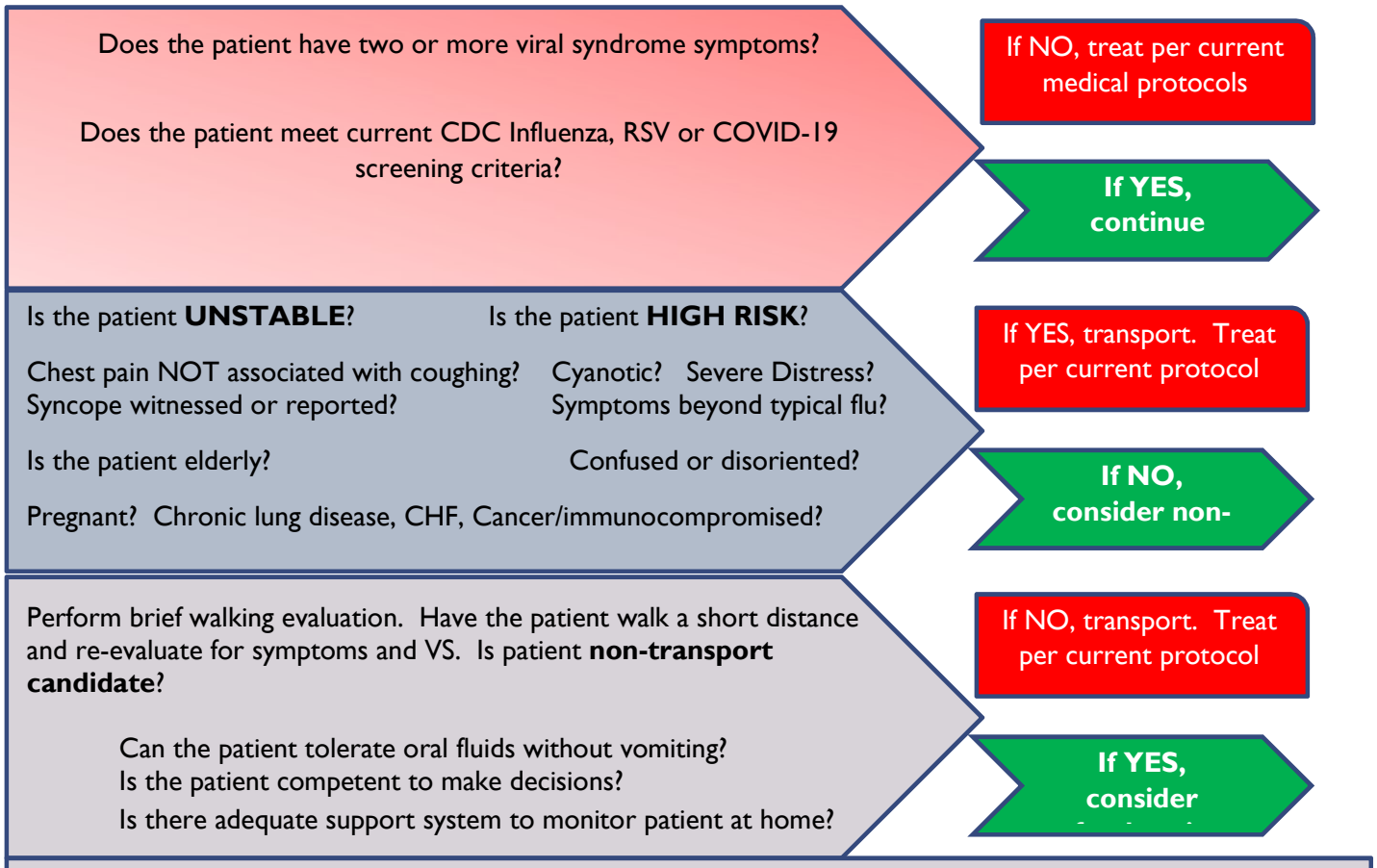
I, _____ (patient name) understand the information above and agree to remain home and self-monitor my condition.

_____

(patient signature)

Paramedic name_____ Ambulance #_____

Signature_____ Date: _____



Patient Refusal / Non-Transport

Provide written guidance and advise the patient:

- You may or may not have an URI virus such as COVID-19 or Flu. Transport does not guarantee testing.
- If you want to be tested, you should contact your primary care physician.
- If not allergic, self-administer acetaminophen and/or ibuprofen according to packaging instructions for fever and aches.
- You should rest, drink plenty of water, and stay hydrated.
- You should stay home and avoid contacting others until symptoms have subsided and you are without a fever (un-medicated) for 48 hours.

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
        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.
    2. Utilize improvised tourniquets only if commercially designed tourniquets unavailable.
    3. Remove and/or replace improvised tourniquets as time allows.
    4. If direct pressure and tourniquet application ineffective or impractical, i.e., junctional wound/bleeding, follow procedure for wound packing.
C. If amputation, follow Amputation Protocol.
D. 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 (Fluid of choice is BSS and NOT LR)
C. **Calcium Gluconate** 10ml slow IV/IO. Flush tubing
    1. ALTERNATIVE: **Calcium Chloride** 500mg IV/IO. Flush tubing
D. **Sodium bicarbonate** 50 mEq slow IV push.
E. **Albuterol** 5mg via continuous Med Neb Max 20mg.
F. Follow protocols for dysrhythmias.
G. Rapid transport

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 60 seconds to confirm respiratory arrest, pulseless Cardiac Arrest or Bradycardia that is profound enough to require CPR.

PATIENT PERFUSING:

A. Monitor ECG and pulse oximetry. Handle patient gently to avoid VF.
B. Institute rewarming procedures:
    1. O2 warmed and humidified, warm packs, mylar blankets (wrap with hood), 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.
B. Continue rewarming procedures during transport.

C. OTHER TREATMENT CONSIDERATIONS:
D. Unconscious patient:
    1. Altered Mental Status and Coma protocol.
E. Frostbite present:
    1. Protect with dry dressings, do not rub frostbitten areas, and permit only gradual warming by room temperature out of hospital.
F. 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.
G. Hypothermia may be preceded by other disorders (alcohol, trauma, OD) look for and treat any underlying conditions while treating the hypothermia.
H. ➤ If death in the field is suspected, online Medical Control will be consulted 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 6L 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 <80bpm at ratio of 3:1 compression to ventilations.

FURTHER CONSIDERATIONS

A. ⊕ Persistent Bradycardia (rate < 80) 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 balanced salt solution.

C. Check blood glucose.

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.

Apgar Scoring System

Indicator		0 Points	1 Point	2 Points
A	Activity (muscle tone)	Absent	Flexed arms and legs	Active
P	Pulse	Absent	Below 100 bpm	Over 100 bpm
G	Grimace (reflex irritability)	Floppy	Minimal response to stimulation	Prompt response to stimulation
A	Appearance (skin color)	Blue; pale	Pink body, Blue extremities	Pink
R	Respiration	Absent	Slow and irregular	Vigorous cry

Nontransport of Patient

A. Patient Treatment Rights
   1. The protocols are intended for use with a conscious, consenting patient, or an unconscious (implied consent) patient.
   2. A rational patient, a patient's family or personal physician may select the destination hospital as long as the transport time does not jeopardize the patient's condition and the receiving facility is appropriate to the patient's condition, e.g., trauma, high risk OB, etc.
   3. When in doubt, contact the Medical Control and fully document your actions.
   4. If a patient is a minor and no consenting adult is available and the minor refuses treatment, the EMT should contact Medical Control and /or law enforcement as necessary.

B. Non-Transport of Patients
   1. The decision to seek emergency medical services resides with the patient or with legal custodians. Similarly, the decision to transport or not transport should reside with the patient or legal custodian. The EMT may believe the patient need not be transported, but unless the patient and/or custodian agrees transport will proceed.
   2. In general, the only reasons for a non-transport are:
      a. No patient (DOA, termination of Code 99 effort, etc.).
      b. Signed "Refusal for Transport", completed by competent patient, family or custodian.
      c. The patient is in custody of Law Enforcement and treatment is refused by the Law Enforcement Officer or deputy. In this case, the officer or deputy needs to the sign the refusal of transport form. Contact medical control to further document this procedure.
      d. Blatant misuse of the 911 system, i.e., need transport to the hospital to visit family. In these instances, contact medical control prior to refusing transport.
   3. If the patient refuses treatment or transport, determine if the patient has the mental capacity to refuse treatment/transport.
      a. Is judgment impaired by alcohol, drugs, psychiatric conditions, head injury, shock, Organic Brain Syndrome (Alzheimer's), language or communication barriers or < 18 years?
      b. Can the patient repeat in their own words the risks of refusing treatment/transport?
      c. A competent patient must be oriented and understand the potential consequences of refusal. A person determined to be incapable of normal decision-making processes is assumed to require a medical screening evaluation and EMS personnel will use available resources to have that person transported, including assistance from relatives/friends, online medical control, police and/or county mental health, if necessary.
      d. Contact Medical Control for all refusal of transport patients when you have determined the patient may not have the capacity to refuse treatment/transport.
      e. If medical control is in agreement, it may be necessary to contact law enforcement to assist in transporting certain patient who may not have the capacity to refuse transport.
      f. In the event that a patient is under arrest, and the arresting officer is refusing transport, you may contact medical control if you feel that there is a significant medical need for transport. If necessary, ask Medical Control to speak with the arresting officer to make your concerns clear. The patient's potential medical condition should always remain the primary concern, and this should be made clear to law enforcement personnel in these situations.

Nontransport of Patient (continued)

C. Determine medical need by complete assessment (Hx, vital signs, physical exam).
    1. If no apparent medical need exists and competent patient/custodian agrees, transport is not necessary.
    2. Complete the Cowlitz County Approved Patient Refusal Form and document: "After a basic physical exam, no apparent EMERGENCY medical need exists currently. We do, however, highly recommend a complete follow up exam by your physician ASAP."
    3. Read refusal form to patient and obtain appropriate signatures. Document all findings and refusal process on MIR and fully complete the refusal form.

D. If an ALS medical need exists and competent patient/custodian refuses care, contact Medical Control and follow instructions.
    1. If refusal is confirmed, read refusal form and risks to patient, have them repeat in their own words the risks of refusal. Obtain signatures and document on MIR**:** situation, Hx, mental status, vital signs, physical exam findings, time Medical Control contacted, name of physician, orders, and outcome, i.e., patient to follow-up with own physician, in care of relative, friend or law enforcement, etc.
    2. If refusal is not confirmed, follow Medical Control instructions.
    3. In the event of a hypoglycemic diabetic patient that regains normal mental status after **Dextrose (D10)** or food administration, it is Cowlitz County EMS's opinion that these patients should be transported and evaluated by a medical provider promptly. However, the patient may refuse transport without contacting Medical Control if the patient:
        a. Is alert and appropriate.
        b. Has eaten some food and the blood sugar is above 80 mg/dl.
        c. Understands the risks and consequences of declining transport.
        d. Has a responsible adult with them who can watch them for the next several hours for signs of recurrent hypoglycemia.

E. If called to the scene of an accident or public assist and no patient(s) are identified as requesting care or evaluation by explicit or implied consent, then document your run as a no patient contact. If potential patients are identified with a potential for altered capacity to make a decision i.e., severe mechanism of injury, head injury or altered sensorium from alcohol/drugs/metabolic state, make patient contact and follow the refusal of transport protocol. (Two set of vital signs, evaluation, Medical Control consult as needed, and a signed refusal of transport form, etc.)

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.

TOXEMIA OF PREGNANCY:

A. Moderate to Severe Pre-Eclampsia (third trimester or post-partum) 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 [Toxemia] any one of the above plus:
    1. Seizure or Post-ictal
C. Seizure treatment.
    1. **Versed** 2.5-10 mg IV/IM.
    2. **Magnesium Sulfate** 2-4 gm IV slow (over 5-10 min.).

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 counterpressure 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 (term infant, 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 will 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 delivered, gently externally massage uterus to encourage contraction and prevent bleeding.
I. If mother has significant postpartum hemorrhage (> 500ml), 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.

Obstetrical Emergencies and Childbirth (continued)

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 the 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.

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. **Ketorolac** (Toradol)
   1. 30 mg IM or 15 mg IV. DO NOT REPEAT.
   2. Not for cardiac chest pain OR Trauma System patient.
   3. Use in patients 2-64 years of age. Contraindicated in pt. w/ known renal/liver disease, allergy to ASA/NSAID, possible pregnancy, anticoagulant use, bleeding disorder, Trauma System Entry or altered mentation.

B. **Opiates -** AVOID USE OF OPIATES IN CHRONIC PAIN SYNDROMES, INCLUDING MIGRAINE HEADACHES. USE IN ACUTE PAINFUL SITUATION ONLY.
   1. **Fentanyl**
      a) Should be given in 50 mcg increments (every 3-5 mins prn), titrated to relief of pain. May be given up to 3 mcg/kg total dose. Do not administer > 200 mcg/hr.
      b) Rapid injection may cause respiratory arrest or chest rigidity – administer slowly, over 30-60 seconds.
   2. **Morphine**
      a) 2-5mg IV/IM/IO to max of 20mg.
   3. **Ketamine**
      a) Adjunct with Opiates:
         - 0.4 mg/kg IV over 2-3 minutes. Max 50 mg. MUST HAVE GIVEN AT LEAST TWO DOSES OF OPIATES PRIOR. Stop administration if pt. develops nystagmus, agitation, or ventilatory compromise. Call OLMC if additional is needed.
         - 1.0 mg/kg IM Max 75 mg. Call OLMC if additional is needed. Stop administration if pt. develops nystagmus, agitation, or ventilatory compromise.
      b) Precautions:
         - In adults treat Emergence Reaction side effects with low dose **Versed** 2.5mg IV/IM. Typically, not necessary in Peds.
   4. **Nitrous Oxide**
      a) See Nitrous Oxide protocol for specific permissions.

Pain Control (Acute, continued)

INDICATIONS FOR ACUTE PAIN CONTROL:

A. Facilitate packaging and transport, prevent exacerbation of symptoms, and alleviate discomfort.

⊕ FACILITATION FOR PAIN CONTROL:

A. Zofran 4-8 mg IV for nausea
B. Versed **2**-10 mg IV for muscle spasms associated with pain

⊕ PEDIATRIC PATIENTS:

A. Ketorolac (age 2-16 years) – 1 mg/kg IM to a max of 30 mg or 0.5 mg/kg IV to a max of 15 mg. Do not repeat.
B. Fentanyl (not to exceed adult dose) - 1.5 mcg/kg max 25 mcg (may be given IN)
C. Morphine (not to exceed adult dose) - 0.1-0.2mg/kg (max 2mg single dose)
D. Do not administer opiates if patient's systolic blood pressure is lower than what is normal for child's age.
    1. Lowest normal pediatric systolic blood pressure by age:
        a) < one month: > 60 mmHg.
        b) One month to 1 year: > 70 mmHg.
        c) > 1 year: 70 + 2 x age in years
E. Facilitation for pain control
    1. Zofran 0.1mg/kg (do not exceed adult dose).

Pain Scale

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 Oregon Poison Center (1-800-222-1222) for advice.

SPECIFIC POISONING/OVERDOSE TREATMENTS:

A. **Aspirin** or **Acetaminophen**:
   1. **Activated charcoal** (Actidose) 50 gm PO per Poison Control or Medical Control

B. Beta Blocker:
   1. Treat Bradycardia and/or Shock per protocol

C. Calcium Channel Blocker:
   1. **Calcium Gluconate** 10ml slow IV/IO. ALTERNATIVE: **Calcium Chloride** 250-500mg IV/IO
   2. 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):
      a) 100% O2 NRM or CPAP if possible.
      b) Determine CO level w/ commercial device.
      c) SpCO between 3% and 25% with neurologic symptoms (HA, dizziness, nausea, syncope, LOC, seizures, coma) – treat and transport to ED.
      d) SpCO > 25% - contact MC for diversion to hyperbaric chamber.
      e) 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** 50 mL of 25% solution IV/IO infused over 10 to 20 minutes.
      b) ALTERNATIVE: **Cyanokit**; 5 gm over 15 mins. Repeat 5 gm if no improvement.

F. Hyperadrenergic (Cocaine, Methamphetamine, MDMA, etc.):
   1. Hyperadrenergic induced arrhythmias
      a) **Versed** 2.5-10 mg IV/IM
      b) Stable V-tach: **Amiodarone** 150 mg ALTERNATIVE: **Lidocaine** 1.5 mg/kg.
      c) V-fib: treat per protocol, limit Epi to 1 mg every 5 min

G. Organophospates (Salivation/Lacrimation/Urination/Defecation/GI/Emesis = SLUDGE):
   1. Prepare to handle copious secretions.
   2. Administer **Atropine** 1 – 2 mg IV/IO every 5 mins until symptoms improve.

H. Phenothiazine – Dystonic Reaction and/or Akathesia:
   1. **Benadryl** 12.5-50 mg IV/IM, usually complete relief in 1-2 minutes IV and 15-20 minutes IM.
   2. If still symptomatic **Versed** 2mg IV/IM

I. Tricyclic Antidepressant and/or **Benadryl**:
   1. If tachycardia >110, dysrhythmia, widening QRS, or if seizures:

Poisoning andOverdose (continued)

J. **Sodium Bicarbonate** 1 mEq/kg slow IV push.
K. **Magnesium Sulfate** 2 gm IV, slow push (5-10 min.) for wide QRS.
L. **Versed** 2.5-10mg IV, IM for seizure.
M. 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** 1gm/kg max50gm
B. **Atropine** 0.02mg/kg Max 3 mg for Bradycardia in calcium channel/Beta blocker OD and Organophosphate poisoning.
C. **Benadryl** 1mg/kg Max 25 mg for dystonia.
D. **Calcium Gluconate** 0.5ml/kg max 10 ml for calcium channel blocker OD.
E. **Magnesium Sulfate** 25mg/kg max 2 gm for TCA/**Benadryl** OD.
F. **Versed** 0.1-0.2mg/kg IV, IM, IN max 5 mg single dose for hyperadrenergic syndrome or seizure due to poisoning.
G. **Cyanokit**; 70 mg/kg gm over 15 mins max 5 gm. If no improvement may repeat to maximum 10 gm
H. Consider possibility for neglect/abuse.

SPECIAL CONSIDERATIONS:
A. Symptoms of dystonic reaction include the following:
   1. Contractions of face, neck, back.
   2. Protrusion/fasciculations tongue common.
   3. Oculogyric crisis (eyes looking upwards).
   4. Laryngospasm sometimes present.

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	Muscarinic* Nicotinic** Central***	**Atropine** Pralidoxime (2-PAM) (Hazmat)
Sedative-Hypnotic	Barbiturates Benzodiazepines	Depressed mental status Hypotension Hypothermia	Supportive treatment
Cardiotoxic Drugs	Beta-blockers Calcium channel blockers	Bradycardia Conduction issues Hypotension	Calcium
Anticholinergic	**Atropine** Jimson Weed Scopolamine **Diphenhydramine**	Delirium Hyperthermia Tachycardia Warm, dry skin	Supportive treatment Physostigmine (ED)
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**

*Muscarinic	**Nicotinic	***Central
Diarrhea, Urination, Miosis, Bradycardia, Bronchospasm, Bronchorrhea, Emesis, Lacrimation, Salivation, Sweating	Mydriasis, Tachycardia, Weakness, Hyperglycemia, Fasciculations	Confusion, Convulsions, Coma

Respiratory Distress

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Follow appropriate Airway Management or Cardiac Dysrhythmia protocol if indicated.
C. Treat patient's clinical impression as follows:

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.
   2. Complete Obstruction
      a) AHA protocol for complete obstruction.
      b) ⊕ Laryngoscopy in unconscious with 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 **Atrovent** 0.5 mg via MedNeb. May repeat prn.
      b) ⊕ **Solumedrol** 125 mg IV (If transport time is longer than 20 minutes). ALTERNATIVE **Dexamethasone** IV/IM/PO 10 mg.
      c) ⊕ Status asthmaticus: **Epinephrine** 2-10mcg/min IV infusion
      d) ⊕ Status asthmaticus: **Magnesium Sulfate** 2 gm in 50-100cc over 5-10 min IV.
      e) ⊕ Consider CPAP 100% FiO2 per protocol

C. COPD
   1. If cyanotic or suspected MI 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 MedNeb. May repeat prn.
   4. ⊕ **Solumedrol** 125 mg IV (If transport time is longer than 20 minutes). ALTERNATIVE **Dexamethasone** IV/IM/PO 10 mg.

D. Insufficient Respiration Or Arrest
   1. Rule out obstruction. Ventilate with bag-valve mask.
   2. ⊕ **Narcan** 2.0 mg IV, if cause unknown or if narcotics possible.

E. Pulmonary Edema
   1. Sit patient up if possible, dangle legs.
   2. If patient in extremis: CPAP 100% FiO2. Use PEEP valve if assisting ventilation.
   3. ⊕ If systolic BP > 100:
      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.

Respiratory Distress (continued)

PEDIATRIC PATIENTS:

A. Upper Airway
   1. ⊕ Patient 20-40 kg with audible stridor at rest, **Racemic Epinephrine** 0.5 mL in 5 mL NS by MedNeb and mask. ALTERNATIVE: 0.5ml **Epinephrine** 1:1,000 via nebulizer
   2. Patient <20kg 0.25 mL **Racemic Epinephrine**
   3. ALTERNATIVE: 0.25 mL **Epinephrine** 1:1,000 via nebulizer.
   4. Treat anaphylaxis and foreign body obstruction per adult guidelines.
   5. If the child deteriorates, ventilate with a BVM.
   6. ⊕ If you cannot effectively ventilate with BVM perform intubation.
   7. ⊕ If complete obstruction is present and you cannot effectively BVM ventilate the patient, consider needle cricothyrotomy.

B. Asthma
   1. Treat as per adult guidelines.
   2. ⊕ **Magnesium Sulfate** 25 mg/kg (max 2gm).

C. Insufficient Respiration or Arrest
   1. Treat as per adult guidelines.

D. Acute Bronchiolitis (< 2 years old)
   1. Mild-moderate 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.
   2. Severe respiratory distress.
      a) If wheezing, **Albuterol** 2.5 mg via nebulizer. If improvement may use every 10 minutes.
      b) Prepare for positive pressure ventilation with BVM and intubation for apnea, ETCO2 > 55 or inability to maintain SpO2 > 85%.

NOTES AND PRECAUTIONS:

A. Aggressive Airway Management, including early intubation, is appropriate for the patient who does not respond to treatment or is rapidly deteriorating.

B. In cases of tachypnea, it is essential to consider all causes such as pulmonary embolus, hypoxia, cardiac causes, infection and trauma. Hyperventilation may be a response to an underlying medical problem and should only be considered after these other causes have been excluded. Do not treat hyperventilation by rebreathing CO2. Reassurance and oxygen via mask are appropriate.

C. Considerations for all Patients:
   1. Capnography- combine with patient presentation to ascertain ventilatory status.
      a) ETCO2 normal range is 35-45 mm/Hg.
      b) Normal ETCO2 may be higher in COPD patient.

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. ⊕ **Versed** 2.5-5 mg IV/IO. Repeat every 5 minutes until seizure stops OR Max 20mg.
   2. ⊕ If no IV access, **Versed** 10mg IM. Repeat every 5 minutes until seizure stops OR Max 20mg.
   3. Monitor patient's respiratory status closely after midazolam administration.
C. Check blood glucose and treat per Altered Mental Status protocol.
D. ⊕ **Magnesium Sulfate** 2-4 gm IV over 5-10 minutes for Eclampsia.
E. Place patient on their left side for transport.
F. All first-time seizure patients require medical evaluation by a physician.

PEDIATRIC PATIENTS:

A. If patient is in status seizure (continuous seizure or repetitive seizures without regaining consciousness):
   1. ⊕ **Versed** 0.3 mg/kg IN/IM. Repeat every 5 minutes until seizure stops.
   2. ⊕ If an IV is available, **Versed** 0.1 mg/kg IV/IO. Repeat every 5 minutes until seizure stops.
   3. Monitor patient's respiratory status closely after **Versed** administration.
B. ⊕ Febrile seizures are generally found between the ages of 1-6 and are usually short in duration. If fever >103 and seizing:
C. **Versed** as above
D. Cool patient and give **Acetaminophen** 20mg/kg suppository.
E. If, on arrival, the patient is not actively seizing (post-ictal) an IV is not required.
F. All hypoglycemic or first-time pediatric seizure patients should be transported.

CONSIDERATIONS:

A. BE PREPARED TO MANAGE RESPIRATORY DEPRESSION.
B. Seizures that self-terminate in known epileptic may not require treatment or transport.
C. Seizures may be a sign of cerebral hypoxia from Cardiac Arrest.
D. Seizures may be caused by dysrhythmias.

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 > 38° C (100.4° F) OR < 36° C (96.8° F)
D. Respiratory rate > 20 breaths/min
E. Heart rate > 100 beats/min
F. ETCO2 ≤ 25 mmHg
G. IF two or more of the above AND SBP 90 (MAP 65) or less or Altered Mental Status notify receiving facility of **"Septic Shock Alert"** and transport emergently.
H. Give up to 2 liters fluid (Lactated Ringers preferred) as rapidly as possible or until: 1. MAP > 65.
I. Neck vein distention develops.
J. Pulmonary rales develop.
K. If not responding to fluid and SBP <90 (MAP <65):
    1. **Norepinephrine** 4 mcg/min. If no response, increase every 5 minutes in 4 mcg/min increments to max of 12 mcg/min. Goal is MAP >65.
    2. ALTERNATIVE **Epinephrine** 2-10mcg/min IV/IO infusion.
L. If patient normotensive and not altered, transport non-emergent and notify hospital personnel of possible sepsis.

Shock

TREATMENT:

A. Hypovolemia:
   1. Control external bleeding.
   2. Give up to 2 liters Isotonic fluid as rapidly as possible or until:
      a) BP systolic is 90 (MAP > 65).
      b) Neck vein distention and/or Pulmonary rales develop.
      c) Normal mentation.

B. If Head Injury and Shock:
   1. Fluid challenge as above. Target BP 100-110 systolic. (MAP > 65)
   2. Maintain normal ventilation rate, Target ETCO2 35 mm/Hg.

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
      a) >65). Repeat once if continued 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. ALTERNATIVE **Epinephrine** 2-10mcg/min IV/IO infusion.

D. Cardiogenic (STEMI, cardiomyopathy):
   1. Follow appropriate dysrhythmia protocol.
   2. Give 250 - 500 mL fluid challenge to maintain a systolic BP of > 90 mm/Hg (MAP
      a) >65). 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 (MAP >65). ALTERNATIVE **Epinephrine** 2-10mcg/min IV/IO infusion.

E. Hypoadrenal Shock (Addison's Crisis):
   1. Known Hypoadrenal state (Medic Alert, Parent or caregiver).
   2. Suspected: patient on high dose, chronic steroid.
   3. Fluid challenge as above
   4. ⊕ **Solumedrol** 125-250 mg IV. ALTERNATIVE **Dexamethasone** IV/IM/PO 10 mg.

PEDIATRIC PATIENTS:

A. Treat per **Universal Patient Care Protocol** and prepare for rapid transport.
B. General shock treatment as above:
   1. Pediatric fluid challenge 20ml/kg repeat x 1 prn to appropriate BP for age or sx of pulmonary edema.
   2. ⊕ **Norepinephrine** **0.1 mcg/kg/min.** May increase by 0.1 mcg/kg/min every 5 mins prn to max of 0.4 mcg/kg/min**.** ALTERNATIVE **Epinephrine** 2-10mcg/min IV/IO infusion.

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

A. If bleed suspected, maintain normal ventilation rates and target ETCO2 of 35 mm/Hg
B. Titrate O2 at lowest level to achieve SpO2 94–98%. Maintain ETCO2 35-40mm/Hg
C. Reassure patient if conscious; patient may understand and hear all conversation even though he/she appears comatose or confused.
D. 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.
E. Patients meeting stroke/CVA criteria will be transported as follows:
    1. Closest Stroke Center
        a) Code 3 stroke alert if positive BE-FAST or LAMS score and symptoms onset of 8 hours or less.

GENERAL CONSIDERATIONS:

A. The receiving Stroke Team may require further medical history from the patient's caregiver or immediate family members. It is preferred they be present when the patient arrives at the hospital. If this is not feasible, obtain a phone number that may be used by the Stroke Team for further information.

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. Presyncope is the prodromal symptoms of syncope, described by the patient as "nearly blacking out" or "nearly fainting."

TREATMENT:

A. 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.
B. Treat per Universal Patient Care Protocol
C. Should be directed at abnormalities discovered in the physical exam or on additional examination and may include management of cardiac dysrhythmias, cardiac ischemia/infarct, hemorrhage, shock, etc.
    1. Manage airway as indicated
    2. Oxygen as appropriate
    3. Evaluate for hemorrhage and treat for Shock if indicated
    4. Establish IV access
    5. Fluid bolus if appropriate
    6. Cardiac monitor
    7. 12-lead EKG
    8. 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

Traumatic Brain Injury

TREATMENT:

A. Treat per Universal Patient Care Protocol.
B. Patient evaluation should include best GCS to help categorize injury severity.
    1. Mild injury GCS of 13-15.
    2. Moderate GCS 9-12.
    3. Severe GCS 8 or less.
C. Avoid hypoxia at all times. Goal is SPO2 94-98.
D. Prevent hypotension (Goal SBP > 100; MAP >65).
    1. Begin 500-1,000 mL fluid challenge to maintain a systolic BP of > 90 mm/Hg. Repeat once if continued signs of shock and no pulmonary edema.
    2. If SBP < 100 after 2 l fluid, follow Shock protocol.
E. Follow Advanced Airway protocol if patient unable to protect airway.
F. If the patient has an airway placed, carefully manage ventilations in order to minimize hyperventilation.
    1. Monitor ETCO2 with goal of 40 mmHg.
    2. If sx of herniation (blown pupil, posturing) maintain ETCO2 35mmHg.

Trauma System Activation

Trauma patients shall be transported to trauma centers according to the most current version of theWashington State Prehospital Trauma Triage (Destination) Procedures.

When transporting trauma patients to St John Medical Center, use the activation tool below.
When transporting trauma patients to other facilities, use the pharase “trauma activation”.

Alert receiving facility as soon as possible.

St John Medical Center Trauma System Activiation Criteria:

Full Trauma Activation Criteria
Systolic Blood Pressure <90
Heart Rate > 120 bpm
Respiratory Rate < 10 or >29 bpm
GCS ≤ 10: other than isolated Head (GSW, Fall.)
Room-air pulse oximetry < 90%
Deep Penetrating wounds to neck, chest or abdomen with hemodynamic instability
For Pediatric patient:
Infant/Toddler 6 mo. to 3 yrs: SBP < 80 and/or HR > 160
School Age <14 yrs: SBP <85 and/or HR > 14
Any use of a tourniquet
Amputation above the wrist or ankle

Modified Trauma Activation Criteria
GCS 11 to 13: Isolated head injury (GSW/Fall)
Penetrating Head Injury
Paralysis.
Flail chest
Two or more obvious proximal long bone fractures (femur/humerus)
Combination of burns >20% or involving face, airway, hand, feet, genitalia.
Biomechanics of injury
Ejection from enclosed vehicle
Fall >20 feet
Pedestrian hit at >20 MPH or thrown > 15 feet
Hanging
Near drowning with associated trauma

Discretionary Criteria for Full or Modified Trauma Activation:
Comorbid factors
Extremes of age
Hostile environment (heat or cold)
Medical illness (COPD, CHF, renal failure, heart disease/anticoagulant therapy.)
Presence of intoxicants
Second or third trimester of pregnancy (see OB trauma plan below)
High Energy transfer situation
Rollover
Motorcycle, ATV or bicycle crash
Extrication time>20 minutes
Significant intrusion
Death of same car occupant

OB Trauma Plan:
It is important to inform the hospital of the patient’s obstetrician or prenatal care clinic during the HEAR report so that the correct obstetrician can be ready to receive the patient on their arrival.

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)
D. If unable to tolerate oral route and IV available:
    1. ⊕ **Ondansetron** 4-8 mg IV SLOW.
    2. Can be administered with **Fentanyl** to prevent nausea during pain control.

PEDIATRIC PATIENTS:

A. ⊕ **Ondansetron** 0.1mg/kg Max 8mg. Children over 2 years only.
B. Pharmacologic intervention for children < two is not necessary.

SPECIAL CONSIDERATIONS:

A. Obtain history and consider underlying cause.
    1. Head injury/Increased intracranial pressure.
    2. Shock/hypotension.
    3. Stroke.
    4. Communicable disease, e.g., Norovirus.
    5. Other disease process.
B. Consider offering patient an Isopropyl Alcohol swab and allowing the patient to self-administer the swab by inhalation. Emphasize slow deep inhalation. May be repeated up to 2 times (total of 3 administrations).

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. Partial Rebreather masks (PRB) 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.
F. PEEP valve should be considered when mechanically ventilating a patient with COPD or CHF.

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 NRBM at maximum flow rate in addition to a nasal cannula at 10L/min for at least 3 minutes prior to intubation.
    1. If SPO2 still < 94%: BVM assist with 100% O2 and PEEP valve UNTIL >94%.
    2. If unable to obtain sats >94%, consider alternate method of airway management.
    3. Suction as needed
    4. After induction, turn up Nasal Cannula to 15L/min 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) ⊕ **Etomidate** 0.3 mg/kg max 30 mg
        b) ALTERNATIVE – **Ketamine** 2 mg/kg max 200 mg single dose (status asthmaticus, RAD, concern for shock due to trauma, cardiac, septic)
            - If patient in shock (MAP<65) the doses for induction agents should be cut in half (i.e., **Etomidate** 0.15mg/kg, or **Ketamine** 1mg/kg)
        c) ⊕ **Succinylcholine** 1.5 mg/kg IV push max 200 mg single dose.
        d) ALTERNATIVE - **Rocuronium** 1 mg/kg if **Succinylcholine** contraindicated (Hyperkalemia, myasthenia gravis, etc).

2. Turn up nasal cannula to 15L/min
3. Apply jaw thrust while awaiting paralysis (if no NPA or OPA in place)
4. Routine use of cricoid pressure is NOT recommended.
5. Prepare for continuous suction prn.
6. ⊕ After fasciculations stop, begin intubation. If using **Rocuronium**, wait 60 seconds before proceeding as there will be no fasciculations.
7. ⊕ Visualize the epiglottis via direct or video laryngoscopy.
8. 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 better 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) King Vision with channeled blade, bougie preloaded to ETT.
9. If relaxation inadequate in 90seconds with **Succinylcholine**:
    a) Ensure oxygenation: NC patent and running at 15L/min with jaw thrust, NPA, or OPA in place.
    b) Verify patency of IV/IO.
    c) ⊕ Repeat dose of **Succinylcholine**. Reattempt intubation after paralysis.

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.). Needlejet if patient < 12.

C. ⊕ Treat Bradycardia per protocol with **Atropine** IV. Temporarily halt intubation as needed, ventilate with BVM and 100% O2.

D. 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.

E. ⊕ Post-intubation
1. Document a repeat set of vital signs as soon as tube is confirmed and secured.
2. **Fentanyl** -50-100 mcg IV/IO q 10 mins max 200mcg (peds 1-2 mg/kg max 200mcg).
3. **Midazolam** 5 - 10 mg IV/IO for post-intubation sedation if MAP>65. May repeat after 15 mins prn.
4. ALTERNATIVE: **Ketamine** 0.4 mg/kg q 10-15 minutes max 50 mg.

F. 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.

PROCEDURE- Advanced Airway (continued)

CARDIAC ARREST INTUBATION:

A. ⊕ If the patient is in Cardiac Arrest, they should be intubated with the preparation above, EXCEPT the 3 minutes of preoxygenation 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

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/POST INTUBATION CARE

A. Need for long-term 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. ⊕ **Fentanyl** -50-100 mcg IV/IO q 10 mins max 200 mcg (peds 1-2 mg/kg max 200mcg).

1. ⊕ **Midazolam** 5 - 10 mg IV/IO for post-intubation sedation if MAP>65. May repeat after 15 mins prn. ALTERNATIVE: **Ketamine** 0.5mg/kg q 10-15 minutes.

C. ⊕ **Rocuronium** 1.0 mg/kg IV (Duration of Action 25-40 minutes)

1. ALTERNATIVE: **Vecuronium** 0.1 mg/kg IV (Duration of Action 60-90 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. 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 capnograph.
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
- □ Preoxygenation: 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
- □ SGA Available
- □ Laryngoscope/King Vision Functional
- □ Tube size and Spare Tube
- □ Syringe
- □ Bougie
- □ ETCO2 Circuit Functional and Ready
- □ ETT Securing Device
- □ Surgical Cric Materials Available

PROCEDURE – Advanced Skills for EMT's

PROCEDURES:

A. Properly trained EMS providers are allowed to assist Paramedics or initiate the following procedures and treatments while on scene based on their certification level.

1. Set up and delivery of oxygen therapy's using multiple types of adjuncts and devices to include, NC, NRB, NRB-Nebulizer, Simple Neb, CPAP, NPA, OPA, SGA
2. Placement of 4 Lead & 12 Lead ECG monitoring electrodes.
    - Providers may notify receiving facility or responding ALS agency of the monitors 12 lead interpretation.
3. Implementation of Mechanical CPR devices during resuscitation.
4. Initiate IV/IO access, insertion of drip tubing into selected IV fluids.
5. Performance of blood glucose determination via IV access or finger stick.
6. **Albuterol MDI/Neb**
7. **Acetaminophen PO/Suppository**
8. **ASA PO**
9. **Benadryl PO/IV/IM**
10. **Epinephrine IM/IV**
11. **Glucose PO**
12. **D10 IV Solution IV/IO**
13. **Glucagon IV/IO**
14. **Narcan IN/IM**
15. **Nitroglycerin Sublingual**
16. **Nitrous Oxide** Inhalation
17. Vaccines for Influenza and Covid-19

B. These procedures may be performed by EMS providers after MPD approved training has occurred.

C. Usually, a Paramedic will be present during these procedures, but this is not required in emergency situations.

D. Any EMS provider administering medication will verify the correct medication prior to administration.

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 balanced salt solution.
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 min.
B. If patient not responding to treatment for Cardiac Arrest, consider Death in the Field.

SUBMIT RECORD TO THE MPD'S OFFICE.

PROCEDURE – Blood Draws of Impaired Driver

REQUEST FOR BLOOD DRAW:

A. Blood for legal alcohol, marijuana, or other drug determination may be drawn at request of law enforcement:
   1. When the officer has reasonable grounds to believe that the person is in violation of RCW 46.61.502 or 46.61.504: driving or being in actual physical control of a motor vehicle while under the influence of intoxicating liquor and/or drugs.
   2. The Officer may request blood be drawn pursuant to:
      a) A search warrant
      b) Valid waiver of the warrant (patient consent)
      c) Exigent circumstances to be articulated by Officer

⊕ PROCEDURE FOR BLOOD DRAW:

A. Requesting Officer will provide the blood draw kit:
   1. Utilize universal precautions as per OSHA.
   2. The law enforcement officer will remove the parts of the kit and hand them to the Paramedic as needed.
   3. The Paramedic drawing the blood will swab the site with betadine and allow to air dry for one minute.
      a) Draw appropriate tubes of blood for testing.
      b) When done doing blood draw apply gauze until hemostasis obtained.
   4. Hand the vials back to the Law enforcement officer as they are filled.
   5. Label tubes with patient name, DOB and current date. Document blood draw on ePCR.

SPECIAL CONSIDERATIONS:

A. Patient care needs are the first priority when considering a blood draw per request of Law Enforcement. Do not delay necessary patient care and/or transport to draw blood.

PROCEDURE – Cardiopulmonary Resuscitation (CPR)

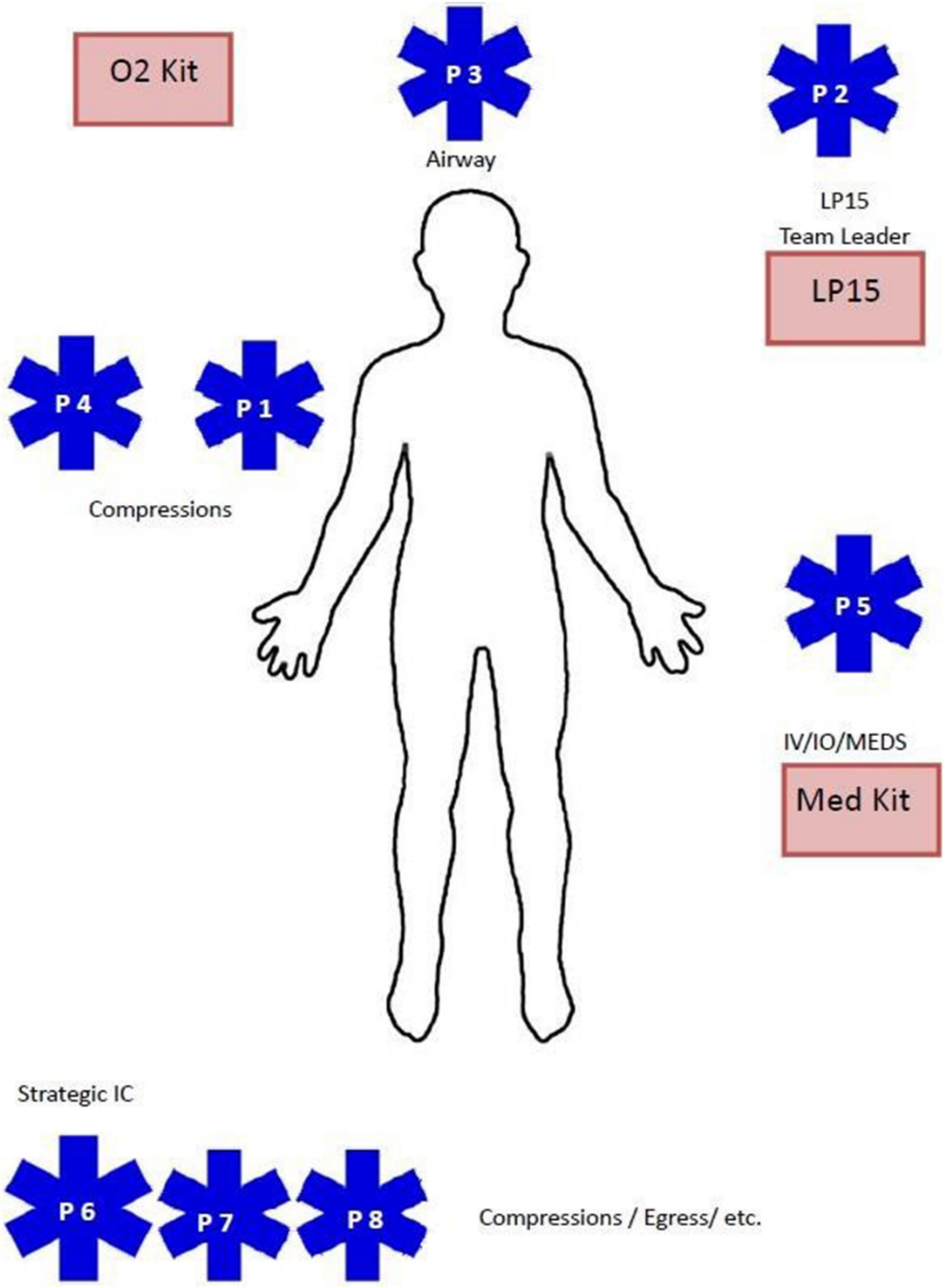
CONTINUOUS CPR DEFINED:

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 an SGA after the 1st or 2nd defibrillation
         - Provide ventilations on the upstroke
      c) Attach ETCO2 monitoring
      d) Provide suctioning as needed
      e) ⊕ Intubation should only be done if required for airway control or after ROSC.
   4. Position 4 (Compressions):
      a) Alternate compressors every 200 compressions (2min cycles).
   5. Position 5 (IV/IO/Meds):
      a) Establish IV or IO access
      b) One (1) IV attempt should be made prior to IO insertion. IO insertion can be done 1st if IV success is unlikely.
      c) ⊕ Administer any required medications
   6. Position 6 (Strategic IC):
      a) Safety
      b) Liaison with family and/or other agencies
      c) Develop egress plan
   7. Position 7 – (Back up):
      a) Assigned as needed
   8. Position 8 – (Backup): Assigned as needed. Additional personnel will be assigned as needed.

PROCEDURE – Cardiopulmonary Resuscitation (CPR- continued)



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 distension, 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 cm. pressure

PROCEDURE:

A. Place facemask and apply O2 device as per manufacturer recommendation.
B. Pressure should be set at 5 cm/H2O and adjusted prn. Do not exceed 10 cm/H2O.
C. Reassess patient every 5-10 minutes.
D. ⊕ Consider mild sedation prn if patient has difficulty tolerating device.
    1. **Midazolam** 2.5 mg (preferred in the elderly or hx of CHF/CAD). OR
    2. **Ketamine** 0.4 mg/kg Max 50 mg.
E. If unable to maintain SPO2 > 90%, administer PPV via BVM and PEEP valve.
F. Remove face mask for suctioning and/or **nitroglycerine** administration.
G. May use with med-neb attachment for bronchodilator administration.

PROCEDURE – Death in the Field

A. EMS providers may withhold resuscitation only if the patient is in cardio/respiratory arrest and:
   1. There is a valid POLST form with the box checked for Comfort Measures Only, DNR.
   2. Physician signed DNR & patient in skilled nursing facility.
   3. Signed and notarized Living Will present and family is in agreement.
   4. There is an obvious sign of death, i.e.
      a) Blunt / penetrating trauma and no vital signs;> 6 min+ transport time and no obtainable VS.
      b) (Unless Paramedic elects to resuscitate)
      c) Evisceration of heart or brain.
      d) Decapitation.
      e) Rigor mortis.
      f) Dependent lividity.
      g) Decomposition.
      h) Incineration.
      i) A pulseless, apneic victim of a mass casualty incident where EMS resources are required for stabilization of other patients (triaged black).

B. Any questionable decision to determine a death in the field should be done only after consultation with:
   1. Medical Control or, if present or reachable by phone,
   2. The patient's primary physician or primary care provider.

C. In all other cases, patient resuscitation should begin immediately, i.e.
   1. Hypothermic patients,
   2. Possible drug overdoses,
   3. Victims of electrocution or lightning,
   4. Drowning victims with > than 10 min submersion time. (Unless medic elects to resuscitate)

D. Unwitnessed arrest with a reasonable suspicion of down time of 15 minutes or greater AND the patient is pulseless and apneic no shock indicated on AED for BLS or asystole in two leads for ALS AND no evidence of hypothermia, drug ingestion or poisoning.

E. Once resuscitation has been initiated, resuscitation may be ceased if one of the following conditions exist.

F. Patient in Cardiac Arrest with persistent asystole, PEA, or Ventricular Fibrillation rhythm after 30 minutes of ACLS intervention that includes intubation or supraglottic airway insertion, and End Tidal CO2 monitor shows good waveform (for placement confirmation) and persistent ETCO2 reading (less than 10 mmHg). Patient in Cardiac Arrest with persistent pulseless electrical activity (PEA) rhythm after 30 minutes of ALS intervention that includes intubation or supraglottic airway insertion and End Tidal CO2 monitor shows good waveform (for placement confirmation) and persistent ETCO2 reading (less than 10 mmHg). Resuscitation of at least 30 minutes has been accomplished with a complete evaluation of causes of PEA (H's & T's)

PROCEDURE – Death in the Field (continued)

A. Traumatic Event: Victim of trauma should be determined dead and should not be transported if:
   1. The patient is a victim of blunt or penetrating trauma and has no vital signs in the field (pulseless, apneic, fixed and dilated pupils).
   2. In instances where scene time combined with transport time will exceed six minutes, and the patient declines and loses vital signs (i.e., pulse/respiration) the patient should be declared DIF unless the Paramedic elects to resuscitate the patient.
   3. In traumatic deaths, a cardiac monitor should not be used in the initial assessment of the patient unless the Paramedic doubts death has occurred. If the monitor is used, only a recognizable QRS of at least eighty (80) per minute should be considered compatible with life in these trauma patients.

B. Drowning victims with greater than 30 minutes submersion.

C. All non-resuscitation and termination of resuscitation situations must be documented according to protocol and an ECG strip documenting cardiac rhythm presenting and verified in 2 or more leads with time and date recorded on the 6 sec. Strip.

D. Document conversation with Medical Control, include time, physician's names, and instructions given.

E. If any doubt exists about the resuscitation of a patient, consult Medical Control.

PROCEDURE – Gastric Decompression

INDICATIONS OG/NG TUBE:

A. Inability to adequately ventilate due to gastric distension, 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.
        b) Adolescents/Adults 14-18 Fr
    2. Depth
        a) Nasogastric: Tip of nose, over ear to xyphoid 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 25 mm Blue needle can be utilized for patients who weigh > 3kg.
   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 (2cm) 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.

PROCEDURE – Intraosseous (IO) Access (continued)

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
   a) "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
   a) ⊕ If the procedure is performed on a conscious patient, immediately following placement of the IO needle, administer **Lidocaine** 40mg over 2 minutes. Wait approximately 30–60 seconds before flushing with normal saline.
8. If fluids do not flow freely, flush IO site with an additional 2-3 cc normal saline.
9. 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.
10. Secure the EZ-Stabilizer when patency is confirmed.
11. Consider additional bolus of saline if flow rates slower than expected.
12. Utilize a blood pressure cuff or pressure bag around the IV bag to help infuse fluids.
13. 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 < 3kg (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.

PROCEDURE – Intraosseous (IO) Access (continued)

A. 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.

B. Pain Management

1. ⊕ If the procedure is performed on a conscious patient, immediately following
2. 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.
3. If fluids do not flow freely, flush IO site with an additional 2-3 cc normal saline.

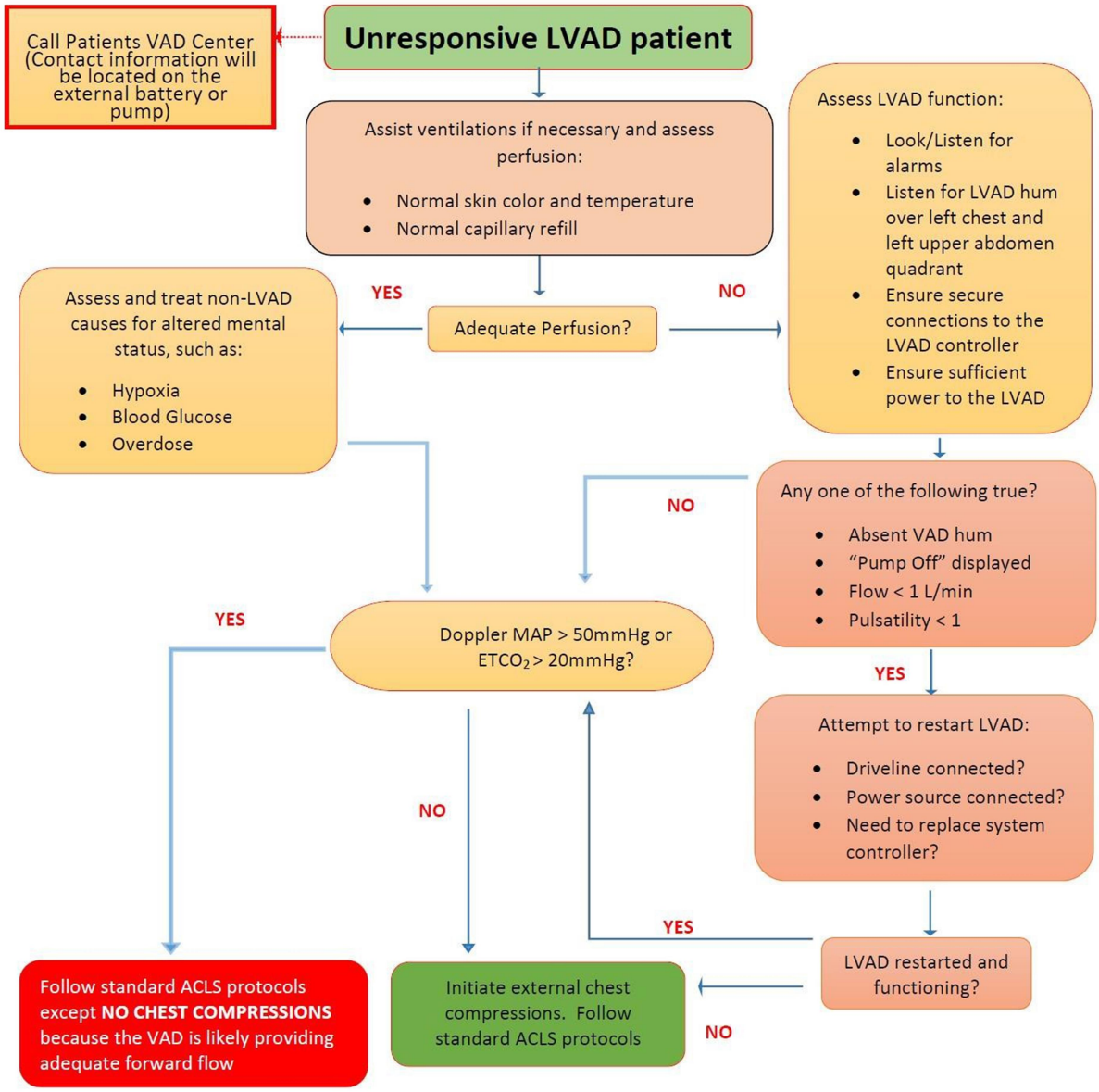
CONTRAINDICATIONS:

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)



- In the non-invasive assessment of the BP of a patient with a continuous flow LVAD, use a manual BP cuff with Doppler when available, with NIBP as a secondary option.
- Waveform capnography can be used to track perfusion in patients in whom more common physical findings used to assess perfusion are not reliable.
- Transport LVAD patients in cardiac arrest to the nearest hospital.
- If ROSC is achieved, transport the patient to the closest VAD center.
- Chest compressions can be performed on all LVAD types (e.g. Heartmate II/III, Heartware)

PROCEDURE - Nitrous Oxide (Nitronox)

ONLY Agencies Identified by County Protocol

INDICATIONS:

A. Pain control to include:
   1. Trauma patients: fractures, burns, abrasions and contusions, etc.
   2. Renal colic (kidney stone)
   3. Pain not contraindicated as below

CONTRAINDICATIONS:

A. Will include, but may not be limited to:
   1. Patient unable to self-administer
   2. Shock state, or likely possibility of shock
   3. Impaired consciousness (head injury, intoxication with alcohol or other drugs)
   4. Chest injuries, blunt or penetrating - possible pneumothorax
   5. COPD
   6. Decompression sickness
   7. Pregnant patients
   8. Unable to make a good seal (maxillofacial injuries, young Peds, etc.)

PROCEDURE:

A. Advise patient that the gas is an analgesic and explain the procedure.
B. The patient will hold the mask in one hand.
C. Have the patient breathe the gas until pain is relieved.
D. Repeat the procedure if and when the pain returns.
E. Discontinue the administration if the patient is unable to self-administer the gas (e.g., becomes stuporous).
F. Monitor vital signs frequently (e.g., every 10 minutes).
G. Nausea and vomiting may occur.
H. If patient supine, instruct patient to remove mask to exhale.

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 patient's 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.**

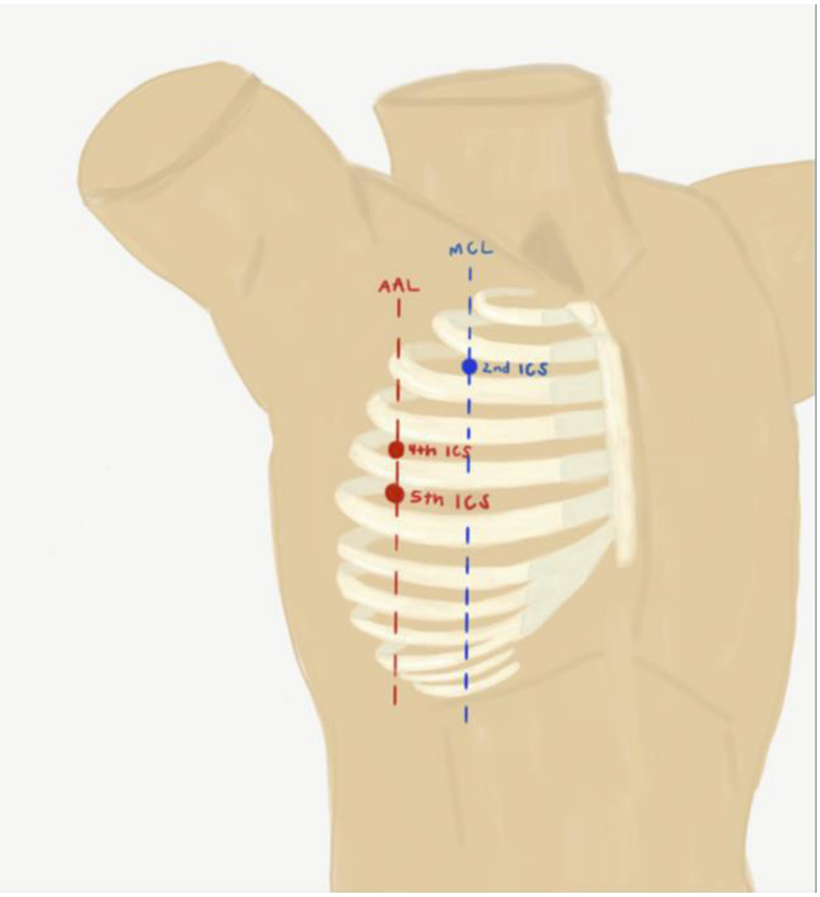
PROCEDURE – Pleural Decompression

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. Primary Site (1st attempt): 4th or 5th Intercostal space, just above midaxillary line (anterior axillary line) if patient large or heavily muscled. Secondary Site: 2nd intercostal space, midclavicular line in average size adults and pediatrics.
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 – Positive End Expiratory Pressure (PEEP)

INDICATIONS:

A. Hypoxia, pre-or post-intubation despite appropriate positive pressure ventilation with 100% O2.
B. May apply PEEP to prepare patient with low SpO2 for RSI.

CONTRAINDICATIONS:

A. Absolute: Cardiac Arrest
B. Relative: hypotension

PROCEDURE:

A. Apply PEEP device to bag valve device
    1. Dial PEEP to 5 cm/H2O and bag as usual; may increase by 5 cm every 3-5 minutes until hypoxia resolves. MAX: 15 cm/H2O
B. MAX Pediatric pressure 5 cm/H2O
C. Maintain MAP >60

PRECAUTIONS:

A. Hyperventilation will result in increased intrathoracic pressure and hypotension.
B. PEEP increases the risk of barotrauma, e.g., pneumothorax.

PROCEDURE – Restraint of Combative Patients

PURPOSE:
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 patients 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 cause of patient's agitation is unknown or suspected to be psychiatric:
   1. ⊕ **Ketamine** 4 mg/kg IM max dose 300 mg OR
   2. **Haldol** 2 – 5 mg IV/IM. May repeat q 15min to total 10mg max dose.
      ALTERNATIVE – **Geodon** 10 mg IM ONLY may repeat 10 mg IM prn max 20 mg
D. If cause of agitation is drug ingestion, withdrawal or postictal state:
   1. ⊕ **Versed** 2.5–5.0 mg IV or 5.0 mg IM. May repeat prn to max 10 mg.
E. ⊕ If 10 minutes after administration of the maximum dose of **Ketamine**, **Haldol**, **Geodon** or **Versed**, and the patient remains combative, administer a different sedative medication as described above.
F. Do NOT use Geodon and Haldol concurrently.
G. Record and monitor vitals and EKG after administration every 5 minutes.
H. ⊕ Treat EPS with **Benadryl** 12.5-25mg IV/IM

EXCITED DELIRIUM:
A. ⊕ **Versed** 10 mg IM followed by **Haldol** 10mg IM to achieve and maintain sedation. **Geodon** 20mg IM may be substituted for **Haldol**.

PEDIATRIC PATIENTS:
A. Follow above guidelines for management of combative patient.
B. ⊕ **Haldol** 0.1mg/kg Max 10mg.
C. ⊕ **Versed** 0.3mg/kg IM/IN; 0.1mg/kg IV max 5mg single dose.
D. ⊕ **Benadryl** 1mg/kg IV/IM Max 25mg.

PROCEDURE – Spinal Immobilization Algorithm

PATIENT SELECTION:

A. Appropriate Patients for Full Spinal Immobilization:
   1. Blunt trauma with ALOC
   2. Spinal pain/tenderness
   3. Neurologic complaint
   4. Anatomic spinal deformity
   5. High energy MOI with any of the following:
      a) Intoxication
      b) Inability to communicate
      c) Distracting injury

PATIENT ASSESSMENT:

A. Patient Mentation:
   1. Decreased Level of Consciousness?
   2. ETOH/Drug Ingestion?
   3. Loss of Consciousness Involved?

B. Subjective Assessment:
   1. Cervical, Thoracic, Lumbar Spinal Pain?
   2. Numbness/Tingling/Burning/Weakness?

C. Objective Assessment:
   1. Cervical, Thoracic or Lumbar Deformity or Tenderness.
   2. Other Severe/Distracting Injury?
   3. Pain w/ Cervical Range of Motion?
      a) IF YES TO ANY, IMMOBILIZE.

D. If no to all, may treat/transport without full spinal immobilization.

E. If penetrating neck injury without neurologic deficit; may Treat/Transport without spinal immobilization.

MODIFIED SPINAL PRECAUTIONS:

A. Consider Spinal Precautions with C-collar and Immobilization to the Gurney without LBB:
   1. Ambulatory at scene.
   2. Long transport, i.e., interfacility
   3. LBB not otherwise indicated

B. MINIMIZING MOVEMENT AND ATTENTION TO SPINAL PRECAUTIONS IS STILL PARAMOUNT!

C. ⊕ All patients who meet Trauma System Activation criteria due to Blunt Trauma mechanism will have, at the minimum, application of a cervical collar. If immobilization to a LBB is impractical and/or leads to patient deterioration, apply a cervical collar and immobilize to the gurney in a supine position.

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:
      - Identify cricothyroid membrane with non-dominant hand, incise skin with a vertical incision.
      - 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.
      - Place appropriately sized Trach Tube over bougie into trachea.
      - Confirm tube placement as per Advanced Airway protocol.
      - Maintain normal ventilation rates with BVM.
      - NOT TO BE USED IN PEDIATRIC PATIENT!
   b) Commercially available cricothyrotomy kit (e.g., Melker):
      - Follow manufacturers and local MPD guidelines for insertion of the device.
3. This procedure to be used only in life-threatening situations.
4. Complications include hemorrhage, false passage, etc.

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

A. ⊕ Needle Jet Cricothyroidotomy

B. Identify cricothyroid membrane, direct #10-14 gauge over the needle catheter caudally into the trachea.

C. When the needle is through the membrane, stop and aspirate for air to ensure tracheal entry.

D. Attach to high-flow O2 source with on/off control device.

E. This procedure to be used only in life-threatening situations.

F. Complications include hemorrhage, false passage, etc.

G. 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.

CONTRAINDICATIONS to field removal:

A. 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 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 wraps 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.

MEDICATIONS – Acetaminophen

SUPPLIED:

A. Acetaminophen 125mg, 325 mg and 500 mg suppositories.

PHARMACOLCOGY 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 > 103 degrees F.

CONTRAINDICATIONS:

A. Known liver disease
B. Current alcohol abuse
C. Acute intoxication
D. Has taken acetaminophen in last 4 hours

PEDIATRIC DOSING:

A. Acetaminophen 20mg/kg PR suppository.

MEDICATIONS – Activated Charcoal

SUPPLIED:

A. 25 grams / 120 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 - 50gm PO or NG.

PEDIATRIC DOSING:

A. Poisoning & overdose – 1gm/kg PO or NG.

MEDICATIONS – Adenosine (Adenocard)

SUPPLIED:

A. 6 mg / 2 ml and 12 mg / 4 ml pre-filled syringes or 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 x 2 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?3ml albuterol
B. 2.5 mg/3 ml vial individually or 3 mg packaged with 0.5 mg ipratropium (Duo-Neb).
C. 90mcg/ actuation albuterol HFA

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 PVCs 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 Nebulized.

PEDIATRIC DOSING:

A. <15kg 2.5-5mg, >15kg 5-10mg

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 (Children's aspirin)

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.

MEDICATIONS – Atropine

SUPPLIED:
A. 1.0mg/10ml

PHARMACOLOGY AND ACTIONS:
A. Vagolytic, Anticholinergic

INDICATIONS:
A. Bradycardia
B. Organophosphate Poisoning

CONTRAINDICATIONS:
A. Tachycardia's
B. Glaucoma

SIDE EFFECTS AND NOTES:
A. Dilated Pupils, Increased HR, VT, HV, H/A and Dry Mouth

ADULT DOSING:
A. Bradycardia- 0.5-1mg every 3-5min; up to 3mg
B. Organophosphate Poisoning- 1-5mg every 5 min until SLUDGE subsides

MEDICATIONS – Calcium Gluconate

SUPPLIED:

A. 10% solution / 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. 10ml 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 10ml.

MEDICATIONS – Calcium Chloride

SUPPLIED:
A. 100mg/ml, 10ml Syringe

PHARMACOLOGY AND ACTIONS:
A. Electrolyte

INDICATIONS:
A. Calcium blocker toxicity
B. Hypocalcemia
C. Hyperkalemia
D. Hypermagnesemia

CONTRAINDICATIONS:
A. . VF, Digitalis toxicity, Hypercalcemia

SIDE EFFECTS AND NOTES:
A. . Decreased HR, Hypotension, VF and N/V

ADULT DOSING:
A. 2-4 mg/kg SIVP

MEDICATIONS – Dexamethasone (Decadron)

SUPPLIED:
A. 1mg vial

PHARMACOLOGY AND ACTIONS:
A. Anti-inflammatory
B. Steroid

INDICATIONS:
A. Cerebral Edema
B. Anaphylaxis
C. COPD
D. Asthma

CONTRAINDICATIONS:
A. Uncontrolled infections, TB, Ulcers, Hypersensitivity

SIDE EFFECTS AND NOTES:
A. Increased HR, Increased BP and Anxiety (side effects are rare)

ADULT DOSING:
A. .3mg/kg IV/IM/IO/PO
B. Pediatrics –
    1. Croup/ Asthma .6mg/kg PO, IM, IV x 1 dose (max dose 16mg) IM, IV, IO

MEDICATIONS – Dextrose

SUPPLIED:

A. 25gm/50ml (d50) 50%
B. 25gm/250 ml D10 bag 10%.
C. 50gm/1000ml (d5) 5%

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 – 50 ml D50 (25gm) IV, 100ml D10 (10gm) prn. Or 100ml D10 (10gm) IV/IO. May repeat 50ml D10 (5gm) to Max 25gm (250ml), 0r 500ml D5 (25gm) 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 – Dextrose 50% (D50)

SUPPLIED:
A. 25gm/50 ml IV push

PHARMACOLOGY AND ACTIONS:
A. Nutrient, Carbohydrate

INDICATIONS:
A. ALOC, Hypoglycemia

CONTRAINDICATIONS:
A. Intracranial bleeding, Hemorrhagic CVA

SIDE EFFECTS AND NOTES:
A. Tissue necrosis

ADULT DOSING:
A. 25gm (50ml) IV/IO

MEDICATIONS – Diltiazem

SUPPLIED:

A. 25mg (5mg/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 mins. After 15 mins. may repeat at 0.35 mg/kg (maximum 25 mg). Consult with Medical Control prior to administration.

MEDICATIONS – Diphenhydramine (Benadryl)

SUPPLIED:

A. 50 mg /ml vial IV,IM or 25-50mg PO.

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 to anti-psychotic drugs.

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/PO max 50 mg

PEDIATRIC DOSING:

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

MEDICATIONS – Epinephrine

SUPPLIED:

A. 1:1,000 – 1 mg/ml 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 workload 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 mins
B. Hypotension/profound Bradycardia/status asthmaticus Anaphylaxis
    1. 2-10mcg/min IV/IO infusion. Titrate to response.
    2. 0.3mg IM if unable to start IV and patient in extremis.

PEDIATRIC DOSING:

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

EPINEPHRINE DRIP:

A. 1 mg of epinephrine in 500 ml of NS (2 mcg/ml), deliver by micro-drip or infusion pump.

MEDICATIONS – Etomidate (Amidate)

SUPPLIED:

A. 40mg/20ml pre-filled syringe or 2mg/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 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. 25-50mcg. IV, IO May repeat every 5 minutes as needed to a maximum of 3mcg/kg. May use higher dose IM.

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
B. 3mg nasal solution atmomized

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 or 30 minutes of nasal atomized dose if patient is hypoglycemic.

INDICATIONS:
A. Known hypoglycemia (preferably demonstrated by blood glucose determination) when patient is confused or comatose and **Dextrose (D10)** is not available or an IV cannot be started.

CONTRAINDICATIONS:
A. None

PRECAUTIONS:
A. IV **Dextrose (D10)** 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.
B. 3mg nasal solution atomized

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
    1. 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 Torsade 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 gm over 15 mins. If no improvement may repeat 5 gm.
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 – 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. 500mg/10ml 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. Induction agent for rapid sequence intubation:
    1. 2 mg/kg IV/IO slow push. Max 200mg.
B. Sedation for CPAP, Pain Control adjunct (after at least 2 doses of optiates):
    1. 0.4mg/kg IV/IO max 50mg.
    2. 1mg/kg IM max 75 mg.
C. Sedation for Combative Patients:
    1. 4mg/kg **IM** max 300mg.

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.
B. Pain management for IO placement:
    1. 40 mg slow bolus.

PEDIATRIC DOSING:

A. Same as adult for V-Fib/Pulseless VT, PVC's.
B. Pain management for IO placement- 1mg/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 (Torsade 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), Eclampsia, TCA/**Benadryl** OD:
    1. 2-4gm IV over 5-10 minutes.
B. WCT, Asthma
    1. 2-4gm IV over 5-10minutes.
C. ETOH Seizure
    1. 2-4gm IV over 5-20 minutes.

PEDIATRIC DOSING:

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

MEDICATIONS – Methylprednisolone (Solumedrol)

SUPPLIED:
A. 125mg/2ml vial

PHARMACOLOGY AND ACTIONS:
A. Steroid
B. Anti-inflammatory Properties
C. Suppresses Immune response 0Especiallt in allergic reaction)
D. 3-4 hr. Half life

INDICATIONS:
A. Asthma, Anaphylaxis, COPD

CONTRAINDICATIONS:
A. GI bleeding, Diabetes, Seizures, Fungal infections.

SIDE EFFECTS AND NOTES:
A. Euphoria, Peptic ulcers, Hyperglycemia, Hypokalemia.

ADULT DOSING:
A. 125-250 mg IV/IO

PEDIATRIC:
A. 2MG/KG

MEDICATIONS – Midazolam (Versed)

SUPPLIED:

A. 10 mg / 2 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/Sedation:
    1. 2.5mg-5mg IV/IO higher dose if IM. Repeat every 5 minutes until seizure stops.
B. Cocaine, meth, MDMA, hyperadrenergic toxicity, Excited Delirium:
    1. 5mg IV/IO; 10mg IM

PEDIATRIC DOSING:

A. Seizures; Chemical Restraint -
    1. 0.1mg/kg IV to a max of 2.5 mg or 0.3 mg/kg IM/IN to a max of 5 mg.
B. Sedation for RSI and Cardioversion -
    1. 0.2mg/kg IV/IO/IM not to exceed adult dose.
C. Sedation after intubation with or without paralytics -
    1. 0.1 mg/kg IV not to exceed adult dose.

MEDICATIONS – Morphine Sulfate

SUPPLIED:
A. 10mg/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. 2-10mg IV/IO/IM Bolus Max 20mg.

PEDIATRIC DOSING:
A. Peds 0.1-0.2mg/kg (max 2mg 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, coma of unknown etiology:
    1. 0.5 mg IV/IO, repeat q 2 minutes up to 2 mg titrating to respirations. If no IV, give 2mg IM/IN.
    2. If no response to initial dose, may repeat at 2 mg q 5 min (IV/IM/IO/IN) up to a maximum of 8 mg.

PEDIATRIC DOSING:

A. Reversal of opioid effects, coma of unknown etiology:
    1. If <5yrs (or <20kg) 0.1mg/kg to max of 2mg

MEDICATIONS – Nitroglycerine

SUPPLIED:

A. 0.4 mg metered dose spray, 0.4 mg tablets

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.

MEDICATIONS- Nitrous Oxide

SUPPLIED:
A.

PHARMACOLOGY AND ACTIONS:
A.

INDICATIONS:
A.

CONTRAINDICATIONS:
A.

PRECAUTIONS:
A.

SIDE EFFECTS AND NOTES:
A.

ADULT DOSING:
A. .

PEDIATRIC DOSING:
A. .

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/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.

PEDIATRIC DOSING:

A. Begin at 0.1 mcg/kg/min. If no response in 5 min, increase to 0.2 mcg/kg/min. If still no response after 5 more minutes may increase to 0.4 mcg/kg/min. 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 Torsade 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 & vomiting –
    1. 4-8 mg tablet IV/IM/PO. Give slowly over two minutes if giving IV.

PEDIATRIC DOSING:

A. >2 years and/or >20kg, 0.1 mg/kg do not exceed adult dose.
B. PO 8-15 kg. 2mg; 15-30 kg. 4mg and >30 kg 6-8mg

MEDICATIONS – Racemic Epinephrine

SUPPLIED:
A. 0.5 ml in 3 ml NS

PHARMACOLOGY AND ACTIONS:
A. Alpha-adrenergic
B. Beta Agonist

INDICATIONS:
A. Croup
B. Stridor

CONTRAINDICATIONS:
A. Epiglottis

SIDE EFFECTS AND NOTES:
A. Increased heart rate
B. Increased blood pressure

PEDIATRIC DOSING:
A. 0.5 ml in 3 ml NS Nebulized

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 ketotic.
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 or IO.
    1. For TCA/**Benadryl** OD, mix 50mEq in 1000ml slow drip.
B. Hyperkalemia:
    1. 50mEq/50ml BSS.

PEDIATRIC DOSING:

A. Use same dosing as for adult.

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 hydoxocobalamin (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 mins.

PEDIATRIC DOSING:

A. 1.65ml/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 200mg 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 conductile and contractile 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 mins. May repeat 5 mg every 15 min 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** 25 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

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
BLS	Basic Life Support
BSS	Balanced Salt Solution
BVM	Bag Valve Mask
c/o	Complaining Of
BSS	Balanced Salt Solution Bvm
Ca	Cancer/Carcinoma
CAOx 4	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
ETCO 2	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
gm	Gram
GSW	Gunshot Wound
gtt.	Drop
gtts	Drops
GU	Genitourinary
GYN	Gynecologic
hr.	Hour
H/A	Headache
HEEN T	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
MgSO 4	Magnesium Sulfate
MI	Myocardial Infarction
MRH	Medical Resource Hospital
MS	Morphine Sulphate, Multiple Sclerosis
NAD	No Apparent Distress
NaHC O3	Sodium Bicarbonate
NC	Nasal Cannula
NIDD M	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

REFERENCE- Abbreviations, continued

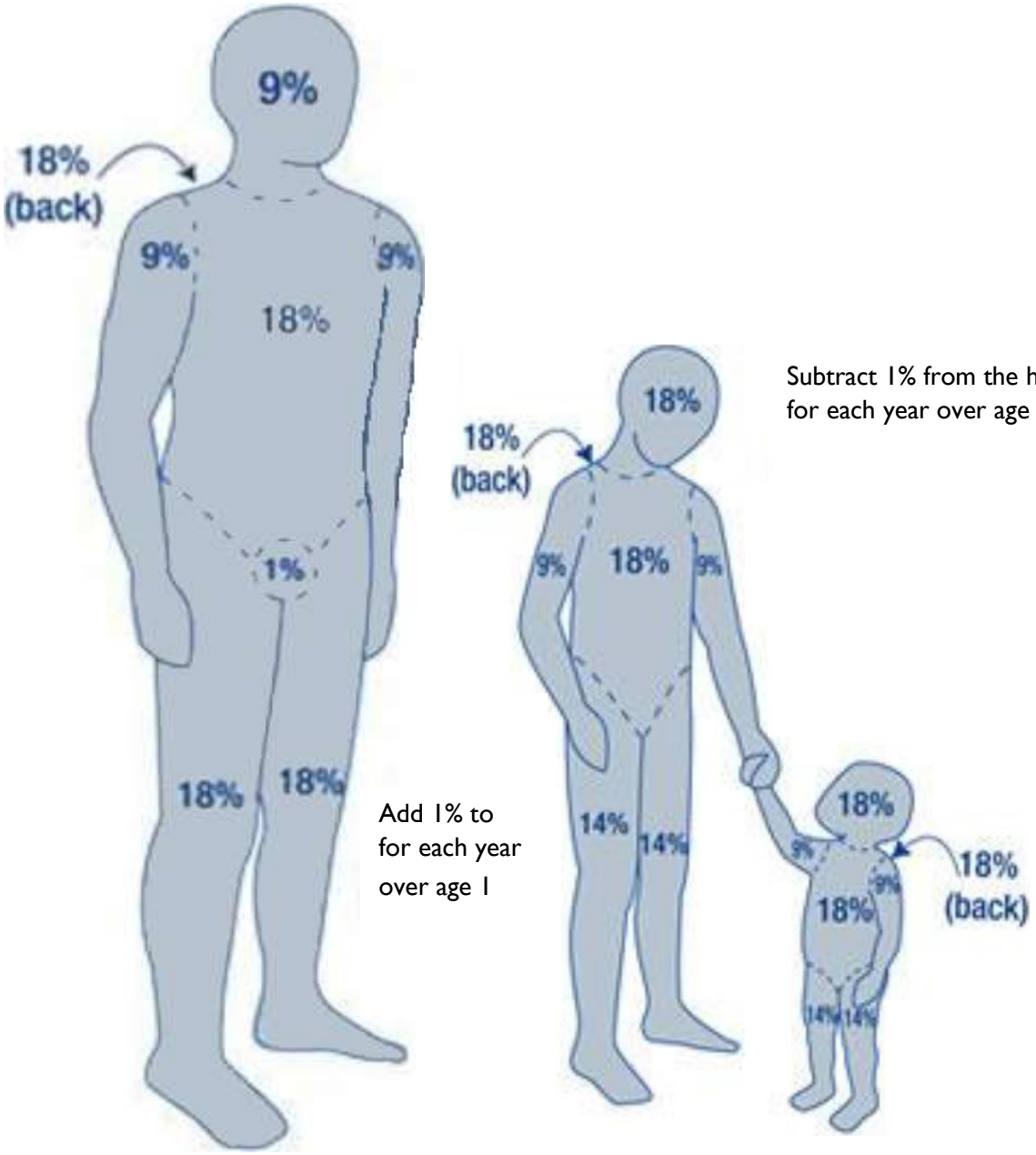
OPA	Oropharyngeal Airway
OR	Operating Room
PCN	Penicillin
PEA	Pulseless Electrical Activity
PEEP	Positive End Expiratory Pressure
PERL	Pupils Equal And Reactive To Light
PHSW	Peace Health Southwest
PID	Pelvic Inflammatory Disease
PMHx	Past Medical History
PMD	Personal Medical Doctor
PND	Paroxysmal Nocturnal 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	Wpw
Wt.	Weight
x	Times
y/o	Year(S) Old
ā	Before
$\bar{p}$	After
@	At
$\bar{c}$	With
$\bar{s}$	Without
Δ	Change
↑	Increasing
↓	Decreasing
>	Greater Than
<	Less Than
~	Approximate
+	Positive
-	Negative
♂	Male
♀	Female

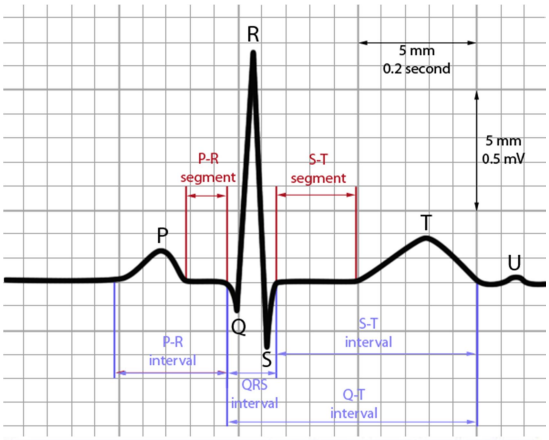
REFERENCE- Glasgow Coma Scale (Adult, Child, and Infant)

	Infant<1yr	Child 1-4 yrs	Age 4-Adult
		EYES	
4	Open	Open	Open
3	To voice	To voice	To voice
2	To pain	To pain	To pain
1	No response	No response	No response
		VERBAL	
5	Coos,Babbles	Oriented,speaks, interacts, social	Oriented and alert
4	Irritable *cry,* consolable	Confused speech, disoriented,consolable	Disoriented
3	Cries persistently to pain	Inappropriate words, inconsolable	Nonsensical speech
2	Moans to pain	Incomprehensible,agitated	Moans,unintelligible
1	No response	No response	No response
		MOTOR	
6	Normal,Spontaneous movement	Normal,Spontaneous movement	Follows commands
5	Withdraws to touch	Localizes pain	Localizes pain
4	Withdraws to pain	Withdraws to pain	Withdraws to pain
3	Decorticate flexion	Decorticate flexion	Decort icate flexion
2	Decerabrate flexion	Decerabrate flexion	Decerabrate flexion
1	No response	No response	No response

REFERENCE- Rule of Nines



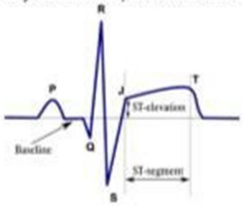
REFERENCE- Cardiac Parameters



No. of L squares between R waves	1	2	3	4	5	6
Rate	300	150	100	75	60	50

Normal PR interval = 3 to 5 small squares (0.12 to 0.2 seconds)
Normal QRS interval < 3 small squares (0.12 seconds)

STEMI definition
ST elevation in two or more contiguous leads (2 mm in leads V2 and V3, or 1 mm in any other leads) or new onset LBBB.

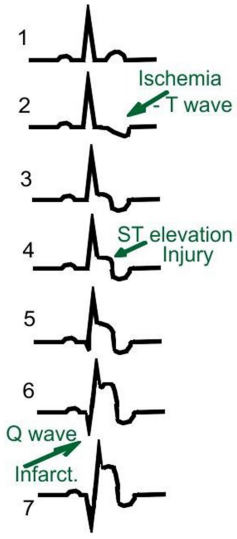


Conditions that mimic an MI

A. Paced Rhythm
B. Left Bundle Branch Block (LBB—see page 9 for Sgarbossa)
C. Left Ventricular Hypertrophy (see page 10)
D. Pericarditis (EKG changes in most or all leads usually tachy)
E. 5. Early Repolarization (rare)

Stages of ACS

Phase 1: Ischemia – Reversible ST depression; Inverted T waves
Phase 2: Injury – Reversible
ST elevation in > more contiguous leads
Phase 3: Infarct -- hours to years old;
Non-reversible / Abnormal Q waves
< 0.04 sec in duration
> 25% of the R wave height



12 Lead Contiguous View

I Lateral	aVR	V1 Septal	V4 Anterior
II Inferior	aVL Lateral	V2 Septal	V5 Lateral
III Inferior	aVF Inferior	V3 Anterior	V6 Lateral

Reciprocal Changes

Leads with EKG Changes	Reciprocal Leads	Injury/infarct artery	Area of Damage	Associated complications
V1, V2	NONE	LCA: LAD- **SEPTAL** branch	Septum, His bundle, bundle branches	infranodal block, BBBs
V3, V4	NONE	LCA: LAD- Diagonal branch	**ANTERIOR** wall LV	CHF, BBBs, Complete Heart Block
I, aVL, V5-V6	II, III, aVF	LCA: Circumflex	High **LATERAL** LV	LV dysfunction, AV Block
II, III, aVF	I, aVL	RCA: Posterior descending branch	**INFERIOR** wall LV, posterior wall LV	Hypotension, Sensitivity to NTG and MS
V1-V4 (depression)	NONE	LCA-circumflex or RCA-post descending	**POSTERIOR** wall LV	LV dysfunction

REFERENCE- SAD PERSONS Assessment Scale

Table 10. SAD PERSONS Assessment Scale[66]

Factor	Points
Sex (male}	1
Age< 19 or> 45	1
Depression or hopelessness	1
Previous suicide attempts or psychiatric hospitalizaltion	1
Excessive alcohol or drug use	1
Rational thinking loss	2
Single.divorced,or widowed	1
Organized or serious suicide attempt	2
No social support	1
Stated future intent	2

Scoring:

<6 = Outpatient management

6-9 = Emergency psychiatric evaluation

> 9 = Inpatient hospitalization

REFERENCE- Cowlitz County EMS Refusal Information Form

COWLITZ COUNTY EMS
REFUSAL INFORMATION FORM

Name:_____DOB:_____SS#: _____ Date: _____

Address:_____City:_____State: _____ Zip: __

PLEASE READ AND KEEP THIS FORM:

This form has been given to you because you do not want treatment and/or transport by the Emergency Service. Your health and safety concern us, so even though you have decided not to accept our advice, please remember the following:

1. The evaluation and/or treatment offered to you by EMS cannot replace treatment by a doctor. We encourage transport by ambulance to a hospital for further medical evaluation and treatment.
2. Your condition may not seem as bad to you as it actually is. Without treatment your condition or problem could become worse. If you are planning to get medical treatment, a decision to refuse treatment or transport by the EMS may result in a delay, which could make your condition or problem worse.
3. You should obtain medical evaluation and/or treatment by going to any hospital Emergency Department in this area or by calling your doctor, if you have one. You may be seen at an Emergency Department without an appointment.
4. If you change your mind or your condition becomes worse, do not hesitate to call 9-1-1. We will respond to help you.

☐ If the box at the left has been checked, it means that your problem or condition has been discussed with a doctor at the hospital by radio or telephone and the advice given to you by the Emergency Medical Service has been issued or approved by the doctor.

I do not wish treatment and/or transport by any Cowlitz County Emergency Medical Service ambulance or personnel. I accept full responsibility for my decision to refuse treatment and/or transport and hereby release the Emergency Medical Service personnel and Medical Control Physicians from all responsibility and any ill effects, which may result from this action.

I have received a copy of this information sheet:

Signature of Patient:_____ Date: _____

Relationship to Patient: _____

I Patient Assessment (Complete each item, circle appropriate response.)

1. Oriented to: Person? **YES / NO** Time? **YES / NO** Place? **YES / NO** Situation? **YES / NO**
2. Altered level of consciousness? **YES / NO**
3. Head Injury? **YES / NO**
4. Alcohol or drug ingestion or psychiatric impairment? **YES / NO**
5. BP_____Pulse_____ RR_____

BP_____Pulse _____ III RR _____

II Medical Control:

_____ Contacted by:_____Phone: _____ Radio _____ at _____ hours.
_____ Unable to Contact (explain in comments).
_____ Medical Control not contacted per protocol.

Comments:_____

Orders:

_____ Indicated treatment and/or transport may be refused by patient.
_____ Use reasonable force and/or restraints to _____treat _____ transport _____both.

IV Patient advised (check each advice given)

_____ Medical treatment/evaluation needed. _____Ambulance transport needed.
_____ Further harm could result without medical treatment/evaluation.
_____ Patient would not accept refusal information form.

V Disposition

_____ Refused all EMS services. _____Refused field treatment.
_____ Refused transport.
_____ In care/custody of law enforcement agency. (Agency: _____ Officer:_____)
_____ In care/custody of relative or friend.

Name:_____Relationship: _____

_____ _____ _____
Signature of Paramedic/EMT Date / Time Witness