

Pre-Hospital Care Treatment Guidelines, Protocols and Procedures

Snohomish County EMS

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January 1, 2010

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1. INTRODUCTION

Preface

This EMS guideline and protocol manual was written to provide an opportunity for optimal patient care among multiple agencies and multiple levels of EMS providers functioning within Snohomish County. The guidelines represent a consolidation of recommendations for patient care from many local and national resources.

Any deviations from this document must have the written approval of the MPD.

Errors in pre-hospital care are generally errors of omission. The EMS provider will be pro-active in the implementation of these protocols, and should not withhold or delay any indicated intervention. **Providers must remember to “FIRST DO NO HARM”.**

Periodic revision will be made in order to reflect the best possible care for to our patients consistent with current acceptable medical practices. These revisions shall be made with the established EMS leadership of each service in conjunction with local medical community involvement.

Every patient will be afforded the best care available, in accordance with these protocols and the EMS provider’s best judgment, without regard to the patient’s age, gender, lifestyle, mental status, national origin, religion, creed, color, race, diagnosis or prognosis, complaint, or ability to pay for services rendered. There is a zero tolerance policy for discrimination.

Disclaimer

Every attempt has been made to reflect sound medical guidelines and protocols based on currently accepted standards of care for out-of-hospital emergency medicine. The working group urges the readers to speak to their respective service point of contact for any specific questions that may arise. The working group assumes no responsibility directly or indirectly for this document. It is the reader’s responsibility to stay informed of any new changes or recommendations made at the state or service level. Despite our best efforts, these guidelines may contain typographical errors or omissions.

Activities of EMS personnel must comply with all applicable federal, state, county and local laws and regulations

This document was developed specifically for the Snohomish County area. As such, these protocols may need to be modified if used in other EMS systems. Other EMS systems may obtain a disk copy of this protocol by written request from their service Medical Director. Contact Marsha Parker at the Snohomish County EMS Office for further information. Protocols of a progressive nature require increased responsibility for a comprehensive education and CQI program.

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2. EMS SYSTEM

EMS System

All participating agencies have provided leadership and design for the pre-hospital care Emergency Medical Services system. The EMS Protocol Committee was created to oversee, direct, and provide information and feedback to the agencies providing Emergency Medical Services to citizens of the primary response area.

EMS Medical Program Director

The Medical Program Director for Snohomish County is Ron Brown, MD, FACEP.

Continuous Quality Improvement

To maximize the quality of care in EMS, it is necessary to continually review all EMS activity in order to identify areas of excellence and potential sources of errors. This method allows optimal and continuous improvement. CQI is defined as a proactive involvement in issues and applications to constantly assess the value and direction of the EMS system. Components of CQI include: active communication, documentation, case presentations, protocol review and refinement, medical direction involvement, medical community involvement, continuing education, and reassessment of expected goals and outcomes. Participation in the CQI process is mandatory to function within the system.

The primary focus of CQI is on “system performance”. Specifically CQI focuses on the bigger picture of our system, including protocols, guidelines, equipment, training and standard operating procedures.

The EMS Medical Director may request additional documentation, typically an incident report, for the purposes of gathering information about a call, event or procedure in question. Failure to cooperate with the CQI or quality assurance process may result in withdrawal of Medical Direction.

All Paramedic personnel will be required to pass a written test on these guidelines. Paramedics applying for their first certification in Snohomish County must pass the protocol test before approval. Thereafter, the state test must be passed with each subsequent Paramedic recertification.

Guidelines and Protocols

This document contains both general guidelines and specific EMS protocols for use by EMS responders. While this document was originally created specifically for Snohomish County area responders, it will be made available to any interested service, as long as the service EMS Medical Director makes that request. Inactive members may not utilize these protocols without first being cleared by their respective EMS department/service and Medical Program Director.

Emergency medicine continues to evolve at a rapid pace. This document is subject to change as new information becomes available and accepted by the medical community.

These protocols are intended to:

- Standardize as much as possible, pre-hospital care for Snohomish County.
- Provide pre-hospital personnel with a framework for care and an anticipation of supportive orders from Medical Control.
- Provide base hospital physicians and nurses with an understanding of what the treatment capabilities of pre-hospital personnel may be.
- Provide the basic framework on which Medical Control can audit the performance of pre-hospital personnel.
- Be carried out in the appropriate clinical setting prior to contacting Medical Control, except when approval from Medical Control is specified.
- Expedite patient delivery to institutions best equipped to handle their specific problems.

They are not intended to:

- Be absolute treatment doctrines, but rather guidelines with sufficient flexibility to meet the needs of complex cases.
- Be a teaching manual for EMTs or Paramedics. It is expected that each pre-hospital care provider is trained to his/her level of certification and that they will continue to meet the requirements of the State for continuing education. It is further assumed that Medical Control will provide continuing education based on the results of patient care audit and review.
- Interfere with the wishes of the patient or family, or the wishes of the patient's physician.
- Dictate details of care to advising physicians or warrant pre-hospital providers as an independent field practitioner.

Any deviation from a protocol must have prior approval from Medical Control.

Interaction Conflicts at the Scene

Any disagreements or potential conflicts at a scene should be discussed after the call in a setting of privacy. Efforts should be made to resolve interpersonal conflicts at the lowest possible level. One-on-one discussions are encouraged whenever possible. In the event the conflict cannot be resolved, the appropriate department/service chain of command shall be utilized. Medical Control shall be contacted immediately for patient care issues that cannot be resolved.

Critiques and debriefings play a valuable role in solving system issues after a particular call. These should preferably take place within 72 hours after a call. Notify the appropriate chain of command to set up these meetings.

Patient Advocacy/Treatment Rights

Our patients are our primary focus! Their requests must be heard and should be honored. Patients deserve to be fully informed of all decisions affecting their care, outcome and potential complications, whenever possible. Competent, rational adults have a right to accept or refuse treatment recommendations.

The patient's immediate family should be considered an extension of the patient in notification and scene management. Whenever possible, family members should be included and informed of events, encouraged to remain present during transport, and supported in their role as patient advocates.

These guidelines are intended for use with a conscious, consenting patient, or an unconscious (implied consent) patient. Refer to the appropriate protocol.

A rational patient has the right to select a medical facility to which to be transported (exceptions: medical facility not appropriate to problem, i.e. trauma, pregnancy, etc.)

When in doubt, contact Medical Control and fully document all of your actions.

If a patient is a minor (under age 18), no consenting adult is available and the minor refuses treatment, the provider should contact Medical Control.

Patient Care Responsibility

The authorized individual with the highest level of certification as recognized by the Washington State Department of Health is in charge of patient care.

These protocols shall take effect:

- Upon arrival on a scene by a certified EMS provider who is duly dispatched or requested within the EMS system standard operating procedures and with affiliation to an EMS department/service participating in these protocols.
- In no case should a higher certified EMS provider who is duly dispatched or requested within the EMS system be prevented from making patient contact, regardless of patient condition.
- The most highly trained provider first on scene shall be in charge of patient care. If that provider is off-duty or out of district, he/she may be relieved upon the arrival of another responder with equal or higher training.
- Attendance of the patient during transport will be appropriate to the degree of illness. EMS personnel qualified and certified by the WAC to provide the appropriate level of care will attend all transports. The only exceptions may occur during mass casualty incidents, Search and Rescue or other special operations circumstances. Inappropriate assignment of EMS personnel will be grounds for suspension.

Receiving Medical Facility

In general, patients with non-life-threatening injuries or disease states will be delivered to the medical facility of their or their family's choice or the medical facility indicated by the private physician. In cases of life-threatening injury or medical condition, the patient will be delivered to the closest hospital with the capability to deal with the problem, or to provide stabilization prior to transfer for definitive care. At times, patients may be diverted to other area hospitals depending on availability of hospitals' facilities or because patient guidelines mandate diversion to Level I Trauma System. In cases where there is a question about the appropriate destination medical facility, Medical Control should be consulted.

Transfer of Care Responsibility and Delegation

An EMS provider will remain with the patient and remain responsible for patient care until another certified EMS provider of equal or higher training and capability receives an oral report and assumes responsibility for patient care or the patient is returned to the originating facility following a diagnostic/therapeutic outpatient procedure, the patient is transported by physician order to his/her place of residence.

EMT-Paramedics are not required to remain with a patient if ALS care is not warranted. Following a full patient assessment and examination, an EMT-Paramedic or EMT-Intermediate may transfer a patient to an EMT-Basic level of care, if there is no reasonable expectation that the patient will require a higher level of care. **The assessment and decision for transfer of care shall be documented.**

In the event of a transfer from ALS/ILS to a lower level of care, the EMT-Paramedic/Intermediate will be held responsible for the appropriateness of care provided. Transfer to a lower level of care is acceptable in an MCI to ensure the greatest benefit for the greatest number of patients.

Law enforcement has NO AUTHORITY in transport decisions unless a law enforcement officer elects to take a patient into custody. The law enforcement officer is then responsible for ALL actions and decisions occurring as a result of his/her direct orders. Liability and system consequences should be clearly relayed to law enforcement officers. **Whenever a conflict exists, contact Medical Control.**

EMS personnel will maintain charge and control of the patient until:

- Proper patient transfer to receiving personnel has occurred.
- A full patient report is provided to the appropriate receiving personnel.

A written copy of the EMS report shall be left with the receiving hospital upon delivery of the patient.

Utilization of Private Ambulance

Private Ambulance Services primarily provide BLS level transport services utilizing EMT and RN personnel. Private ambulance services shall not normally respond to emergency incidents (911 dispatches) as first responder units, except in the following instances:

1. When specifically requested by the EMS agency having jurisdiction
2. When the private service receives a direct request for service from a person or facility other than dispatch, in which the patient may be transported to an Emergency Department. In these instances the service may respond but shall contact the appropriate emergency dispatch agency.

Transfer of care by paramedics of an ALS patient to a private RN ambulance service for transport shall only occur with **direct on-line Medical Control approval**. Transport by air ambulance is an exception to this rule.

3. EMS PROTOCOLS

Protocol Format

Definitions:

ALL EMS PROVIDERS: Includes certified EMS First Responders (unless specified otherwise), EMT-Basics, EMT-Intermediates and EMT-Paramedics.

BLS AND ABOVE PROVIDERS: Basic Life Support (BLS) care provided by certified EMT-Basics, EMT-Intermediates and EMT-Paramedics.

ILS AND ABOVE PROVIDERS: Intermediate Life Support (ILS) care provided by certified EMT-Intermediates and EMT-Paramedics.

ALS PROVIDERS: Advanced Life Support (ALS) care provided by certified EMT-Paramedics who have at their disposal a manual defibrillator/monitor/pacer, ACLS medications, controlled substances and advanced airway equipment.

Standing Orders

Establish Primary Management

This term is found throughout the protocols. It requires that a complete primary and secondary survey be accomplished and that, via STANDING ORDERS, all necessary and appropriate skills, medications and procedures be immediately used to maintain Airway, Breathing and Circulatory function. Rather than list the standard ABCs on each page, it is assumed that EMS providers will realize that this should occur commensurate with their level of training and applicable state and county protocols, on every patient.

Specific treatment protocols address the treatment and disposition of each condition.

Interventions are listed in recommended sequential order. It is understood that circumstances may require flexibility.

Each intervention preceded by the above definitions indicates the level of certification required to perform the indicated procedure.

Interventions preceding the words “**CONTACT MEDICAL CONTROL**” may be considered standing orders for the specific condition addressed by each protocol.

Interventions following the words “**CONTACT MEDICAL CONTROL**” may be considered standing orders only in the rare circumstances when: location or circumstances prohibit communication OR Medical Control communication cannot readily be established.

Authorization of treatment requiring Medical Control orders is at the discretion of the physician at the receiving facility. If requested orders are not authorized by Medical Control, concerns may be referred via the appropriate Chain of Command to the Medical Program Director. Medical Control orders for intervention not specifically listed in the protocols may be performed if the order is within the scope of practice, and the intervention is indicated for the condition.

Assessment Guidelines

A complete assessment up to the responder's level of training and available resources, and includes the following, as appropriate:

- ABC's
- Level of consciousness
- History of chief complaint
- Pertinent past medical history, allergies and medications (SAMPLE and OPQRST)
- Vital Signs, including:
 - Respiratory effort, rate and volume
 - Pulse rate, strength and regularity
 - Blood Pressure
 - Oxygen saturation (if applicable)
 - Capnography (if applicable)
- Mental Status exam
- Physical exam, head to toe, when appropriate.
- Skin signs
- Lung sounds
- Neurological exam, including pupillary reaction, coordination and general movement and sensation
- Cardiac monitor including 12 lead EKG
- Full documentation on appropriate EMS response form

4. CARDIAC EMERGENCIES - ADULT

Cardiac Chest Pain

Designation of Condition: Typically, patients may present with retrosternal chest discomfort, which may be described as tightness or pressure that may radiate into the epigastrium, jaw, arms, neck or back. Females and diabetic patients may present atypically. When in doubt, treat as an ACS. Dissecting aortic aneurysm may mimic an ACS in presentation and in response to treatment. Providers should recognize that there are many types of chest pain and it may be difficult to distinguish between cardiac chest pain and other forms. Caution should be given and err on the side of cardiac in origin.

ALL EMS PROVIDERS

- Establish Primary Management
- For patients exhibiting signs and symptoms of a cardiac event (e.g. active chest discomfort, SOB, weakness, dizziness, diaphoresis indicative of an ACS), consider an ALS intercept from the nearest appropriate entity.
- Oxygen 2-6 lpm NC or commensurate to the patient's level of distress

BLS AND ABOVE PROVIDERS

- Administer chewable baby aspirin 324 mg.
- BLS Providers may **Contact Medical Control** for orders to administer patient's own nitroglycerin.

ILS AND ABOVE PROVIDERS

- Enroute, initiate isotonic IV, titrate to LOC, HR and end organ perfusion.
- If there is no EMT-P on scene, the EMT-I may administer SL Nitroglycerin.

ALS PROVIDERS

- 12 lead EKG is required on all patients with chest pain suspected to be of cardiac origin should be accomplished within 10 minutes of arriving on scene. Time permitting, serial 12 lead EKGs should be obtained.
- If possible, the 12 lead EKG should be sent to the receiving facility if there are signs of STEMI, or findings necessitating immediate physician interpretation. In these instances, medics should consult with online Medical Control.
- If systolic BP > 90 mmHg administer 0.4 mg Nitroglycerin SL, may repeat dose q 3 - 5 minutes as needed.
 - Nitroglycerin administration is contraindicated in patients who have recently taken Erectile Dysfunction medication (Contact Medical Control)
 - For stable patients with long transport times **Contact Medical Control** for 1/2-2 inches of Nitropaste

- If pain persists and patient remains hemodynamically stable,
 - Administer Morphine Sulfate 2 - 20 mg; titrate to pain relief/hemodynamic effect.
 - May substitute Fentanyl at a dosage of 3 mcg/kg in 50-100 mcg increments if patient allergic/hypersensitive to MS.
- STEMI Patients
 - Patients with STEMI should be transported to a facility with cardiology and PCI capability, bypassing other facilities.
- **CONTACT MEDICAL CONTROL** for orders above 20 mg of Morphine Sulfate.
- The goal of treating cardiac chest pain is to eliminate the chest pain as much as possible, without delaying the patient's arrival at the hospital. Short scene times are crucial and should be limited to 20 minutes unless unusual circumstances exist.

Cardiogenic Shock

Designation of Condition: The patient will usually present with shortness of breath (wet noisy respirations, crackles, or wheezing), possibly pink frothy sputum (pulmonary edema) and hypotension. These signs and symptoms are often observed in the setting of ACS and require expeditious transport.

ALL EMS PROVIDERS

- Establish Primary Management
- Patients in cardiogenic shock should be transported to a facility with cardiology and PCI capability, bypassing other facilities.

ILS AND ABOVE PROVIDERS

- Initiate two large-bore isotonic IV; titrate to maintain LOC, HR and end organ perfusion. If BP < 90 mmHg systolic, administer a fluid challenge of 250 cc (20 ml/kg for pediatric) and reassess.

ALS PROVIDERS

- Move to vasopressors if refractory hypotension after 500 cc bolus.
- If BP remains < 90 mmHg systolic, initiate Dopamine drip @ 2 - 20 mcg/kg/min (titrate to BP between 100-110 mmHg systolic).

Pulmonary Edema and Congestive Heart Failure

Designation of Condition: Patient presenting with signs, symptoms and history of moderate/severe dyspnea and/or decreased perfusion secondary to pulmonary edema. The patient will usually present with shortness of breath (wet noisy respirations/crackles) and possibly pink frothy sputum (pulmonary edema). It should be noted that a fever suggests infectious vs. cardiac origin. Explore differential diagnoses.

ALL EMS PROVIDERS

- Establish Primary Management
- ALS intercept recommended

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- EKG and 12-Lead
- If systolic BP > 90 mmHg:
 - Administer 0.4 mg Nitroglycerin SL, may repeat dose q 3 - 5 minutes as needed.
 - Nitroglycerin administration is contraindicated in patients who have recently taken Erectile Dysfunction medication (Contact Medical Control)
 - Furosemide 20 - 80 mg SIVP. Consider higher doses (double daily dosage) if patient already taking Furosemide, up to a limit of 200 mg.
 - Morphine Sulfate 2 – 20 mg titrated to effect. Morphine is typically most helpful in low dosages of 2 mg increments.
 - May substitute Fentanyl in 3 mcg/kg in 50-100 mcg increments if patient allergic/hypersensitive to MS if needed
- Consider CPAP or intubation as needed. Early intubation is preferable in the hypotensive patient with pulmonary edema.

Cardiac Arrest - Adult Universal Algorithm

Designation of Condition: Pulseless and apneic from a medical cause.

ALL EMS PROVIDERS

A paramedic level of response should be dispatched simultaneously to all cardiac arrest responses. The EMS response team should ensure that an ALS unit is enroute at the first opportunity. EMS personnel should never wait for paramedic arrival before utilizing the AED. Early access to CPR and early defibrillation are critical to successful cardiac resuscitation.

Does patient meet Dead at Scene Criteria, if not proceed.

- Establish Primary Management.
- Orchestrate resuscitation.
- *If witnessed arrest and down time is less than 4 minutes, use AED and defibrillate once if advised prior to BLS CPR, otherwise begin below.*
- Perform 2 minutes of BLS CPR (30:2 ratio).
 - Attach defibrillation electrodes to patient during CPR if personnel available.
- Check rhythm (push “analyze”).
- Defibrillate once at pre-programmed setting if advised.
- Perform 2 minutes of BLS CPR (30:2 ratio for adults and 15:2 for pediatrics/infants) **THEN** check for rhythm/pulse.
- If no pulse check rhythm and defibrillate once if advised.

The cycle is 2 minutes of 30:2 CPR followed by rhythm check and one defibrillation (if needed) repeated until resuscitation successful or efforts terminated.

Interruptions to CPR should be limited and less than 10 seconds each.

Defibrillation should always be followed by two minutes of CPR before pulse check. Though the patient may have electrical activity or a pulse, the body benefits from the increase cardiac output.

Patients with a return of spontaneous circulation should be transported to a facility with cardiology and PCI capability, bypassing other facilities.

Cardiac Arrest - Hypothermia

Designation of Condition: Cardiac arrest with the presence of a depressed core temperature < 95 degrees Fahrenheit. Tympanic thermometers may not be accurate at low temperatures.

ALL EMS PROVIDERS

- Establish Primary Management
- If the patient is in cardiac arrest, begin CPR. Defibrillate (if needed) at appropriate joule settings or as device indicates. Defibrillation is unlikely to cause conversion to a normal rhythm until a core temperature of 86 degrees Fahrenheit is reached.
- If **<86 degrees Fahrenheit** limit defibrillation to 1.
- If **>86 degrees Fahrenheit** limit defibrillation to 3.
- Ventilate with warm humidified Oxygen, if available, at a maximum rate of 6 - 10 breaths per minute.
- Remove wet clothing and begin active external warming.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- If temperature **<86 degrees Fahrenheit**, withhold IV meds and limit defibrillation to 1 shock.
- If temperature >86 degrees Fahrenheit:
 - Administer Epinephrine or Lidocaine as appropriate per cardiac protocols, except double the time intervals between medication administrations.
 - In cases of known or suspected hyperkalemia, renal failure or hypocalcemia (e.g. after multiple blood transfusions) consider Calcium Chloride 10%, 10 ml SIVP, followed by Sodium Bicarbonate 1 mEq/kg IVP early in resuscitation.
- Attempt rapid core re-warming by any means possible. Continue re-warming until core temperature is > 95 degrees Fahrenheit or ROSC.
- If ANY pulse is detected, DO NOT Perform CPR.
- If pulse present, do not treat Bradycardia or Atrial Fibrillation - assuming severe hypothermia. If patient is in Ventricular Tachycardia with a pulse, give Lidocaine 1 mg/kg IVP.
- CONTACT MEDICAL CONTROL

Asystole

Designation of Condition: The patient will be unconscious, unresponsive, pulseless, and apneic and show asystole on the monitor (confirmed with ten-second strips in at least two leads).

On occasion, high levels of parasympathetic tone may lead to cessation of both ventricular and supraventricular pacemaker activity. Electric shocks also produce parasympathetic discharge. For this reason, routine shocking of asystole because "it can't make the rhythm worse" is strongly discouraged. Studies of asynchronous defibrillation for asystole do not reflect an increase in survival. **In cases of electrocution, drowning, overdose, or environmental hypothermia, continue CPR and ACLS pending MEDICAL CONTROL contact.**

ILS AND ABOVE PROVIDERS

- Follow Cardiac Arrest – Universal Algorithm Protocol
- Initiate isotonic IV; consider early bolus based on history.

ALS PROVIDERS

- Confirmation of condition, in multiple leads
- Intubate
- If pacing is considered, perform it immediately.
- Epinephrine:
 - IV dosage of Epinephrine (1:10,000) 1.0 mg, repeat dose q 3 to 5 minutes until a change in rhythm or mechanical capture occurs if the patient is being paced.
 - ET (if no IV/IO available) dosage of Epinephrine (1:1,000) 2.0 mg in 10 cc NS flush.
 - Vasopressin, 40 units IV, may be substituted for either the first or second dose of Epinephrine
- Atropine Sulfate, IVP or ET, 1 mg q 5 minutes until there is a change in rhythm or a total of 3 mg has been given.
- In cases of known or suspected hyperkalemia, renal failure or hypocalcemia (e.g. after multiple blood transfusions) consider Calcium Chloride 10%, 10 ml SIVP, followed by Sodium Bicarbonate 1 mEq/kg IVP early in resuscitation.
- CPR and ACLS measures should not be interrupted any longer than necessary to assess for mechanical capture during pacing attempts.

Contact Medical Control for orders to terminate resuscitation efforts. Consider field termination of resuscitation efforts on all adult cardiac arrest patients who are unresponsive to appropriate defibrillation, successful airway control, ventilation and rhythm appropriate medications. **Excluding hypothermic patients.**

Pulseless Electrical Activity

Designation of Condition: The patient will be unconscious, unresponsive, pulseless, apneic, and demonstrate organized electrical activity on the monitor.

In addition to severe cardiac disease, potentially treatable causes of PEA include:

Hypovolemia	Tension Pneumothorax
Hypoxemia	Tamponade (pericardial)
Hypothermia	Toxins (OD)
Hypo/Hyperkalemia	Thrombosis (Coronary/pulmonary)
Hydrogen Ion (acidosis)	Trauma
Hypoglycemia	

ILS AND ABOVE PROVIDERS

- Follow Cardiac Arrest – Universal Algorithm Protocol
- Treat underlying cause
- Establish at least one large bore IV line with an isotonic solution and begin fluid bolus of 20 ml/kg.

ALS PROVIDERS

- **Epinephrine:**
 - IV dosage of Epinephrine (1:10,000) 1.0 mg, repeat dose q 3 to 5 minutes until there is a change in rhythm or mechanical capture occurs if the patient is being paced.
 - ET (if no IV/IO available) dosage of Epinephrine (1:1,000) 2.0 mg.
- Vasopressin, 40 units IV, may be substituted for either the first or second dose of Epinephrine
- Atropine Sulfate 1.0 mg IVP or ET, repeat q 3 - 5 minutes up to 3.0 mg **if PEA Rate is slow**
- In cases of known or suspected hyperkalemia, renal failure or hypocalcemia (e.g. after multiple blood transfusions) consider Calcium Chloride 10%, 10 ml SIVP, followed by Sodium Bicarbonate 1 mEq/kg IVP early in resuscitation.
- **Contact Medical Control** for orders to terminate resuscitation efforts. Consider field termination of resuscitation efforts on all adult cardiac arrest patients who are unresponsive to appropriate defibrillation, successful airway control, ventilation and rhythm appropriate medications (excluding hypothermic patients)

Ventricular Fibrillation and Pulseless Ventricular Tachycardia

Designation of Condition: The patient is unconscious, unresponsive, apneic, pulseless, and shows Ventricular Fibrillation or Ventricular Tachycardia on the monitor.

ILS AND ABOVE PROVIDERS

- Follow Cardiac Arrest – Universal Algorithm Protocol
- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Basic resuscitation cycle is the same as Universal Algorithm. Advanced measures below should follow current ACLS guidelines.
- Interruptions to CPR should be limited and less than 10 seconds each.
- Defibrillate manually, at appropriate setting.
- Epinephrine IV/IO:
 - IV dosage of Epinephrine (1:10,000) 1.0 mg, may repeat q 3 to 5 minutes.
 - ET (if IV/IO not available dosage of Epinephrine (1:1,000) 2.0 mg
- Vasopressin, 40 units IV, may be substituted for either the first or second dose of Epinephrine
- Check Rhythm and defibrillate as needed
- Lidocaine 1.5 mg/kg IV/IO
 - Repeat Lidocaine 1.5 mg/kg. If rhythm is converted, administer Lidocaine Drip at 2-4 mg/min IVPB.
- Amiodarone it may be administered in place of Lidocaine at a dose of 300 mg IVP. May repeat dose in five minutes at 150 mg IVP.
- Consider Magnesium Sulfate 2 gm SIVP.
- Procainamide may be administered at a dose of 30 mg/min to max dose of 17 mg/kg. Current ACLS guidelines do not mention Procainamide but it is still an acceptable alternative.
- In cases of known or suspected hyperkalemia, renal failure or hypocalcemia (e.g. after multiple blood transfusions) consider Calcium Chloride 10%, 10 ml SIVP, followed by Sodium Bicarbonate 1 mEq/kg IVP early in resuscitation.

Ventricular Tachycardia/Unknown Wide Complex Tachycardia - Stable

Designation of Condition: The patient will have demonstrated sustained Ventricular Tachycardia on the monitor, must be conscious and alert, have a blood pressure > 90 mmHg, and be free of significant SOB, chest pain and diaphoresis.

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Lidocaine 1.0 mg/kg IVP
 - Repeat Lidocaine 0.5 - 0.75 mg/kg q 5 minutes until a total dose of 3 mg/kg has been given, or less if the therapeutic effect has been achieved.
 - Initiate Lidocaine drip at 2 - 4 mg/min.
 - Lidocaine maintenance drip/dose should be reduced by one-half in patients over 70 years old, and in those with liver or congestive heart failure.
- Consider Amiodarone 150 mg IV bolus over 10 minutes (may put in 250 cc NS bag and run in over 10 minutes)
- If rhythm is thought to be Torsades de Pointes, administer Magnesium Sulfate, 2 gm in 250 cc over 5 minutes.

Ventricular Tachycardia/Unknown Wide Complex Tachycardia - Unstable

Designation of Condition: Sustained ventricular tachycardia (broad QRS tachycardia) will be present on the monitor. Rate will generally be > 150 bpm. The patient has a pulse, but is hypotensive with decreased mental status, significant SOB, severe chest pain or diaphoresis.

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Consider analgesics and sedation as appropriate.
- Synchronized Cardioversion @ 100 Joules if monomorphic, proceed to 200, 300 and 360 Joules, as needed.
 - Substitute equivalent biphasic energy doses.
- If rhythm is polymorphic, start with 200 joules Synchronized Cardioversion.
- Lidocaine 1.5 mg/kg IVP or ET
- Synchronized Cardioversion @ 360 Joules or equivalent biphasic
- Repeat Lidocaine 0.75 mg/kg q 5 minutes until 3 mg/kg has been given, or less if the therapeutic effect has been achieved.
- Initiate Lidocaine drip at 2 - 4 mg/min.
 - Lidocaine maintenance drip/dose should be reduced by one-half in patients over 70 years old, and in those with liver or congestive heart failure.
- Synchronized Cardioversion @ 360 Joules or biphasic equivalent after each bolus of Lidocaine.
- Consider Amiodarone 150 mg IV bolus over 10 minutes (may put in 250 cc NS bag and run in over 10 minutes).
- If rhythm is thought to be Torsades de Pointes, administer Magnesium Sulfate, 2 gm over 1 - 2 minutes.
- Defibrillate if Cardioversion is delayed, or heart rate > 150 bpm with unstable patient.

Bradycardia - Symptomatic

Designation of Condition: The patient will present with a hemodynamically unstable bradycardia (blood pressure < 90 mmHg systolic and a heart rate of < 60 bpm with associated signs and symptoms including: chest pain, decreased LOC, shortness of breath, etc).

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Begin transcutaneous pacing at a rate of 70 bpm. Begin increasing by 20 mA increments until electrical capture obtained, then increase by 5 mA increments until mechanical capture obtained. May consider atropine first in the absence of myocardial ischemia and/or high degree block.
- IV access is required, as the patient may require sedation/analgesia. However, noninvasive pacing should not be delayed in order to initiate a peripheral IV. Ideally, both procedures should be performed simultaneously.
- Atropine Sulfate IV or ET
 - 0.5 mg IVP or ET q 3 - 5 minutes up to a maximum of 3 mg. The goal is a heart rate of at least 60 bpm and a systolic blood pressure > 90 mm/Hg.
 - Atropine Sulfate should be considered only after attempts to pace have failed in any of the following situations
 - Acute MI
 - Third degree heart block
 - Mobitz type II second-degree heart block.
 - Atropine Sulfate is preferred over pacing for vagally induced bradycardia.
- If above treatment is not effective:
 - Dopamine IV Piggyback (IVPB) Drip: Start at 5 - 20 mcg/kg/min; titrate to heart rate and BP.
 - Epinephrine IV Piggyback (IVPB) Drip: Start at 2-10 mcg/min; titrate to heart rate and BP.

Atrial Fibrillation/Flutter

Designation of Condition: The patient may have a heart rate > 120 bpm with atrial flutter or atrial fibrillation on the rhythm strip and be severely symptomatic. Severely symptomatic patients (chest pain, SOB, and/or hypotension) should be determined to be critically unstable and with significantly altered levels of consciousness to consider cardioversion in the pre-hospital environment. This risk should be balanced with the known risk of embolic complications with conversion of a-fibrillation/flutter > 48 hours in duration. If the duration of onset is unclear or suspected to be > 48 hours, contact Medical Control prior to cardioversion.

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- If patient stable, consider:
 - Diltiazem 0.25 mg/kg SIVP, may repeat x 1 at .35 mg/kg
- If unstable, consider:
 - Sedate with Midazolam as appropriate 1-2 mg over two minutes if possible
 - Atrial Fibrillation - Synchronized cardioversion at 100 Joules proceed to 200, 300 and 360 Joules or biphasic equivalent as needed for conversion.
 - Atrial Flutter - Synchronized cardioversion at 50 Joules proceed to 100, 200, 300 and 360 Joules or biphasic equivalent as needed for conversion

Supraventricular Tachycardia

Designation of Condition: The patient will have a heart rate > 150 beats/minute with a supraventricular focus by history or a QRS complex < 0.12 seconds and EKG consistent with SVT. EKG tracings are to be made during any of the following ALS procedures.

Consider compensatory tachycardia and the global clinical picture before treating rhythm.

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; consider early bolus based on history.

ALS PROVIDERS

If patient is stable:

- Initiate continuous cardiac monitoring and recording prior to conversion efforts.
- Valsalva Maneuver
- Adenosine 6 mg rapid IVP (1 - 2 seconds) followed by 20 cc NS flush.
- If unchanged, repeat Adenosine 12 mg rapid IVP followed by 20 cc NS flush.
- If unchanged, repeat Adenosine 12 mg once more.
- If refractory, administer Diltiazem 0.25 mg/kg SIVP, may repeat if unchanged, repeat at 0.35 mg/kg SIVP
- Critically unstable patients will present with severe chest pain, severe SOB, profound hypotension or significantly altered levels of consciousness.

If patient is critically unstable:

- Consider analgesics and sedation as appropriate.
- Synchronized Cardioversion at 100 Joules. Lower settings (50 Joules) may be used for A-Flutter/SVT. Proceed to 200/300/360 Joules or biphasic equivalent as necessary.

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5. CARDIAC EMERGENCIES - PEDIATRIC

General Guidelines

ALL EMS PROVIDERS

- Establish Primary Management
- Resuscitation should be attempted on all pediatric cardiac arrest patients with the exception of obvious rigor mortis, livor mortis or brain extrusion. Patients that meet these criteria of death should be left at the scene and the Medical Examiners Office notified
- Pediatric patients with a significant cardiac history require ALS assessment and intervention regardless of patient presentation.
- Primary cardiac arrest in pediatric patients is rare and usually a result of respiratory arrest.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Paramedics should follow current PALS guidelines.

Cardiac Arrest - Pediatric Universal Algorithm

Designation of Condition: Pulseless and apneic from a medical cause in the prepubescent patient.

ALL EMS PROVIDERS

A paramedic level of response should be dispatched simultaneously to all cardiac arrest responses. The EMS response team should ensure that an ALS unit is enroute at the first opportunity. EMS personnel should never wait for paramedic arrival before utilizing the AED. Early access to CPR is critical to successful cardiac resuscitation.

Does patient meet Dead at Scene Criteria, if not proceed.

- Establish Primary Management.
- Orchestrate resuscitation.
- Providers should follow current American Heart Association guidelines regarding CPR and AED use.
- Perform 2 minutes of BLS CPR (30:2 ratio for sole rescuer and 15:2 for dual).
 - Attach defibrillation electrodes to patient during CPR if personnel available.
- Check rhythm (push “analyze”).
- Defibrillate once at pre-programmed setting if advised (pediatric pads).
- Perform 2 minutes of BLS CPR **THEN** check for rhythm/pulse.
- If no pulse check rhythm and defibrillate once if advised.

The cycle is 2 minutes of CPR followed by rhythm check and one defibrillation (if needed) repeated until resuscitation successful or efforts terminated.

Interruptions to CPR should be limited and less than 10 seconds each.

Defibrillation should always be followed by two minutes of CPR before pulse check. Though the patient may have electrical activity or an undected pulse, the body benefits from the increase cardiac output.

One-person BLS CPR rates are 30:2 while two person rates are 15:2.

AED use in children less than 1 year of age has shown no specific benefit and there is no recommendation for or against its use.

AED use in the child should use pediatric pads as designed by the manufacturer.

Pediatric Asystole

Designation of Condition: The patient will be pulseless, apneic, and demonstrate asystole on the monitor (confirmed in at least 2 leads).

ILS AND ABOVE PROVIDERS

- Follow Cardiac Arrest – Universal Algorithm Protocol
- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Epinephrine
 - IV/IO (1:10,000) 0.01 mg/kg
 - ET (1:1,000) 0.1 mg/kg (0.1 ml/kg) – if no IV/IO available
- Repeat dose q 3 - 5 minutes.
- For patients who continue in Asystole, consider field resuscitation termination based on down time, ventilation and delivery of rhythm appropriate medications, after **MEDICAL CONTROL** is contacted. *

* Excludes hypothermic arrests.

Pediatric Bradycardia

Designation of Condition: The patient will present with a hemodynamically unstable bradycardia and decreased LOC.

ALL EMS PROVIDERS

- Establish Primary Management.
- Secure airway and administer 100% Oxygen. Assess rate and depth of ventilation.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Neonate – (Age Birth – Discharge from Hospital – usually two days old)
 - If heart rate < 60 bpm despite adequate oxygenation and ventilation for 30 seconds, begin CPR
 - Epinephrine IV/IO, (1:10,000) 0.01 mg/kg
 - Repeat dose q 3 - 5 minutes until rhythm change is noted.
- Infant/Child – (Age > Neonate - Adolescence)
 - If heart rate < 60 bpm, despite adequate oxygenation and ventilation for 30 seconds, **and** poor perfusion, begin CPR
 - Epinephrine
 - IV/IO (1:10,000) 0.01 mg/kg
 - ET (1:1,000) 0.1 mg/kg (0.1 ml/kg) – if no IV/IO available
 - Repeat dose q 3 - 5 minutes.
 - Atropine Sulfate, IVP, IO or ET, 0.02 mg/kg (0.1 mg minimum dose, 0.5 mg maximum single dose). Atropine may be repeated once.

Pediatric Pulseless Electrical Activity

Designation of Condition: Consider and expeditiously treat underlying causes:

Hypovolemia	Tension Pneumothorax
Hypoxemia	Tamponade (pericardial)
Hypothermia	Toxins (OD)
Hypo/Hyperkalemia	Thrombosis (Coronary/pulmonary)
Hydrogen Ion (acidosis)	Trauma
Hypoglycemia	

ILS AND ABOVE PROVIDERS

- Follow Cardiac Arrest – Universal Algorithm Protocol
- Establish IV access with isotonic solution, bolus 20 cc/kg and reassess.

ALS PROVIDERS

- Epinephrine
 - IV/IO (1:10,000) 0.01 mg/kg
 - ET (1:1,000) 0.1 mg/kg (0.1 ml/kg) – if no IV/IO available
 - Repeat dose q 3 - 5 minutes.
- For patients who deteriorate to asystole, consider field resuscitation termination based on down time, ventilation and delivery of rhythm appropriate medications, after **MEDICAL CONTROL** is contacted. *

* Excludes hypothermic arrests.

Pediatric Supraventricular Tachycardia

Designation of Condition: The patient will have a narrow complex heart rhythm at a rate > 220.

ALL EMS PROVIDERS

- Establish Primary Management
- ALS intercept required
- Secure airway and administer 100% Oxygen.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Stable
 - Oxygenation
 - Transport
- Unstable
 - If IV/IO access readily available give Adenosine 0.1 mg/kg, follow rapid NS 2 - 5 ml bolus. Maximum dose is 6 mg
 - Adenosine may be doubled and repeated once if SVT persists. Maximum dose is 12 mg
 - If IV access is delayed, and patient is unstable, move directly to synchronized cardioversion
 - Synchronized cardioversion: 0.5 Joules/kg, 1 Joules/kg and 2 Joules/kg

Pediatric Ventricular Fibrillation and Pulseless Ventricular Tachycardia

Designation of Condition: The patient will be apneic and pulseless.

ILS AND ABOVE PROVIDERS

- Follow Cardiac Arrest – Universal Algorithm Protocol
- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Defibrillate at 2 Joules/kg
- Resume CPR immediately (2 minutes)
- Check Rhythm and defibrillate at 4 Joules/kg if needed.
- Resume CPR immediately (2 minutes)
- Epinephrine IV/IO 0.01 mg/kg (0.1 cc/kg) (1:10,000)
 - ET dosage is 0.1 mg/kg (0.1 cc/kg) (1:1000), in 3-5 cc NS
 - Repeat every 3-5 minutes
- Resume CPR immediately (2 minutes)
- Check Rhythm and defibrillate at 4 Joules/kg if needed.
- Consider antiarrhythmic
 - Lidocaine IV/IO 1 mg/kg
 - Amiodarone IV/IO 5 mg/kg (max of 300 mg)
 - Magnesium IV/IO 25-50 mg/kg (max of 2 Grams)
- CONTACT MEDICAL CONTROL

Pediatric Ventricular Tachycardia

Designation of Condition: The patient will have a pulse and show sustained Ventricular Tachycardia (wide complex QRS) on the monitor.

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

Stable

- Lidocaine IV/IO 1 mg/kg
 - If no response to Lidocaine, re-bolus Lidocaine 1 mg/kg q 5 - 8 minutes until 3 mg/kg has been given or until therapeutic endpoint has been achieved.
 - Consider Amiodarone IV/IO (5 mg/kg over 20-60 minutes with max of 150 mg) or Procainamide IV/IO (15 mg/kg over 30-60 minutes)
- If rhythm does not terminate the rhythm may be SVT with aberrancy, **CONTACT MEDICAL CONTROL** for orders of Adenosine 0.1 mg/kg rapid IVP
 - May repeat Adenosine once at double the first dosage with **MEDICAL CONTROL**.

Unstable

- Consider sedation, Midazolam IV/IO 0.05 mg/kg
- Consider analgesia, Fentanyl IV/IO 3 mcg/kg
- Synchronized cardioversion 0.5 - 1.0 Joules/kg
- If rhythm converts, administer Lidocaine 1.0 mg/kg SIVP. Re-bolus in 5 minutes and start a Lidocaine drip at 20 - 50 mcg/kg/min.
- If rhythm fails to convert, then repeat synchronized cardioversion at 2 Joules/kg up to two attempts.

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6. MEDICAL EMERGENCIES

Abdominal Pain—Not Related to Pregnancy or Trauma

Designation of Condition: The patient will present with abdominal pain that is not related to trauma or pregnancy. Careful evaluation should include attempting to ensure the pain is not cardiac related. When in doubt, the cardiac symptoms should be treated.

ALL EMS PROVIDERS

- Establish Primary Management
- Allow patient to seek position of comfort.
- Consider ALS intercept

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV, titrate to maintain LOC, HR and end organ perfusion

ALS PROVIDERS

- Cardiac monitoring
- Consider anti-emetics and analgesics

Altered Mental Status

Designation of Condition: The patient will have a pulse, but will be disoriented, lethargic or unresponsive from an undetermined cause.

ALL EMS PROVIDERS

- Establish Primary Management
- Assess and ensure a patent airway, rate and depth of respirations, and circulation. Advanced airway procedures should not be considered until hypoglycemia and/or the possibility of a narcotic overdose has been ruled out.
- Titrate Oxygen commensurate to the patient's level of distress.
- Assess and document the Glasgow Coma Scale (GCS) score.
- If you believe the patient was traumatically injured, consider spinal motion restriction.
- Consider ALS intercept

BLS AND ABOVE PROVIDERS

- Assess Blood Glucose Level

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV, titrate to maintain LOC, HR and end organ perfusion
- If Blood Glucose Level is < 80 mg/dl with signs and symptoms consistent with hypoglycemia, administer Dextrose per Diabetic Emergencies protocol.
- Dextrose should not be administered to an unconscious patient who has a normal glucose level, and no history of present illness (HPI) or past medical history (PMH) consistent with hypoglycemia.
- If no change, administer Naloxone per Narcotic Overdose protocol
- Aggressive Airway management required:
 - If the patient fails to respond to any of the above treatments and the patient is in a deep state of unconsciousness (no gag reflex), consider placing MLA.
- Be prepared for combativeness if the patient responds to above treatment.

ALS PROVIDERS

- Cardiac monitoring
- Maintain airway and intubate as needed.

Allergic Reactions and Anaphylaxis

Designation of Condition: A systemic response to exposure to an allergen. Allergic reactions may involve a single, or multiple body systems. Presentation may be mild or severe. While severe allergic reaction, known as anaphylaxis, is uncommon, it is important to recognize, as it may progress very rapidly.

- Signs and Symptoms
 - Skin: Urticaria (hives), itching, angioedema
 - Respiratory: wheezing/stridor
 - Cardiovascular: hypotension, cyanosis
 - GI: cramps, emesis, diarrhea
 - Neurologic: AMS, seizures
- Severity (respiratory, cardiovascular and neurologic systems differentiate)
 - Mild: hives, angioedema, mild respiratory distress (e.g. wheezing)
 - Severe: severe respiratory distress (stridor, tachypnea, hypoxia), cardiovascular collapse (cyanosis, hypotension)
- Common allergens: medicines - especially antibiotics and NSAIDs; nuts; stings (bee, wasp or hornet); shellfish (shrimp, crab, lobster)
- Symptoms that have been present for > 1 hour without increasing severity are unlikely to suddenly worsen. Rash or hives not associated with breathing or swallowing problems are unlikely to develop into more severe problems later.

ALL EMS PROVIDERS

- Establish Primary Management
- Titrate Oxygen commensurate to the patient's level of distress.

BLS AND ABOVE PROVIDERS

- **Unstable:**
 - Severe respiratory distress/anaphylaxis (**hypoxia** and/or **hypotension**): Epinephrine 1:1,000 via auto-injector (Epi-Pen®).
 - Adults (>30 kg): adult Epi-Pen (0.3 mg)
 - Children (<30 kg): pediatric Epi-Pen (0.15 mg)

ILS AND ABOVE PROVIDERS

- **Stable:**
 - Enroute, initiate an isotonic IV. Titrate to maintain LOC, HR and end organ perfusion.
 - Albuterol 5.0 - 10.0 mg via nebulizer, if wheezing or decreased breath sounds.
- **Unstable:**
 - In cases of true, life-threatening anaphylaxis, severe respiratory distress/arrest, or hemodynamic instability, administer Epinephrine 1:1000 SQ
 - Adult dosage (> 8 years) 0.3-0.5 mg 1:1000 SQ or IM, may repeat once in 10 minutes if hypotension or severe SOB is still present

- Pediatric dosage 0.01 mg/kg 1:1000 SQ, may repeat once in 10 minutes if hypotension or severe SOB is still present
- Initiate aggressive isotonic fluid therapy, multiple large bore lines (1 - 2 L)

ALS PROVIDERS

- Cardiac monitoring.
- For severe urticaria without other signs or symptoms, consider Diphenhydramine 25 - 50 mg IVP or IM in the adult or 1 mg/kg in pediatric patients IV or IM.
- Continue Epinephrine 1:1,000 SQ q 3 - 5 minutes
- If adult patient is perfusing too poorly to absorb the Epinephrine via SQ or IM, administer Epinephrine 1:10,000 0.1-0.5 mg SIVP, repeat as necessary, but only when severe hypotension and/or hypoxia justify the cardiovascular risk of IV epinephrine administration.
- Consider 125 mg Methylprednisolone (SoluMedrol) IV (2.0 mg/kg pediatric dose).
- Epinephrine drip should be considered as necessary for refractory hypotension at 2-10 mcg/min. Discontinue if systolic pressure >110 mmHg.

Asthma

Designation of Condition: Constriction of the small airways of the lungs, increased secretions and wheezing due to inflammation. The patient almost always has a history of asthma and is suffering some degree of dyspnea. Physical exam reveals respiratory distress, decreased air movement and wheezing. Wheezing may not be present. Lack of wheezing with decreased breath sounds is often a sign of impending respiratory arrest.

ALL EMS PROVIDERS

- Establish Primary Management
- If patient presents with SOB and wheezing BLS providers may assist with Albuterol via the patient's MDI after contact with medical control.
- Titrate Oxygen commensurate to the patient's level of distress.

ILS AND ABOVE PROVIDERS

- If there is no EMT-P on scene, the EMT-I may **CONTACT MEDICAL CONTROL** for:
- Albuterol nebulizer:
 - Children who appear to be < 8 years, 5.0 mg
 - Adults and children > 8 years, 5-10 mg. Repeat 5.0 mg per nebulizer treatment as necessary, with cardiac and vital sign monitoring for toxicity. Some patients may need continuous nebulizer treatment during entire transport.
 - Providers are encouraged to deliver nebulized Albuterol via assisted ventilation for patients who are unable to provide effective respiratory exchange.
- Do not delay on-scene care waiting for the medication to take effect.
- Consider initiating isotonic IV. Titrate to maintain LOC, HR and end organ perfusion, and consider bolus for dehydration.
- **If asthma attack is severe and life threatening (e.g. cyanosis, inability to speak, impending respiratory arrest, unresponsive to Albuterol, silent chest, poor SaO₂):**
 - Administer Epinephrine via Epi-Pen® IM
 - Adults 0.3 mg IM – Children 0.01 mg/kg IM
 - Epinephrine should be administered judiciously to patients with a history of coronary artery disease and/or hypertension or over the age of 45.

ALS PROVIDERS

- EKG and 12-lead if ACS suspected
- Combine 1st nebulizer with 0.5 mg Atrovent. Subsequent nebulizers should be Albuterol only. Nebulized medications show little effect when bronchospasm severely limits tidal volume. E.g. a silent chest.
- Administer Epinephrine 1:1000 SQ/IM
 - Adults 0.3 mg SQ/IM (Children 0.01 mg/kg SQ/IM)
 - May repeat Epinephrine SQ/IM dosages PRN q 3 - 5 minutes
- Magnesium Sulfate 1 gm in 100 ml in NS over 10 minutes
- Consider Methylprednisolone 125 mg IV (2 mg/kg pediatrics)
- Early intubation should be avoided as above measures can often provide rapid improvement. Consider CPAP.

Carbon Monoxide Poisoning

Designation of Condition: Carbon monoxide is a colorless, odorless gas produced by incomplete combustion of hydrocarbons or carbon-based fuels. Carbon monoxide victims can appear to be in a state of intoxication.

Remember your own safety first. Wearing an SCBA into a confined space may be appropriate. Always remove the victim from the source before beginning resuscitation efforts. Pulse oximetry will not provide accurate readings of true Oxygen saturation in the case of CO poisoning.

ALL EMS PROVIDERS

- Establish Primary Management
- Administer high-flow Oxygen via NRB. Assist ventilation with 100% Oxygen via BVM as needed.
- Ensure the safety of asymptomatic people at the scene prior to transport.
- Consider need for hyperbaric chamber in the setting of decreased mental status

ALS PROVIDERS

- If CO poisoning is secondary to inhalation of combustible products and significant altered mentation is present, consider administration of cyanide antidote.

Cerebrovascular Accident (CVA)

Designation of Condition: Patient presents with signs, symptoms and history consistent with a cerebrovascular insult/accident (i.e. focal weakness, numbness, incoordination, aphasia or confusion, usually sudden onset).

ALL EMS PROVIDERS

- Establish Primary Management
- Titrate Oxygen commensurate to the patient's level of distress.
- Detailed history and time of onset is **critical**
- Cincinnati Prehospital Stroke Scale
 - Facial Droop
 - Normal: Both sides of face move equally
 - Abnormal: One side of face does not move at all
 - Arm Drift
 - Normal: Both arms move equally or not at all
 - Abnormal: One arm drifts compared to the other
 - Speech
 - Normal: Patient uses correct words with no slurring
 - Abnormal: Slurred or inappropriate words or mute
- Hyperventilation IS NOT indicated for increased ICP, unless the patient is clearly presenting with signs of herniation (dilated pupil or posturing)
- Stroke patients should never receive Aspirin or NTG by EMS providers
- High blood pressure should NOT be treated
- Transport:
 - All patients with signs and/or symptoms of stroke should be transported to a facility with a CT scanner.
 - Code transport if onset of symptoms is < 3 ½ hours.
 - Stable patients may be sent BLS without Medical Control contact

BLS AND ABOVE PROVIDERS

- Assess Blood Glucose Level

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion (do not delay transport).

ALS PROVIDERS

- If BGL < 80 mg/dl, administer D₅₀W 12.5 gm; recheck blood glucose; if < 80, give additional 12.5 gm and recheck.
- Maintain airway and intubate as needed
- If patient is being ventilated, ensure that capnography is maintained at 30 - 35 mmHg, unless herniation is imminent. If herniation is imminent, maintain capnography at 25 - 30 mmHg.

COPD Exacerbation

Designation of Condition: A disease state characterized by the presence of airflow obstruction due to inflammation. The airflow obstruction generally is progressive, may be accompanied by airway hyper-reactivity, and may be partially reversible.

ALL EMS PROVIDERS

- Establish Primary Management
- Titrate Oxygen commensurate to the patient's level of distress.

ILS AND ABOVE PROVIDERS

- If there is no EMT-P on scene, the EMT-I may **CONTACT MEDICAL CONTROL** for:
- Albuterol nebulizer:
 - Adults 5.0 - 10.0 mg. Repeat 5.0 mg per nebulizer treatment as necessary, with cardiac and vital sign monitoring for toxicity. Some patients may need continuous nebulizer treatment during entire transport.
 - Providers are encouraged to deliver nebulized Albuterol via assisted ventilation for patients who are unable to provide effective respiratory exchange.
 - Do not delay on-scene care waiting for the medication to take effect.
- Consider initiating isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- EKG and 12-lead if ACS suspected.
- Combine 1st nebulizer with 0.5 mg Atrovent. Subsequent nebulizers should be Albuterol only.
- Consider Methylprednisolone 125 mg IV.
- Consider CPAP.
- Intubation should be considered if ventilation becomes ineffective.

Croup

Designation of Condition: Illness marked by signs of upper airway inflammation. When severe, child will be stridorous at rest. Consider foreign body aspiration in your differential diagnosis. Watch for drooling (common in epiglottitis), and listen for a barking cough (common in croup).

ALL EMS PROVIDERS

- Allow child to assume position of comfort
- Keep child comfortable and quiet with parent
- No invasive procedures unless lifesaving intervention is required
- Attempt cool/humidified Oxygen mist administration; “blow-by” is an acceptable mode of delivery, parent may hold the mask
- Notify receiving facility ASAP

ALS PROVIDERS

- If cool mist is not effective and patient is in significant respiratory distress i.e. stridor at rest:
 - Administer Epinephrine via nebulizer.
 - **>2 yrs** = 0.5 mg/kg per dose (maximum of 5 mg) of a 1:1000 dilution in 3 ml NS
 - **<2 yrs** = 0.25 mg/kg of 1:1000 in 3ml NS

Diabetic Emergencies

Designation of Condition: Patient presents with signs, symptoms or history of hypoglycemia or hyperglycemia (e.g. diabetics on insulin or oral agents), or chronic alcohol use. Completion of patient assessment and history, along with blood glucometry is required prior to administration of Dextrose.

ALL EMS PROVIDERS

- Establish Primary Management

BLS AND ABOVE PROVIDERS

- Assess Blood Glucose Level
- If the patient is conscious and able to protect airway, consider administration of oral glucose, when indicated for hypoglycemia. Do not administer oral glucose to any patient who has a compromised airway or decreased level of consciousness.
- Repeat BGL should be performed and recorded after all interventions.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

Hypoglycemia

- If Blood Glucose Level is < 80 mg/dl and associated signs of hypoglycemia exist,
 - **Adult:** administer 25 gm of D50W SIVP.
 - **Pediatric:** 1 gm/kg of D25W solution SIVP. To make D25W dilute D50 1:1 with NS. D25 should be used on patients older than a neonate up to 8 years of age.
 - **Neonate:** administer 1 gm/kg (1 cc/kg) SIVP of D10W.
 - May repeat dosage in ten minutes if patient's level of consciousness and condition does not improve. May administer Dextrose by mouth if the patient is conscious and able to protect airway, and the care provider is unable to establish an IV line.

ALS PROVIDERS

- If unable to obtain IV/IO access in the **adult** patient, administer Glucagon 1 mg IM (prefer deltoid site)
- Immediate IV access for Dextrose administration, or Dextrose PO is required after the administration of Glucagon to prevent recurrent hypoglycemia (particularly in patients with end-stage liver disease)

Hyperglycemia

ILS AND ABOVE PROVIDERS

- If glucometry reading is > 300 mg/dl, lung fields are clear, and patient does not have a history of pulmonary edema or congestive heart failure: bolus adult patient with 500 cc isotonic fluid and reassess lung fields. If lung fields remain clear, follow with an additional 500 cc of isotonic fluid. Pediatric patients receive 10 ml/kg each bolus.

Extra-Pyramidal Reactions

Designation of Condition: A response to a medication, typically a phenothiazine (e.g. Thorazine, Compazine) or a butyrophenone (e.g. Haldol, Droperidol) marked by acute dystonia (muscle spasms) or akathisia (motor restlessness).

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Enroute, initiate an isotonic IV. Titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Diphenhydramine 25 - 50 mg IVP or IM (Pediatric dose 1 mg/kg IVP or IM)

Fever

Designation of Condition: Fever is a body's natural response primarily to infection or heat emergencies. Temperature elevation in children may cause seizures.

It is important to differentiate causes of fever (e.g. infection, hyperthermia from environmental exposure, excited delirium, or malignant hyperthermia from medications). In fever caused by infection, the hypothalamus is signaling the body to produce heat. Acetaminophen or aspirin reset the body's thermostat, thus lowering the fever. In environmental or malignant hyperthermia (> 105 degrees Fahrenheit), proceed with aggressive cooling measures.

ALL EMS PROVIDERS

- Establish Primary Management
- Immediate treatment of fever is rarely warranted. The main reason to treat fever is to relieve discomfort associated with fever.
- If conscious and alert and without indications for possible surgery, patient may drink fluids.

BLS AND ABOVE PROVIDERS

- ALS intercepts required only in setting with seizure that persists or recurs.

ILS AND ABOVE PROVIDERS

- If signs of dehydration or shock potential are present, enroute, initiate cool isotonic IV. Titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Consider Acetaminophen 15 mg/kg PR or PO
- May be sent BLS after Acetaminophen administration
- If signs of dehydration or shock potential are present, enroute, initiate cool isotonic IV solutions. If febrile seizures occur, follow seizure protocol and rapidly cool patient by whatever reasonable means possible.

Heat Related Illnesses

Designation of Condition: The patient may exhibit a temperature > 101 degrees Fahrenheit and signs and symptoms consistent with an elevated temperature due to fever or environmental hyperthermia.

Heat Cramps - Large muscle group cramping, usually after prolonged or heavy exertion. There are no changes in mentation.

Heat Exhaustion - This is often a progression from Heat Cramps. Symptoms include moist, pale and clammy skin, dilated pupils, normal temperature, weakness, dizziness, headache, or nausea. There are no changes in mentation.

Heat Stroke - A progression from Heat Exhaustion. Symptoms include mentation changes, flushed skin (dry or moist), constricted pupils, high temperature, rapid pulse, deep and rapid respirations, decreased blood pressure, dry mouth, or seizures.

ALL EMS PROVIDERS

- Establish Primary Management
- Remove patient from warm environment
- Rapidly cool patient by whatever reasonable means possible; avoid causing shivering
- If patient is alert and without nausea, encourage oral hydration, consider commercial electrolyte solution when available.
- If LOC deteriorates further, place cold packs under patient's arms, and at neck, ankles and head. Consider cooling with cool, wet dressings.

BLS AND ABOVE PROVIDERS

- Assess Blood Glucose Level

ILS AND ABOVE PROVIDERS

- Initiate multiple isotonic IVs. Titrate to maintain LOC, HR and end organ perfusion.

Hypothermia

Designation of Condition: Depressed core temperature < 95 degrees Fahrenheit. Handle the hypothermic patient gently. Rough handling may cause Ventricular Fibrillation. Conditions, medications and substances that may predispose hypothermia include: exhaustion, diabetes, hypothyroidism, iron deficiency, anorexia, renal failure, tricyclic antidepressants, anti-psychotics, narcotics, benzodiazepines, steroids, caffeine, alcohol and nicotine.

ALL EMS PROVIDERS

- Establish Primary Management
- Remove victim from cold environment
- Remove any wet/cold clothing
- Monitor vital signs for one full minute at the carotid or by auscultation of heart sounds.
- If any pulse is detected, do not perform CPR
- Administer warm humidified oxygen if available.
- Cover torso with warm blankets
- Consider wrapping heat packs under arms, groin and posterior neck

ILS AND ABOVE PROVIDERS

- Enroute, initiate warm isotonic IV fluids

Narcotic Overdose - Known Or Suspected

Designation of Condition: Evidence of ingestion, inhalation or injection of narcotics with a symptomatic patient (e.g. unconscious, respiratory depression, altered mental status).

ALL EMS PROVIDERS

- Establish Primary Management
- Titrate Oxygen commensurate to the patient's level of distress.
- Assist ventilations PRN

BLS AND ABOVE PROVIDERS

- Assess Blood Glucose Level
- Protect airway with MLA as appropriate

ILS AND ABOVE PROVIDERS

- Simple observation is more prudent than giving Naloxone when patient is ventilating adequately.
- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.
- Naloxone: Administer 0.4 – 2.0 mg for patients >5 years old or 0.1 mg/kg for < 5 years old, IV/IO/IN/SQ
 - Repeat Naloxone in 0.4 mg increments; titrate to respiratory improvement
 - Titrating to level of consciousness is not necessary unless it involves airway protection.
 - Repeat as needed (high doses may be required for synthetic narcotics).
 - In cases of suspected multi-substance abuse, consider administration of sufficient amount of medication to restore adequate depth and rate of respirations.
 - Patient may awaken quickly and be combative. Be prepared for restraints, if needed. Naloxone may send chronic narcotic users quickly into withdrawal, with likely severe agitation.
- If still unresponsive, secure a definitive airway (MLA)

ALS PROVIDERS

- Monitor cardiac rhythm, treat as appropriate
- If prompt improvement does not occur, see protocol for unconscious/unresponsive.
- Waveform capnography monitoring to assure adequate ventilations should be utilized.
- Consider endotracheal intubation, as necessary.

Organophosphate Exposure

Designation of Condition: Evidence of ingestion, inhalation or injection of an organophosphate substance.

S = Excessive Salivation

L = Excessive Lacrimation

U = Urination

D = Defecation

G = Gastric irritability

E = Emesis

ALL EMS PROVIDERS

- Establish Primary Management
- Titrate Oxygen commensurate to the patient's level of distress.
-

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion. Administer with caution to patient with signs of pulmonary edema.

ALS PROVIDERS

- Administer Atropine Sulfate 2 mg q 1 - 3 minutes up to 6 mg, titrate to resolution of rales
- **CONTACT MEDICAL CONTROL** for additional for additional doses, if needed.

Seizures/Convulsions

Designation of Condition: Most seizures spontaneously end within 5 minutes with a postictal state of varying length with unconsciousness or altered LOC. Status-epilepticus is witnessed seizure activity that continues for > 10 minutes or multiple seizures that reoccur without a return to full mental capacity. Status-epilepticus and first-time seizures require Paramedic level intervention.

ALL EMS PROVIDERS

- Establish Primary Management
- Protect patient from further injury and embarrassment during seizure.
- Obtain history of seizure activity including onset, duration, type, medication taken and prior history.

BLS AND ABOVE PROVIDERS

- Assess Blood Glucose Level.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- If seizure is prolonged or if more than two seizures reoccur without an intervening lucid period, administer one of the following.
- Diazepam
 - Adult: 2 - 10 mg SIVP, up to a maximum of 20 mg.
 - Children: 0.2 mg/kg SIVP or IO.
 - Diazepam may be administered rectally via a lubricated 3 cc syringe. The pediatric **rectal** dose is 0.5 mg/kg.
 - Titrate for effect, may repeat dose as needed for seizure control.
- Lorazepam IV/IM
 - 1-2 mg IV not to exceed 4 mg
 - Pediatric dose 0.05 mg/kg IV not to exceed 2 mg should be diluted 1:1 with NS
- If temperature elevated see Fever protocol.
- See Eclampsia protocol for treatment of pregnancy related seizures.

Syncope

Designation of Condition: Patient experiences a sudden loss of consciousness. A thorough history is vital as it may lead the EMS care provider to the source of the problem. **Syncope is frequently a result of another medical emergency.** Look for the underlying condition and treat per appropriate protocol. Consider ALS resources, as appropriate.

ALL EMS PROVIDERS

- Establish Primary Management
- Detailed past medical history and history of present illness is required, focusing on any symptoms occurring immediately prior to syncope.
- Obtain baseline vital signs, including orthostatic vitals, if possible.
- Maintain airway as needed

BLS AND ABOVE PROVIDERS

- Glucometry

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.
- If BGL <80 mg/dl administer D₅₀ per Diabetic Emergencies protocol

ALS PROVIDERS

- Cardiac monitoring
- Consider 12 lead EKG

Tricyclic Antidepressant Overdose

Designation of Condition: Patient will have ingested a known or suspected tricyclic substance.

ALL EMS PROVIDERS

- Establish Primary Management
- Maintain airway and ventilations as needed

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.
- Monitor vital signs aggressively. Rapid onset of seizures, dysrhythmias or coma may occur.

ALS PROVIDERS

- If the patient has any **one** of the following,
 - QRS widening > 0.12 mm
 - Ventricular dysrhythmias

Administer:

- Sodium Bicarbonate 50 mEq, followed by Sodium Bicarbonate drip with 50 mEq in 1 L of isotonic solution.
- Titrate to blood pressure if hypotensive, otherwise administer 500 cc bolus, then TKO. Multiple IV lines are encouraged.
- Treat any dysrhythmias per appropriate ACLS protocol
- If seizing, refer to seizure protocol.

7. OBSTETRIC & GYNECOLOGIC EMERGENCIES

Evaluation at Birth - APGAR Scoring System

Obtain APGAR at earliest reasonable opportunity (obtain at 1 and 5 minutes)

Evaluation Factor:	0	1	2
<i>Heart Rate</i>	Absent	<100	>100
<i>Respiratory Effort</i>	Absent	Slow or Irreg.	Strong Cry
<i>Muscle Tone</i>	Limp	Some Flexion	Active Motion
<i>Reflex Irritability</i> Cry/Cough	None	Some Motion	Vigorous
<i>Color</i> Completely Pink	Blue or Pale	Blue Ext./Pink Core	Body

Normal Imminent Delivery

Designation of Condition: Imminent spontaneous vaginal delivery in which no complications are anticipated.

ALL EMS PROVIDERS

- Establish Primary Management
- Create field for delivery
- Treat infant with drying, warming, positioning, suctioning and stimulation.
- Double clamp the umbilical cord and cut, (recommended at 8" and 10" – First Responders cannot cut the cord)
- Clean, dry and wrap baby in clean sheet, towel or blanket. Cover the head.
- Gently deliver the placenta; do not pull on the umbilical cord
- Oxygen blow-by as needed
- If the baby's respirations and movement are depressed or abnormal despite above, follow Neonatal Resuscitation protocol.
- Gently massage the fundus after delivery of placenta

ILS AND ABOVE PROVIDERS

- Initiate large bore isotonic IVs to mother, titrate to maintain LOC, HR and end organ perfusion.

Breech Delivery

Designation of Condition: Any delivery in which the head is not the presenting part.

ALL EMS PROVIDERS

- Establish Primary Management
- Support infant's body. If head delivers spontaneously, proceed with suctioning airway and wrap baby.
- Delivery of the lower extremities is generally easily accomplished.
- Once the umbilical cord is visualized, it should be pulled gently down and out of the vagina
- After the umbilicus has been delivered, the head must be delivered in 3 - 5 minutes
- The shoulders are delivered by depression of the buttocks and extracting the anterior shoulder with a gloved finger. The baby is then raised gently by the legs and the posterior shoulder extracted.
- The infant will then usually rotate so that the back faces anteriorly.

ALS PROVIDERS

- If head does not deliver within 4 - 6 minutes, perform the **Mauriceau Maneuver** as defined below:
 - Place body of infant over forearm
 - Place your gloved hand on the fetal maxilla applying enough pressure to tuck and flex the child's head. The maneuver is to tuck, NOT PULL the head.
 - Place your other hand gently over the fetal occiput to aid in flexion
 - An assistant should put supra-pubic pressure downward and caudally to assist with the delivery.

Prolapsed Cord

Designation of Condition: When the umbilical cord descends through the vagina before the baby presents.

ALL EMS PROVIDERS

- Place mother in prone knee-chest position on her elbows
- Insert gloved hand into vagina and gently lift baby's head off the cord until pulsations are felt, and maintain positioning if effective.
- If the cord is exposed, it may be covered with gauze soaked in sterile warm saline.
- No further manipulation should take place unless delivery is imminent.

Neonatal Resuscitation

Designation of Condition: The patient is a newborn who requires resuscitation. Extent and level of intervention is patient condition dependent.

ALL EMS PROVIDERS

- Establish Primary Management
- DO NOT delay delivery if birth appears imminent
- After delivery:
 - If particulate or thick meconium is present, **DO NOT STIMULATE BABY**, suction until clear.
 - Warm and dry baby.
 - Place in supine position in slight Trendelenburg and open/maintain airway.
 - Tactile stimulation of feet and/or back.
 - If apneic, gasping, or persistent central cyanosis despite high flow blow-by Oxygen and/or HR < 100, administer 100% Oxygen via BVM and provide tactile stimulation.
 - If HR is less than 60, begin CPR (you can palpate umbilical cord for fetal pulse).

ILS AND ABOVE PROVIDERS

- Establish IV access with isotonic solution, as appropriate
- Assess BGL: capillary or venous, if BGL is < 80 mg/dl, administer 1 gm/kg SIVP of D10W over twenty minutes.
- If non-addicted mother has used narcotics within the past four hours, consider Naloxone 0.1 mg/kg IV for the infant with respiratory depression unresponsive to conventional resuscitation.
- **DO NOT** administer Naloxone to infants of narcotic addicted mothers, or when this is in question.

ALS PROVIDERS

- If BVM and tracheal suctioning are not effective, intubate patient with appropriate sized, uncuffed ET. Confirm ET placement, per intubation guidelines.
- Deliver baby, suction deeply with meconium aspirator or with a small-uncuffed endotracheal tube.
- Administer medications only if CPR and 100% Oxygen/BVM/intubation do not raise HR > 80.
- Epinephrine:
 - IVP, ET or IO, (1:10,000) 0.01 mg/kg (0.1 ml/kg)
 - Repeat q 3 - 5 minutes
 - For ET medication administration, follow with NS/sterile water flush not to exceed 3 ml.

Nuchal Cord

Designation of Condition: When the umbilical cord is wrapped around the baby's neck during delivery.

ALL EMS PROVIDERS

- If the cord is wrapped around the neck of the newborn, **IMMEDIATE** intervention is required. Attempt gentle loosening of cord with fingers as a first maneuver.
- If unsuccessful, the cord should be immediately clamped, cut and removed from the neck.
- Baby must be delivered immediately.

Vaginal Hemorrhage - Post Delivery

Designation of Condition: A delivery after which vaginal bleeding continues post delivery in larger than normal amounts.

ALL EMS PROVIDERS

- Place patient in Trendelenburg position
- **After delivery of the placenta**, gently massage the fundus.
- Place dressings against the vaginal area. DO NOT place anything inside the vagina.
- Put baby to the breast; suckling may assist in stopping bleeding.
- Keep mother warm; give nothing by mouth.

ILS AND ABOVE PROVIDERS

- Enroute, initiate 2 large bore IVs of isotonic fluids, titrate to maintain LOC, HR and end organ perfusion. Aggressive fluid resuscitation is encouraged.

ALS PROVIDERS

- If there is **severe bleeding** after placental delivery CONTACT MEDICAL CONTROL for orders to start Pitocin. Add 20 units in 1000ml started wide-open.

Pre-Eclampsia/Eclampsia

Designation of Condition: Pre-eclampsia is hypertension, proteinuria and peripheral edema associated with pregnancy. Eclampsia is the presence of seizures and/or coma in pregnant patients with pre-eclampsia.

ALL EMS PROVIDERS

- Establish Primary Management

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- For seizures, administer Magnesium Sulfate 4 gm SIVP in 250 cc over 5 minutes. If refractory seizures, use Benzodiazepine per Seizure protocol.
- Respiratory depression/arrest, hypotension, areflexia may be caused by too rapid administration or overdose of Magnesium Sulfate

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8. PSYCHOLOGICAL/BEHAVIORAL

Agitated or Violent Patient: Restraint and Transport

Safety of the responding EMS providers has priority over patient care at all times. EMS personnel shall not enter into or remain in any situation that poses a threat to the safety of the team. Assuring the safety of the patient is then the second highest priority in treatment. Patients in hazardous or threatening environments should be protected or removed to a safe place before any definitive care is rendered. The EMS team members should enter the scene together, and generally, depart together. The assessment of scene safety is shared, but each individual EMS responder has the authority to decline to enter a potentially hazardous scene, or elect to leave. If any EMS team member is uncomfortable with the situation, and wants to leave, all team members should leave immediately.

Summon law enforcement at the first indication of danger

A patient is considered dangerous when the assessment indicates that the patient is:

- A threat to him/herself
- A threat to others
- Unable to care for him/herself and with potential underlying medical problems that are possibly masked by drugs, alcohol, mental illness, or head injury.

Involuntary Restraint and Transport

Designation of Condition: The patient is judged by the pre-hospital provider as a threat to self or others. It is appropriate to use restraints when a patient is a danger to themselves or others as a result of a medical or psychiatric condition. These conditions include, but are not limited to, substance abuse and psychiatric disorders. **Do not administer a chemical restraint to a Multi-system trauma patient.**

ALL EMS PROVIDERS

- Ensure EMS provider safety as the priority.
- Establish Primary Management.
- Use the least restrictive or invasive method of restraint that will protect the patient.
- Use restraints in a humane manner, affording the patient as much dignity as possible. Explain to the patient and family that you are restraining them so that they do not hurt themselves or someone else.
- Never place a restrained patient in a prone position due to the potential for death from positional asphyxia or aspiration.
- Monitor and chart the restrained patient's airway, circulatory and respiratory status constantly.
- Document the patient's mental status, lack of response to verbal control, the need for restraint, the method of restraint used, the results, any injuries to

patient or EMS personnel resulting from the restraint efforts, the need for continued restraint and methods of monitoring the restrained patient.

- **PRONE or HOBBLE restraints are not appropriate for EMS** due to the risk of death from positional asphyxia and the lack of proper access for medical assessment and procedures. If a patient is found in prone or hobble restraint, immediately roll the patient to his/her side and accomplish appropriate EMS restraint.
- Restrain one or more extremities and progress to full body restraint as necessary. This can be accomplished with soft roll gauze or wrist and ankle restraints. Restrain only the extremities necessary to accomplish control, unless, in the judgment of the EMS personnel, it is appropriate to apply full restraint initially. Each extremity is restrained to the stretcher. Cot straps must be in place. If handcuffs are used, law enforcement, with the key, must accompany the EMS provider. The EMS provider will monitor neurovascular status of hands.

ALS PROVIDERS

- Perform risk assessment, attempt verbal de-escalation prior to sedation. Appropriate actions to ensure the safety of the provider must be undertaken prior to sedation by the ALS Provider. Whenever possible, law enforcement officers should be on scene and involved with the actions and consequences of the treatment. **Attempts to restrain the patient by conventional means will be attempted prior to considering chemical restraint.**
- Diazepam 2-10 mg SIVP or Lorazepam 1-2 mg IVP or IM may be considered. Be prepared to secure airway and ventilation prior to administration
- CONTACT MEDICAL CONTROL for higher doses.

Agitated or Violent Patient: in Law Enforcement Custody

Designation of Condition: Law enforcement may call EMS for a field evaluation of a patient in custody. They may be in physical restraints, or have been subjected to the use of “less-lethal” methods during apprehension. These patients often have psychological and toxicologic factors contributing to their presentation. The patient must also be evaluated with respect to the immediate effects of the force used, e.g. trauma from Taser barbs or bean bag projectiles, and the possible underlying pathophysiologic processes.

ALL EMS PROVIDERS

- Ensure Scene Safety and Establish Primary Management
- Evaluate for abnormal Vital Signs, pinpoint or dilated pupils, diaphoresis, altered Mental Status, signs of trauma, multiple taser shocks.
- Evaluate for hyperthermia (temperature > 101F/38C).
- If patient is awake, alert, oriented and lucid with a normal evaluation as outlined above, patient may be released after **Contacting Medical Control**.
- Taser barbs may be removed as per individual agency policy.

ILS AND ABOVE PROVIDERS

- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.

ALS PROVIDERS

- Cardiac monitoring and 12 lead EKG to evaluate dysrhythmias, QT abnormalities, treat as per relevant protocols.
- Look for unexplained changes in waveform capnography
- Cautious use of chemical restraints as per Restraint Protocol as needed. Monitor neurologic status and vital signs frequently. Be prepared to secure airway and ventilation prior to administration

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9. TRAUMA

Assault/Rape

Documentation is essential. Protect and preserve evidence and the scene. Comfort and reassure the victim. Encourage the victim to not change clothes, bathe or wash hands. Law enforcement activation is always appropriate. Consider additional resources such as rape crisis and protective services. History taking should be limited to establishing the extent of injuries associated with the assault, and/or other medical issues immediately relevant to the situation. Documentation of information regarding details of a sexual assault/abuse may be construed as evidence tampering by the courts and therefore compromise prosecution of the assailant. This is especially true when gathering information from abused/assaulted children, or gathering such information in a child's presence. This is an important exception to the general idea that more information is always better.

ALL EMS PROVIDERS

- Establish Primary Management
- Treat injuries as appropriate.
- Protect the scene and evidence.
- Offer reassurance and emotional support.
- Make every reasonable attempt to prevent the patient from bathing, changing clothes or using the restroom.
- Notify law enforcement if they are not present.
- External vaginal and anal examinations are not appropriate unless uncontrolled life-threatening external hemorrhage is suspected.
- Transport to the nearest appropriate facility.
- Contact hospital facility for activation of Sexual Assault Nurse Examiner (SANE), if available.

Bites

Designation of Condition: Most bites, except in rare instances, are not life or limb threatening. More limbs are lost because of inappropriate treatment than from the bite itself. Inappropriate treatment with ice and tourniquets can cause more damage than the bite itself.

Animal/Human

ALL EMS PROVIDERS

- Establish Primary Management
- Remove constrictive clothing
- Gently irrigate wound with sterile saline and dress
- Notify Animal Control if appropriate
- A physician should evaluate all bites that break the skin the same day.

ILS AND ABOVE PROVIDERS

- If shock potential is present, enroute, initiate isotonic IV and titrate to maintain LOC, HR and end organ perfusion.

Snake

Try to determine species of snake. Bring dead snake to hospital if possible. Do not delay transport.

ALL EMS PROVIDERS

- Establish Primary Management
- Remove all jewelry from affected limb and flush with sterile saline
- Immobilize affected area at heart level. Keep patient calm and limit movement.
- Apply constricting band, 1 - 2 inches wide and 3 inches above the bite. Band should not be too tight. There should still be a distal pulse and one finger should be able to be easily worked under the band (lymphatic constriction only) and mark inflammation boundaries, if present.
- Contact Medical Control to assist with snake identification and assure antivenin resources.

ILS AND ABOVE PROVIDERS

- Enroute, initiate isotonic IV (to unbitten extremity). Titrate to LOC, HR and end organ perfusion. Consider fluid bolus, NS as needed to maintain systolic BP > 90.

ALS PROVIDERS

- Consider Morphine Sulfate 2 - 10 mg. Titrate to VS as needed for pain control. Phenergan 6.25 – 25 mg pm nausea.

Burns

Classification

- **Superficial** – red skin (like sunburn)
- **Superficial Partial Thickness** - red skin, often with blisters
- **Deep Partial Thickness** - blistering (very painful) often difficult to distinguish from full thickness.
- **Full Thickness** - all skin layers and possibly deeper structures involved (may be pain free), often lacks blanching and tenderness; dry, leathery, often charred appearance.

Rule of Nines

Figures represent anterior and posterior)

	<u>Adult</u>	<u>Child</u>
<i>Head</i>	9%	18%
<i>Chest/Back</i>	18%	18%
<i>Arm</i>	9%	9%
<i>Leg</i>	18%	13.5%
<i>Pubis/perineum</i>	1%	1%

- The palm of the **patient's** hand represents 1% body surface area.
- Be alert for patients with respiratory problems from smoke or chemical inhalation, respiratory tract burns or burns involving the face, head or chest. These patients are at an increased risk for airway compromise, hypothermia, and later for shock and infection. Major burns should be transported to the Regional Burn Center as soon as possible. Local stabilization may be required before transport to Regional Burn Center.

Major Burns

- Partial thickness burns > 20% in adults and > 10% in children
- All severe full-thickness burns involving hands, face, eyes, ears, feet and perineum
- All burns that compromise circulation
- All burns with evidence of respiratory involvement. If unable to secure airway and patient is in respiratory distress, ALS intercept is required.
- All high voltage electrical injuries
- Burns with associated multi-systems trauma
- All high risk patients

Moderate Burns

- Should be transported to a facility that is capable of treating them. Moderate burns include:
- All partial thickness burns of < 20% in adults and < 10% in children
- Full thickness injuries of < 10% body surface area

Treatment

ALL EMS PROVIDERS

- Establish Primary Management
- Chemical burns - identify contaminant
- Estimate depth and percent of area injured
- Treatment
 - Brush off dry chemicals before irrigation
 - Gently flush with water for 10 minutes.
 - Partial Thickness burns of < 10% of adult and < 5% of child may be cooled with water for 10 - 15 minutes and covered.
 - Cover with sterile burn sheets and keep warm.
- When burns are associated with severe trauma, trauma protocols supersede burn protocols.
- Burns with suspected airway involvement (facial burn, singed nasal hair, carbonaceous sputum, change in voice or wheezing), and burns > 20% body surface area require Paramedic assessment.
- All major and moderate burns deserve Paramedic assessment.
- Immediate stabilization should take place at closest hospital facility.
- **CONTACT MEDICAL CONTROL** to discuss patient destination decisions, as appropriate.

ILS AND ABOVE PROVIDERS

- Enroute, initiate isotonic IV, and titrate to maintain LOC, HR and end organ perfusion.
- If burned surface area > 20%, bolus patient with 20 cc/kg (may repeat).
- DO NOT place IV in burned skin region unless absolutely necessary.
- Consider ALS intercept for pain medications.

ALS PROVIDERS

- Depending on hemodynamic stability, administer Morphine or Fentanyl IV titrated to pain and VS.
- For airway control in the presence of a respiratory burn with signs of airway compromise, refer to ALS Provider Airway Management and Intubation Guidelines. Be prepared for a difficult airway.

Crush Injuries

Designation of Condition: Trauma caused by crushing injuries presents unique problems in patient management. Entrapment commonly complicates access and evacuation. Cellular destruction causes lactic acidosis, electrolyte imbalances and metabolic disturbance. Swelling and constriction interrupt distal circulation. When the crushing force is relieved and circulation restored, blood returning from the injured tissue to systemic circulation is acidotic and dangerously high in potassium, phosphorus and myoglobin. Crushed tissue is also particularly susceptible to infection, causing sepsis. These factors combine to cause cardiac dysrhythmias, systemic electrolyte derangement, renal failure and hypotensive shock.

ALL EMS PROVIDERS

- Ensure scene safety when accessing patient.
- Remove lightly trapped victims before attempting extrication of the heavily entrapped.
- Establish primary management of airway, breathing, circulation, spinal immobilization and disability.
- Administer oxygen PRN.
- Obtain core body temperature measurement and treat for hypothermia, PRN.
- Apply tourniquets to affected extremities, as proximal to crushed tissue as possible.
- Request ALS intercept.
- **CONTACT MEDICAL CONTROL** to determine patient destination. If extrication is unlikely, consult with medical control to discuss alternate options.
- Transport as soon as possible according to Medical Control or Washington State Prehospital Trauma Triage Tool

BLS AND ABOVE PROVIDERS

- Measure blood glucose level if altered mentation.

ILS AND ABOVE PROVIDERS

- Initiate large bore isotonic IVs. Titrate to maintain LOC, BP of 100mm/Hg systolic and end organ perfusion.
- Anticipate need for aggressive fluid therapy when crushing force is released.

ALS PROVIDERS

During Entrapment

- Monitor ECG, Capnography and SPO₂.
- Titrate isotonic fluids to systolic BP of 100mm/Hg, LOC and end organ perfusion. 1500mL per hour recommended for prolonged extrication.
- Auscultate lung sounds frequently, check for pulmonary edema.
- Sodium Bicarbonate 50mEq IV per hour.
- Fentanyl IV or Morphine IV titrated to vital signs and pain.

Before Removal of Crushing Force

- Coordinate removal with rescue personnel.

- 1000mL isotonic IV fluid bolus.
- Sodium Bicarbonate 50mEq IV bolus immediately before release of force.
- Remove crushing force slowly.

After Removal of Crushing Force

- Reassess. Anticipate deterioration.
- Titrate isotonic IVs to BP of 100mm/Hg, LOC and end organ perfusion.
- Epinephrine 2 to 10 mcg/ min. IV, titrated for hypotension unresponsive to IV fluids.
- Treat dysrhythmias per Cardiac Emergencies Protocol.
- Treat Hyperkalemia (Polymorphic VT/VF, Tall peaked “T”, Prolonged “PR”, Dull “P”, Widening QRS):
 - Calcium Preparation 5 to 10 mL **SLOW** IVP.
 - Sodium Bicarbonate 50 mEq IV in separate IV line or after flush.
 - Albuterol SVN.

Eye Injuries

Designation of Condition: The patient will present with signs and symptoms of eye pain due to small foreign bodies, superficial corneal abrasions, mace or pepper spray exposure or welders burns (UV keratitis).

ALL EMS PROVIDERS

- Establish Primary Management

Chemicals or Foreign Objects

- Assess for obvious trauma to globe or cornea. If found, do not irrigate, cover both eyes with a loose dry dressing.
- Where there is no obvious trauma to the globe, gently flush eyes with NS for at least 15 minutes, or until 1 L of NS has been used. Do not be concerned with removal of contact lenses in the field unless broken. Treat by irrigation, like any foreign body.
- In the case of exposure to law enforcement type chemical agents such as Pepper Spray, transport may not be required following eye flushing if symptoms of eye irritation are resolved.
- Consider covering both eyes to help decrease eye movement.
- Do not patch any penetrating or open eye injury. May cover without any pressure on the globe (e.g., with a cup).

ALS PROVIDERS

- Instill two drops of anesthetic solution proparacaine before irrigation. Proparacaine is contraindicated in the presence of penetrating eye injuries. When in doubt, **CONTACT MEDICAL CONTROL**.
- Patients that receive proparacaine shall be transported to the ED. BLS transport is appropriate.
- Protect the eye after proparacaine administration, as it will be insensate.

Fractures - Isolated

Designation of Condition: Treat significant dislocations, strains and sprains as a fracture until proven otherwise.

ALL EMS PROVIDERS

- Establish Primary Management
- If a distracting injury exists, consider providing spinal motion restriction (if appropriate) and transport.

If patient is stable or if isolated injury exists:

- Check distal pulses and sensation before and after splinting, and reassess frequently.
- Splint injuries in position found. If limb must be moved for extrication or transport, gently straighten to anatomically correct position and splint. Immobilize the joints proximal and distal to the injury.
- If extremity or joint is severely angulated with absent pulses or loss of sensation or strength distally, gently straighten to anatomically correct positioning. Reassess circulation.
- Most isolated hip, acetabular and high femur fractures are best managed WITHOUT the use of a rigid device such as a backboard and/or vacuum splint. Carefully placing the patient on a soft gurney will dramatically increase comfort and minimize pain during transport.
- Most mid to distal shaft femur fractures should have a traction splint applied. These are at higher risk for significant hemorrhage. Consider paramedic evaluation.

ILS AND ABOVE PROVIDERS

- Enroute, initiate isotonic IV, on unaffected side, to maintain LOC, HR, and end organ perfusion.

ALS PROVIDERS

- Morphine SIVP, as needed (0.1 mg/kg for pediatrics) titrated to pain and VS.
- Fentanyl SIVP, as needed (3 mcg/kg) titrated to pain and VS.
- **CONTACT MEDICAL CONTROL** for additional medication orders, if necessary.

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Hemorrhage

Designation of Condition: The patient will have external hemorrhage.

ALL EMS PROVIDERS:

- Standard hemorrhage control (direct pressure, elevation, pressure bandage)
- Hemostatic Dressing
 - Indications
 - Hemorrhage from head, trunk or extremities refractory to direct pressure, elevation, splinting and proximal artery compression.
 - May be used with tourniquet
 - Device
 - HemCon® ChitoGauze® Dressing
 - Procedure
 - Remove from pouch
 - Pack dressing into wound, placing it into contact with all bleeding surfaces
 - Apply pressure to packing for at least 5 minutes
 - Place compressive-type dressing as possible
- Tourniquet
 - Indications
 - Hemorrhage from extremities refractory to direct pressure, elevation, splinting and proximal artery compression.
 - Massive and life threatening hemorrhage in settings where risk of brisk exsanguination makes application of less aggressive methods impractical.
 - Contraindications
 - None in emergency setting.
 - Device
 - Composite Resources Combat Application Tourniquet
 - Procedure (apply according to manufacturer instructions)
 - 1 to 2 inches proximal to injury site.
 - Tighten windlass rod or tensioning device until distal bleeding is stopped. Note: Capillary “oozing” may continue after bleeding is controlled.
 - Secure windlass rod or tensioning device in place for positive control.
 - Document time and location of tourniquet on MIR.
 - Leave tourniquet in place for 30 minutes before considering removal.
 - Reassess every 3 minutes for additional bleeding, tighten as needed. Note: 30 minutes after bleeding is controlled, tourniquet removal can be attempted, provided the patient is not in circulatory shock and adequate resources are present to manage clinical situation.

- Continued bleeding is unlikely.
- Tourniquet Removal
 - Apply pressure dressing to wound and prepare for bleeding.
 - Release windlass, maintaining positive control manually.
 - Loosen windlass ¼ turn per minute, reassessing for bleeding.
 - If bleeding recurs tighten tourniquet to control bleeding and secure.

ALS AND ABOVE PROVIDERS:

- Consider analgesia in accordance with Trauma Protocols

Increased Intracranial Pressure - Traumatic

Designation of Condition: The patient will be suspected of having increased intracranial pressure due to traumatic injury. A history of trauma associated with any or all of the following: slowing pulse rate, increasing blood pressure, increasingly irregular respiratory pattern, altered level of consciousness, unequal pupils, repetitive speech patterns, seizures, or presence of Cerebral Spinous Fluid (CSF) leak.

ALL EMS PROVIDERS:

- Monitor serial GCS and document q 5 minutes for patients who present with GCS < 8.
- Ensure adequate oxygenation.
- Ensure adequate perfusion - Systolic BP > 90 mmHg.
- Hyperventilate only if signs of impending herniation (e.g. development of unilateral/asymmetrical pupil dilation, or extensor posturing). Continue to monitor and document serial GCS every 5 minutes and if pupils improve (become symmetric), return to normal ventilation.
- Consider ALS intercept for patients with GCS < 8 and prolonged transport.
- Expedite transport, but consider ALS evaluation as time allows.

BLS AND ABOVE PROVIDERS:

- BGL, if altered mentation

ILS AND ABOVE PROVIDERS:

- If BGL < 80 mg/dl, administer 12.5 gm D₅₀W, recheck blood glucose, if < 80, administer additional 12.5 gm D₅₀W and recheck.
- Titrate IV NS to keep systolic BP > 90 mmHg
- Do not administer Nitroglycerin or otherwise attempt to lower the blood pressure

ALS AND ABOVE PROVIDERS:

- If patient is being ventilated, ensure that EtCO₂ is maintained at 30 – 35 mmHg, unless herniation is imminent. If herniation is imminent, maintain EtCO₂ between 25-30 mmHg.

Shock – Blunt or Penetrating Trauma

Transport should be initiated AS SOON AS POSSIBLE. Longer scene times should occur only in rare situations, (e.g. the scene is unsafe, the patient is not accessible, the patient has a precarious airway requiring prompt invasive intervention, multiple patients, or a belligerent and combative patient who requires arrival of extra hands).

ALL EMS PROVIDERS

- Establish Primary Management
- High flow oxygen, ventilatory assistance, MLA as indicated
- Begin immediate transport to appropriate facility if ALS not imminent

ILS AND ABOVE PROVIDERS

- Initiate large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.
- Bolus 20 cc/kg as needed and reassess.
- Systolic blood pressure range of 90 – 100 is acceptable.

ALS PROVIDERS

Consider causes of shock and treat accordingly:

- Hypovolemic
 - Initiate large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.
 - Bolus 20 cc/kg as needed and reassess.
 - Vasopressors are not appropriate for hypovolemia
- Obstructive – Tension Pneumothorax
 - Needle Decompression.
- Obstructive – Cardiac Tamponade
 - Pericardiocentesis.
- Distributive – Spinal
 - Initiate large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.
 - Consider Epinephrine Drip at 2-10 mcg/min if patient unresponsive to 2 liters of normal saline.

Spinal Motion Restriction (SMR)

Designation of Condition: SMR is indicated for trauma patients when there is a suspicion of spinal injury or the patient complaining of pain in the area of the vertebral column. Caution should be exercised in patients < 8 or > 70 years old.

ALL EMS PROVIDERS:

- The use of Spinal Motion Restriction may be waived if all of the following are met (NEXUS Criteria):
 - No Significant MOI
 - No loss of consciousness
 - No altered LOC – CAO X4
 - Must be reliable historian
 - No recent drug or alcohol use
 - No distracting injury
 - No midline neck or back pain; with or without movement
 - No midline pain or tenderness on back or neck upon palpation
 - Complete pain-free range of motion
- Risk of SMR versus benefits should be weighed in special circumstances, such as prolonged extrication from remote wilderness or technical rescue situations. Risks include emesis with subsequent airway compromise, pressure sores and extreme patient discomfort. Rescuer must carefully consider the index of suspicion for injury.

ALS PROVIDERS

- If spinal cord injury is suspected:
 - Initiate 1-2 large bore isotonic IV solutions titrated to maintain LOC, HR, and end organ perfusion.
 - Be prepared to secure airway in cases of cervical spine injury.

Trauma - Amputations

Designation of Condition: The patient presents with an extremity (e.g., hand, foot, leg, toe, and finger) that has been completely or partially amputated. Extremity parts are potentially salvageable. Optimal results occur when re-implantation occurs within a few hours (less than six hours post injury).

ALL EMS PROVIDERS

- Establish Primary Management.
- Enroute, consider rinsing the amputated parts with NS to remove loose debris. DO NOT scrub.
- Wrap loosely in saline moistened gauze and place into plastic bag or emesis basin.
- DO NOT pour water into bag and do not cool directly with ice. Place in sealed bag in ice water bath, when possible.
- Notify Medical Control of possible surgical candidate, and seek direction to appropriate Medical Facility.

ILS AND ABOVE PROVIDERS

- Enroute, Initiate 1 - 2 large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.

ALS PROVIDERS

- For isolated extremity trauma, consider Morphine Sulfate SIVP, as needed titrated to pain and VS.
- May substitute Fentanyl at 3 mcg/kg in 50-100 mcg increments if patient allergic/hypersensitive to MS.

Trauma System Activation

Trauma System Activation is the term used to request the activation of the Trauma System. This activation allows for the highest state of readiness and preparation prior to the trauma patient's arrival. Trauma Activation provides a mechanism for EMS to request the activation of the Trauma Team when indicated by the appropriate triage criteria of the trauma patient at the scene.

Trauma-Team Activation Criteria (from DOH 12/09/05)

- Confirmed SBP < 90 mmHg at any time in adults (established by a second measurement in rapid succession).
- Age specific hypotension in children.
- Transferred patient from other hospital receiving blood to maintain vital signs.
- Gunshot wound(s) to the neck, chest, abdomen, or groin.
- Anticipated arrival of > 3 seriously injured patients.
- Unable to intubate in prehospital setting with suspected need for surgical airway.
- Receiving facilities may have their own additional criteria, please refer to these documents when transporting to that facility.

State of Washington Prehospital Trauma Triage Procedure

Purpose

The purpose of the Triage Procedure is to ensure that **major trauma patients are transported to the most appropriate hospital facility**. This procedure has been developed by the Prehospital Technical Advisory Committee (TAC), endorsed by the Governor's EMS and Trauma Care Steering Committee, and in accordance with RCW 70.168 and WAC 246-976 adopted by the Department of Health (DOH).

The procedure is described in the schematic with narrative. Its purpose is to provide the prehospital provider with quick identification of a major trauma victim. If the patient is a major trauma patient, that patient or patients must be taken to the highest-level trauma facility within 30 minutes transport time, by either ground or air. To determine whether an injury is major trauma, the prehospital provider shall conduct the patient assessment process according to the trauma triage procedures.

Explanation of Process

- A. **Any certified EMS and Trauma person can identify a major trauma patient and activate the trauma system.** This may include requesting more advanced prehospital services or aero-medical evacuation.
- B. **The first step (1) is to assess the vital signs and level of consciousness.** The words "Altered mental status" mean anyone with an altered neurologic exam ranging from completely unconscious, to some who responds to painful stimuli only, or a verbal response that is confused, or an abnormal motor response.
The "and/or" conditions in Step 1 mean that any one of the entities listed in Step 1 can activate the trauma system.
Also, the asterisk (*) means that if the airway is in jeopardy and the on-scene person cannot effectively manage the airway, the patient should be taken to the nearest medical facility or consider meeting up with an ALS unit. These factors are true regardless of the assessment of other vital signs and level of consciousness.
- C. **The second step (2) is to assess the anatomy of injury.** The specific injuries noted regarding activation of the trauma system. Even in the assessment of normal vital signs or normal levels of consciousness, the presence of any of the specific anatomical injuries does require activation of the trauma system.
Please note that steps 1 and 2 also require notifying Medical Control
- D. **The third step (3) for the prehospital provider is to assess the biomechanics of the injury and address other risk factors.** The conditions identified are reasons for the provider to contact **and consult with Medical Control** regarding the need to activate the system. They do not automatically require system activation by the prehospital provider.
Other risk factors, coupled with a "gut feeling" of severe injury, means that Medical Control should be consulted and consideration given to transporting the patient to the nearest trauma facility.
Please note that certain burn patients (in addition to those listed in Step 2) should be considered for immediate transport or referral to a burn center/unit.

Patient Care Procedures

To the right of the attached schematic you will find the words "according to DOH approved regional patient care procedures." The regional EMS and Trauma council in conjunction with local councils develop these procedures. They are intended to further define how the system is to operate. They identify the level of medical care personnel who participate in the system, their roles in the system, and participation of hospital facilities in the system. They also address the issue of inter-hospital transfer, by transfer agreements for identification, and transfer of critical care patients.

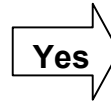
In summary, the Prehospital Trauma Triage Procedure and the Regional Patient Care Procedures are intended to work in a "hand in glove" fashion to effectively address EMS and Trauma patient care needs. By functioning in this manner, these two instruments can effectively reduce morbidity and mortality.

State of Washington Prehospital Trauma Triage Procedure

Prehospital triage is based on the following 3 steps: Steps 1 and 2 require prehospital EMS personnel to notify medical control and activate the Trauma System. Activation of the Trauma System in Step 3 is determined by medical control. **

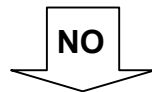
Assess vital signs & level of consciousness (Step 1)

- Systolic BP <90
- HR > 120
 - For pediatric (<15yr) pts. Use BP <90 or cap. Refill >2 sec.
 - For pediatric (<15yr) pts. Use HR <60 or >120
- Any of the above vital signs with signs and symptoms of shock
And/or
- Respiratory Rate <10 or >29 associated with evidence of distress
And/or
- Altered mental status



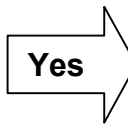
1. Take the patient to the highest level trauma center within 30 minutes transport time via ground or air transport according to DOH approved regional patient care procedures.

**If prehospital personnel are unable to effectively manage airway, consider rendezvous with ALS, or intermediate stop at nearest facility capable of immediate definitive airway management.

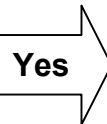
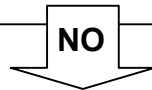


Assess anatomy of injury (Step 2)

- Penetrating injury of head, neck, torso, groin; or
- Combination of burns \geq 20% or involving face or airway; or
- Amputation above the wrist or ankle; or
- Spinal cord injury; or
- Flail chest; or
- Two or more obvious proximal-long bone fractures.



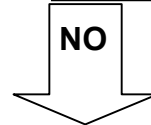
2. Apply "Trauma ID Band" to patient.



Assess biomechanics of injury And Other risk factors (Step 3)

- Death of same car occupant; or
- Ejection of patient from enclosed vehicle; or
- Falls \geq 20 feet; or
- Pedestrian hit at \geq 20 MPH or thrown 15 feet
- High energy transfer situation
 - Rollover
 - Motorcycle, ATV, bicycle accident
 - Extrication time of > 20 minutes
 - Significant intrusion
- Extremes of age < 15, > 60
- Hostile environment (*extremes of heat or cold*)
- Second/third trimester pregnancy
- Gut feeling of medic

**CONTACT
MEDICAL
CONTROL
FOR
DESTINATION
DECISION**



**Transport patient per
regional patient care
procedures**

1. Take the patient to the highest level trauma center within 30 minutes transport time via ground or air transport according to DOH approved regional patient care procedures.
2. Apply "Trauma ID Band" to patient.

10. COMMUNICATION & NOTIFICATION ISSUES

Radio Reports

Radio/Phone reports should be kept as **brief** as possible for minor medical and trauma patients. A short, concise report can be given over the radio/phone, followed by a more detailed report at the hospital. For critical medical and trauma patients, it is important to provide a clear picture of the patient; though brevity is still important. It is not important with critical patients to include everything about the patient's recent or past medical history unless something in that history is pertinent and important in obtaining a medication or procedural order. The purpose of the radio/phone report is to provide an opportunity for the receiving facility to activate the appropriate resources and services given the patient presentation. It is also utilized to provide Medical Control for medication/procedural requests. The receiving facility should be contacted at the earliest available opportunity during critical care cases.

Radio Report Structure

Identify yourself, your unit and request to speak with either a nurse for routine ALS and BLS patients; or a physician for critical patients or medical control. Unless the receiving facility is totally overwhelmed; reports are given to either an RN or MD.

- Age, sex, and condition of patient
- Chief complaint or reason for transport with brief pertinent medical history (one sentence if possible)
- Vital signs
- Pertinent treatment rendered
- Estimated time of arrival
- The paramedic **must** request to speak **directly** to the ED physician in the following cases
 - Patients requiring advanced airway measures
 - ST Elevation MI
 - All significant trauma (penetrating injury to chest, abdomen or pelvis or blunt trauma patients with a GCS of <12 or with unstable VS)
 - Termination of resuscitation
 - Any critically ill patient who appears to be having a life threatening event
 - Patients receiving the following high acuity special procedures
 - Central IV catheterization • Thoracic decompression
 - Cricothyrotomy • Patients on (CPAP)
- When contacting the physician for medical control, state your need at the beginning of your report. E.g. "I'm requesting a pediatric no-transport. The patient is a 14 y/o male..."

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11. APPENDIX A - PROCEDURES

Airway Management – General

Indications: Patients with failure to oxygenate, ventilate, or protect the airway due to a decreased level of consciousness.

ALL EMS PROVIDERS

- Head-tilt/Chin-lift or jaw thrust as appropriate
- Oropharyngeal airway (OPA)
- Nasopharyngeal airway (NPA)
- Bag-valve-mask assistance

BLS AND ABOVE PROVIDERS

- Multi-lumen airway (MLA) (refer to MLA protocol)

ALS PROVIDERS

- Endotracheal intubation
 - For purposes of reporting intubation, an attempt shall be defined as *direct laryngoscopy*.
 - This is a change from the previous definition of “tube past the lips.”
 - **All future reporting of attempts-to-success shall utilize this method as of January 1, 2010.**
- Cricothyrotomy
- Immediately following intubation, the ET tube must be confirmed by at least three indicators and documented.

Tube Confirmation Indicators

Indicators include, but are not limited to the following:

- Continuous end-tidal capnography must be performed following intubation of all patients. Numerical values and waveforms must be recorded on the EMS run report. Ventilation rate and depth should be adjusted to reflect optimal EtCO₂ values for each specific patient complaint. EtCO₂ should not be used as the sole indicator of successful tube placement
- Additionally, other methods such as: visualize tube passing through the cords, misting in the tube, bilateral equal breath sounds, absence of breath sounds over the epigastrium, use of bulb-syringe and/or Toomey syringe, pulse oximetry, equal chest rise, improving/stabilizing vital signs and skin condition must be documented.

Airway Management – Drug Assisted Intubation (DAI)

Indications: To facilitate endotracheal intubation in the appropriate patient using sedation and/or paralysis.

ALS PROVIDERS

- **Sedation Only**
 - Indicated when paralytics are undesirable
 - If patient becomes unresponsive and loses gag reflex, no paralytics are needed
 - Preoxygenate
 - Etomidate 0.3 mg/kg IV/IO
- **Rapid Sequence Intubation**
 - Indicated to maximize successful endotracheal intubation
 - Provider assumes total responsibility for protecting the patient's airway
 - Preoxygenate
 - Premedicate pediatrics (<6 years old) with 0.02 mg/kg Atropine
 - Induction and paralysis
 - Etomidate 0.3 mg/kg IV/IO followed in 0-30 seconds by
 - Succinylcholine 1-1.5 mg/kg IV/IO
 - Protect the Airway
 - Cricoid cartilage pressure immediately on induction and until airway secured
 - Do not assist with BVM ventilations after induction unless saturation drops below 90%
 - Avoid gastric insufflation

Airway Management – Difficult Airway (ALS)

Indications: All prehospital airways should be considered difficult to some degree. The provider must have preexisting criteria for predicting possible difficult airway situations and a set algorithm based on agency resources for managing this difficult airway. Difficulty can be due to technical issues, such as a small mandible, or related to other factors, such as the patient's health status. Critically ill patients will desaturate quickly, possibly resulting in a failed airway situation.

Difficult Airway Predictors (utilization of Mallampati Scale is encouraged)

- **Anatomic**
 - Large incisors
 - Small mandible
 - Short neck
 - Arthritis of the cervical spine
 - Obesity
- **Trauma**
 - Face and/or neck trauma
 - Cervical spine immobilization
- **Health**
 - Moderately ill patients will desaturate more quickly
- **Algorithm example**
 - Attempt laryngoscopy (x 1) using provider's usual tools
 - Partner attempts, or provider attempts with different blade (x 1)
 - Attempt using bougie or lighted stylet
 - If unsuccessful move to "Failed Airway"

Airway Management – Failed Airway (ALS)

Indications: provider is unable to secure a definitive airway. Providers should avoid transporting patients with BVM ventilation where DAI has been attempted.

- **Definition**
 - Oxygen saturation is below 90% after one attempt at ETT **OR**
 - Three failed attempts at ETT
- **Management**
 - Multi-lumen airway (MLA): bridging airway until definitive airway is placed
 - Cricothyrotomy: surgical airway is definitive, non-surgical (e.g. Quick-Trach) is not

Automatic External Defibrillation (AED)

Indications

- Unconscious and pulseless patient

Contraindications

- Patient with a pulse.

ALL PROVIDERS

- Determine unresponsiveness.
- Establish Primary Management and Check Pulse.
- Call for ALS Intercept.
- Perform CPR for 2 minutes (30:2) if > 4 minute down time.
- **Attach AED and press “Analyze”**
 - **Defibrillate once if indicated.**
 - **If “no shock indicated” go to next step.**
- **Perform CPR for 2 minutes (30:2).**
- Continue above **cycle** until pulse returns or efforts terminated.
- If pulse is present or return of spontaneous circulation.
 - Assess ventilations and vital signs.
 - Support airway.
- Prepare for transport or intercept with ALS.

Capnography

Indications

- Any condition in which ventilation, perfusion, and/or metabolism monitoring is needed.
- Confirmation of endotracheal tub placement.

Contraindications

- None when used in above setting.

ALL EMS PROVIDERS

- Normal end-tidal is 35-45 mmHg
- Waveform monitoring is critical
- Should be utilized on all respiratory patients and is mandatory in intubated and CPAP patients.
- Documentation should include indication of the waveform and numerical value documented in the report.
- A copy of the strip will be attached to the report.
- It is key to remember that changes in capnography reflect changes in either ventilation, perfusion, and/or metabolism and is often an earlier indication of a change in patient condition than other clinical parameters (HR, BP, LOC, etc).

Central Venous Catheter, Accessing Preexisting

Indications

- The administration of life-saving fluids and medications via preexisting central venous catheter when other access cannot be obtained.

Contraindications

- None when used in above setting.

ALS PROVIDERS

Risks to Patient:

- Infection resulting in sepsis and/or loss of central line
- Loss of limb
- Damage to central line or shunt requiring a major surgical procedure with all the potential accompanying morbidity to replace lost access
- Inability to dialyze patient (life-saving procedure) due to damage to shunt
- Death as a result of the above

Procedure for Accessing Central Venous Catheters

- Meticulous sterile prep with Betadine and alcohol
- If clamp is present, unclamp the line
- Withdraw 10 cc of blood and discard, may use for BGL if no Dextrose containing solutions or TPN infusing prior to withdrawal of specimen
- Flush catheter with 10 cc NS
- If withdrawal of blood or flush with saline is not accomplished without resistance, DO NOT USE THE LINE (it may be clotted or no longer in the vessel)
- Attempting to flush catheter with too much pressure can rupture the catheter

Administer necessary fluids or medications if able to withdraw and flush easily
Maintain flow through catheter by infusing at least 50 cc/hr through line when not in use.

Notify RN at receiving facility upon arrival so that line can be flushed with heparin.

Central Venous Catheter

Indications

- The administration of life-saving fluids and medications when other access cannot be obtained.

Contraindications

- Trauma to adjacent structures.

ALS PROVIDERS

- Sterile Technique
- Identify Landmarks
 - Internal Jugular
 - The triangle formed by the heads of the sternocleidomastoid and the clavicle.
 - Subclavian
 - Infraclavicular approach
 - Medial portion of the middle third of the clavicle towards the sternal notch (head of the clavicle)
 - Femoral
 - One centimeter medial to the femoral artery.

Providers should only perform techniques in which they have been trained and with which they are comfortable

Continuous Positive Airway Pressure (CPAP)

Indications

- Severe respiratory distress. This includes:
 - Conscious patient suffering from CHF with pulmonary edema.
 - Conscious near drowning with pulmonary edema.
 - Severe asthma exacerbations
 - Severe COPD exacerbation

Contraindications

- Pneumothorax
- Respiratory arrest or inadequate respirations
- Unconscious or inability of patient to maintain airway
- Shock with BP <90 mmHg systolic
- Penetrating chest trauma
- Persistent nausea/emesis
- Facial trauma and/or abnormalities
- Recent GI surgery or bleeding

SPECIAL NOTES

- Mandatory continuous monitoring of waveform capnography
- CPAP should not be used in children <12 years
- Advise receiving hospital **ASAP** so they can prepare
- Monitor patient for gastric distension which may lead to vomiting

Cricothyrotomy - Vertical Approach Guideline

Indications

- Unconscious adult patient with immediate life threatening airway compromise and when other modalities of airway management are ineffective or contraindicated.

ALS PROVIDER

- Identify the thyroid cartilage and palpate the inferior border. The cricoid cartilage is the hard cartilaginous ring inferior to the thyroid cartilage. The cricothyroid membrane is situated between the two structures.
- Locate and identify cricothyroid membrane and prep with betadine.
- Make a **vertical** incision through the skin over the cricothyroid membrane 2 - 3 cm in length with sufficient depth to expose the cricothyroid membrane.
- **Horizontally** puncture the membrane with the scalpel to facilitate access to the trachea.
- Insert and maintain airway with a cuffed endotracheal tube (in most adults, a 6 mm tube will suffice). Advance cuff 2 cm past the opening. Check for chest excursion and auscultate lung fields. Inflate cuff. Reassess (visualize, palpate, auscultate, check compliance).
- Confirm tube placement by required methods, including waveform capnography, and document.
- Verify correct placement of tube by visualizing oropharynx to ensure tube is not misdirected.
- Secure the tube and ventilate with high-flow Oxygen.
- The service Medical Director will review all cricothyrotomy attempts immediately.

Intraosseous Access

Indications

- The administration of life-saving fluids and medications after peripheral attempts are unsuccessful.
- May be first-line for cardiac or respiratory arrest.
- Providers may use proximal tibial, distal tibial, and humeral head sites commensurate with their training

Contraindications

- Fracture.
- Previous orthopedic surgery in limb.
- Infection in limb.
- Absence of landmarks.
- Excessive soft tissue.

MLA Guidelines

Indications

- BLS airway
- The unconscious patient with an unprotected airway.
- Failed ALS airway (see airway protocol).

Contraindications

- Intact gag reflex.

Procedure

- Oxygenate patient for 1 - 2 minutes via BVM and Check for gag/lash reflex
- Check for and remove, if possible, any dentures/plates in the patient's mouth

Insertion

- Position head in neutral position and with gloved hand, move the tongue forward
- Insert the MLA following the natural curvature of the airway. If significant resistance is encountered, remove the MLA ventilate briefly and re-attempt.

Assess Placement

- Attach a BVM to the appropriate lumen and ventilate the patient.
- Expected tube placement is the esophagus. Esophageal placement will result in chest rise, positive lung sounds, and absent epigastric sounds when ventilated through the appropriate tube.
- Tracheal placement will result in epigastric sounds only and no lung sounds or chest rise when ventilated through the esophageal lumen. If this occurs, ventilate through the other lumen.
- **Capnography is required to confirm MLA placement at the Paramedic level.**
- Placement should be reassessed every time the patient is moved.

Removal Indications Without ET Placement

- Return of gag reflex

Procedure

- Turn on suctioning device
- Deflate balloons as per specific manufacturer recommendations.
- Turn the patient on his/her side and be prepared to suction.
- Remove the MLA and suction as necessary.

Removal at Request of EMT-P or MD

A paramedic or physician may choose to remove the device to replace it with an endotracheal tube. The patient's airway is your responsibility until you educate higher-level medical personnel to the specifics of the device, and said medical personnel make an informed decision to remove the device.

Pericardiocentesis

Indications

- Relief of suspected pericardial tamponade
- Cardiac arrest or imminent arrest states

Contraindications

- None in above situation

ALS PROVIDER

- Sterile Technique
- Identify Landmarks
 - Xyphoid process
 - Towards left shoulder

Thoracostomy (Needle Chest Decompression)

Indications

- Relief of tension pneumothorax

Contraindications

- None in above situation

ALS PROVIDER

- Sterile Technique
- Identify Landmarks
 - Mid-clavicular line
 - 2nd or 3rd intercostal space

12. APPENDIX B - SPECIAL SITUATIONS

Air Transport Guidelines

The decision to call for air transport will be made by an on scene paramedic. If a paramedic has not arrived at the scene, the EMS personnel in charge of patient care can make an air transport request. EMS personnel should consider calling for air transport when:

1. The patient meets the State Trauma Triage Procedure (see Appendix B) criteria and air transport would result shorter transport times (versus ground)
2. A critical medical patient would benefit from the shorter transport time from a remote area
3. Multiple Casualty Incident

Consideration about air transport must take into account the following inherent times: dispatch of Airlift, time enroute to the incident, shut down/load time of the patient, air transport time, and shut down/unload time with transfer to the ED. If ground transport is initiated promptly, air transport is often unnecessary in urban/suburban settings. Threshold for activation may be lower in rural/wilderness settings.

Air transport guidelines do not apply to special circumstances utilizing public safety, Search and Rescue, or military assets. In general, these involve insertion of technical personnel, delivery of care in specialized situations, and technical or specialized extrication. These circumstances include wilderness, MCI and disaster responses. These agencies are not, per WAC, air ambulance services.

Blood Draws

- It is up to each individual service whether blood draws are performed. If a service does decide to perform blood draws they must be done with a needleless system (i.e. Vacutainer® system).

Field Draws for Blood Alcohol Determinations

Field draws for the purpose of blood alcohol determinations are specifically NOT to be performed by EMS personnel in Snohomish County.

Dead At Scene

Upon arrival at a scene in which the patient is obviously dead (pulseless and apneic) and resuscitation efforts would be unsuccessful, resuscitation efforts of any kind may be withheld.

To withhold resuscitation at least one of the following criteria should be present:

- Presence of rigor mortis
- Presence of livor mortis
- Obvious external exsanguination
- Truncal transection
- Decapitation
- Decomposition
- Extruded brain matter
- Blunt traumatic arrests (after consideration of potentially reversible causes)
- Penetrating traumatic arrests with a transport time of more than ten minutes
- Sustained time down prior to arrival without CPR in progress with presenting rhythm of Asystole in warm adults

Note: Hypothermic arrests, near-drowning events, and medical pediatric arrests deserve full resuscitative attempts. CONTACT MEDICAL CONTROL for direction.

Do Not Resuscitate Orders

Definitions:

- A. A DNR Order is an order issued by a physician, directing that in the event the patient suffers a cardiopulmonary arrest, CPR will not be administered.
- B. POLST (Physician Orders for Life Sustaining Treatment) is an order issued by a physician directing what level of care the patient desires in the event EMS is called.
- C. Resuscitation includes attempts to restore failed cardiac and/or ventilatory function by procedures such as endotracheal intubation, mechanical ventilation, chest compressions, defibrillation

Resuscitation may be withheld:

- A valid DNR or POLST is present.
- The following compelling reasons are both present
 - Verbal indication from family members or caretakers of patient's desire to not be resuscitated
 - A terminal condition is present
 - Medical Control **MUST** be contacted for confirmation in this case
- The EMT or Paramedic must document the DNR order in the patient care report.

No BLS or ALS procedures should be performed on a patient who is the subject of a confirmed DNR or POLST order and who is pulseless and apneic.

Except when the above circumstances apply, all other cases shall be considered potentially resuscitatable, and resuscitation efforts shall be initiated until further orders are received from the responsible physician.

HAZMAT (for non-HAZMAT personnel)

ALL EMS PROVIDERS

- Assume all scenes have a potential for HAZMAT
- If you are first on scene, assume Incident Command until HAZMAT arrives
- If Incident Command is already established, report to Incident Commander or Staging Area Manager.
- Approach cautiously from upwind and uphill and position vehicle well away from incident and headed away from the scene
- Isolate scene and keep others away.

Patient Care

- Determine material involved from HAZMAT team and advise Medical Control of material involved and request direction for treatment.
- HAZMAT or Fire will be responsible for initial decontamination and patient packaging.
- Don personal protective equipment as directed by HAZMAT team.
- Receive packaged patient at decontamination corridor from HAZMAT or Fire and transfer to PREPARED ambulance and treat as directed by Fire, HAZMAT and Medical Control

Ambulance Preparation

- Prepare ambulance as directed by HAZMAT or Fire.
- Remove all non-essential supplies/equipment.
- Drape interior and floor of vehicle with plastic as directed

Transport

- Notify receiving facility: provide all relevant information and ask where they would like you to park. Do NOT enter the ER without specific direction from the ER staff.
- After transferring the patient to ER staff, return to the ambulance and remain inside. Do not move the vehicle or allow others inside.
- Contact Incident Commander to determine how and where the vehicle should be decontaminated.

EMS Personnel Exposure

- If exposed at the scene: remove yourself from further contamination and report incident to the Safety Officer or HAZMAT and wait for direction.
- If exposed enroute to the hospital: inform the ER and await direction.
- After decontamination and treatment, receive clearance from HAZMAT Group Supervisor or ER MD AND your supervisor before returning to duty.

Inter-Facility Transport

Inter-facility transport will occur at the BLS Ambulance, Registered Nurse Ambulance and the ALS (Paramedic) level in the following general categories.

- Transfer between hospitals for admission for services not available at the initial hospital.
- Transport of patient to and from facility for diagnostic evaluations at the second facility.
- Transport from hospital to extended care facility.
- Transport of patient between facilities at patient or physician's request.
- Transport of a psychiatric patient to Western State Hospital.

As a general rule, it is the responsibility of the transferring facility to ensure that the medical necessities for safe patient transfer are met. Medical instructions of the attending physician and registered nurses will be followed unless specifically contrary to guidelines or standing orders. If a physician attends the patient during transfer, s/he will direct all care regardless of standing orders. If a registered nurse attends the patient, s/he will direct the care of the patient from the standing orders given by the physician at transfer or by contact with the receiving hospital physician. The registered nurse may desire to defer emergency care in some situations to the paramedic.

The responsibility for transfer to another facility resides with the transferring facility. **Patients will not be transferred to another facility without first being stabilized.** Stabilization includes adequate evaluation and initiation of treatment to assure that transfer of a patient will not, within reasonable medical probability, result in material deterioration of the condition, death, or loss or serious impairment of bodily functions, parts, or organs. Evaluation and treatment of patients prior to transfer will include the following:

- Establish and assure an adequate airway and ventilation
- Initiate control of hemorrhage
- Stabilize and splint the spine or fractures when indicated
- Establish and maintain adequate access routes for fluid administration
- Initiate adequate fluid and/or blood replacement
- Determine that the patient's vital signs are sufficient to sustain adequate perfusion

It is also the transferring facility's responsibility to establish the need for BLS Ambulance, Registered Nurse Ambulance or ALS transport.

For ALS transports, the following may apply:

- You may initiate pre-hospital guidelines including the establishment of intravenous lines, airway control, etc.
- **You may refuse to transfer the patient until the facility has complied with the above evaluation and/or treatment.** Should you decide this is necessary, contact Medical Control for concurrence and consultation.

If a BLS inter-facility transport is requested and it is the judgment of the BLS crew that the patient needs to be treated or transported by a Medic unit, it is

mandated that dispatch be contacted and a Medic unit dispatched. Under no circumstance should a BLS crew transport a patient if, in their judgment, this is a Paramedic call (exception: Mass Casualty Incidents).

In Paramedic or BLS transports, if an emergency occurs enroute that is not anticipated prior to transport, pre-hospital guidelines will immediately apply. Medical Control should be contacted for concurrence with any orders as appropriate; the receiving facility should be contacted as soon as possible to inform them of changes in the patient's conditions. Any deviation from this guideline or from the transport guidelines should be reported to the MPD on an incident report within 24 hours of occurrence.

Intervening Physician On Scene

Medical professionals at the scene of an emergency may provide assistance to paramedics and should be treated with professional courtesy. Medical professionals who offer their assistance should identify themselves. Physicians should provide proof of their identity, if they wish to assume or retain responsibility for the care given the patient after the arrival of the paramedic unit.

The following principles may help guide you in your actions:

- Your first responsibility is to the patient who needs your help.
- You are legally authorized to be at the scene by virtue of your dispatch call.
- This is a service organization. Be considerate of those who offer help. The majority will have the best intentions. Without their help and support, the whole program would falter.
- Follow the orders of the base hospital physician, unless the patient's private physician is available or you cannot contact the base station physician.
- Control of medical care at an emergency scene is the responsibility of the individual who is best trained and most knowledgeable in providing pre-hospital emergency care. When a medic unit is requested and dispatched to the scene of an emergency, a doctor-patient relationship has been established between the patient and the physician providing on-line medical direction to that unit. The paramedic is responsible for the management of the patient, and acts as the agent of medical control, unless the patient's physician is present (as might occur in a doctor's office).
- In the interest of providing the best possible care to patients in the pre-hospital setting, the following policy is hereby set forth.
 - **Private Physician Present** and assumes responsibility for patient's care
 - The paramedic should defer to the orders of the private physician
 - Contact base station for record keeping purposes
 - Responsibility reverts back to base hospital physician if private physician is no longer available in person or by phone
 - For purposes of this policy, whenever there is a prior relationship between a physician and patient, orders from that physician, whether by phone or in person, should be followed as if the patient were in the physician's office. Such would apply, for example, in the patient's home or nursing home if the private physician gives phone orders.
 - **Bystander Physician Present:** no on-line medical control
 - The paramedic should relinquish responsibility for patient management to the bystander physician who has identified himself/herself and demonstrated willingness to assume responsibility.
 - Request some form of identification, unless the physician is personally known to you
 - Current license or membership card in a medical specialty society is acceptable

- Defer to the order of the physician on the scene. Request that the physician agree in advance to accompany the patient to the hospital.
- **Bystander Physician Present; on-line medical control available**
 - The on-line medical control physician is ultimately responsible. If disagreement exists between the bystander physician and the on-line medical control physician, the **paramedic should take orders from the on-line medical control physician** and place the bystander physician in radio contact with the on-line medical control physician. The on-line medical control physician has the option of managing the case entirely, working with the bystander physician, or allowing him/her to assume responsibility.
 - Bystander physician should document his/her intervention on the pre-hospital care record.
 - The decision of the bystander physician to accompany the patient to the hospital should be made in consultation with the on-line medical control physician.
 - Should situations arise which conflict directly with your standing orders, consult the on-line medical control physician for appropriate response. Under such circumstances, it is preferable to have the on-line medical control physician speak directly to the physician at the scene.
 - The following information card should be handed to any bystander physician who offers to assist at the scene.

Thank you for your offer of Assistance

Physician On Scene

This advanced life support team is operating under Washington State Law and EMS policy approved by the Medical Society of Snohomish County and the Snohomish County Emergency Medical Services and Trauma Care Council. The ALS team is functioning under standing orders from the Medical Program Director of Snohomish County and is in direct radio contact with an authorized Medical Control Physician at their base hospital emergency center. If you wish to assist, please see the other side for options

Ron Brown MD
Medical Program Director
Snohomish County EMS

In general, the physician who has the most expertise in management of the emergency should take control. This is usually the base hospital physician.

You may:

1. Request to talk directly to the base hospital physician to offer your advice and assistance.
2. Offer your assistance to the ALS team with another pair of eyes, hands, or suggestions, but allow the ALS team to remain under Medical Control of the base hospital physician.
3. If you have an area of special expertise for the patient's problem, you may take total responsibility, if delegated by the base hospital physician, and accompany the patient to the hospital.

Note: Use of this card is for physicians who are intervening ONLY. Nothing in this protocol precludes appropriate assistance from recognized physicians in the community.

MCI

START Triage

RED (IMMEDIATE/CRITICAL) these are the patients of the highest priority, which, in most circumstances, are removed and treated first. This category **EXCLUDES** patients that are in cardiopulmonary arrest, or are near death and have, in the judgment of the Triage Officer, fatal injuries. These patients meet the following:

- Able to maintain own airway
- Respiratory rate <10 or >30
- Capillary refill > 2 seconds without radial pulses
- Unable to follow simple commands

YELLOW (DELAYED/SERIOUS) Patients whose injury/illness is serious and needs attention. However, treatment and transport may be delayed until viable **RED** patients have been treated and transported. These patients meet the following:

- Cannot walk
- Respiratory rate 10-30
- Radial pulse present
- Able to follow simple commands

GREEN (MINOR/STABLE) Patients who may have treatment and/or transport delayed.

- Able to walk

BLACK (DECEASED) Patients who are already dead or so severely injured that death is certain within a short timeframe, regardless of treatment given. Unconscious/unresponsive/apneic and unable to maintain own airway.

White (DECONTAMINATED) these patients may be from any triage category but must be grossly decontaminated prior to tagging, treatment and/or transport. Colors should be used with Triage Tags, tape, ribbons, tarps, flags, etc.

Minors

EMS Providers should **CONTACT MEDICAL CONTROL** for situations involving non-transport of minors, in the absence of a legal guardian or authorized health care decision-maker.

Minors age 14 and older can give (and withhold) consent for issues related to pregnancy, STDs, mental health, drugs and alcohol. This age group may request care/transport for such problems without their parent's consent. Similarly they may decline care/transport despite their parent's wishes.

Minors age 14 and older are also entitled to complete confidentiality regarding the above issues, i.e. you can only talk to their parents/family with the minors consent. This is usually implied if the family is present.

Personnel are encouraged to contact Medical Control for assistance in resolving such dilemmas should they arise.

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Non-Transports Refusal of Treatment and/or Transport

A complete EMS medical incident report (MIR) should be performed on all patient encounters. This is a legal record and may be called upon as evidence in any court of law. Remember, *if it is not written, it was not seen or done*. An EMS MIR must be appropriately documented and filed for any call for EMS assistance resulting in patient contact within Snohomish County regardless of patient transport. This will apply to both basic and advanced life support units and includes public assist calls.

A person is considered a patient when any of the following exist. It should be noted that patients will commonly fit into multiple categories. Only one sign or symptom is required.

- Chief complaint reported by patient or other competent person
- Suspected illness or injury
- Mental incompetence (includes influence of drugs or alcohol)
- Risk to self or others

If a person fails to fit into one of the above categories, s/he is not a patient.

Example: crews respond to a motor vehicle accident. On arrival crews find a low speed “fender bender” in the parking lot of the local supermarket. There are 5 people in two vehicles. All of which do not meet the above patient criteria. In this instance only **one** MIR needs to be completed that states crews responded to the incident, what they found on arrival and at a minimum the number of individuals involved in the incident with documentation that each person denied having any injury and no injuries were evident to the EMS personnel.

Non-transport of a patient usually results from a patient refusal, but occasionally because the evaluation by EMS personnel determines that immediate medical follow-up is not required. The following are reasons a patient may not be **transported**.

- A. Patient Refusal. The decision to seek emergency medical services usually resides with the patient, family or in certain instances, with legal custodians. Similarly, the decision to transport or not transport should reside with these same people.
- B. Private Transportation. When the senior EMS provider on the scene deems it appropriate. Any alternate plan must be immediate, concrete and reliable. In any questionable case, on-line medical control should be consulted and a patient refusal signed.
- C. Medical Necessity. EMS provider determines that there is no medical necessity for EMS transport to the Emergency Department. The patient and/or guardian agree with this. **Contact Medical Control** per individual department policy.
- D. Termination of Resuscitation/DOA.

Non-transport issues represent significant legal and clinical risks. These situations emphasize the need for complete extensive assessments and

documentation, including potential risks and recommendations to contact 911 for any changes in patient condition.

Determine patient decision-making capacity:

- Patient must be oriented to person, place, time and event
- Patient must not appear to have a mental compromise
- Patient judgment must not be influenced by hypoxia or head injury
- Patient must not have obvious impairment from drugs or alcohol
- Patient must not have evidence of suicidal tendencies or obvious psychiatric disorders
- Patient must appear to understand the consequences of his/her decision

If patient is deemed to have the capacity to refuse by the EMS provider:

- Potential risks, if any, of refusing treatment/transport must be clearly explained to the patient including any possible implications of the injury or illness, and possibilities of death or disability, if applicable.
- Consider soliciting the help of friends or family to convince the patient to accept your advice. Consider contacting Medical Control to speak with the patient.
- If patient does not wish to be treated or transported, and you do not feel they have a life or limb threatening injury, advise them to call 911 for any changes, symptoms, etc. Document accordingly.
- Ask the patient or legal guardian to sign a refusal of treatment statement. (Note: This request may be refused.)
- Witness signature for refusal, particularly if patient refuses to sign.

If patient is not deemed to have the capacity to refuse by the EMS Provider:

Law enforcement should be summoned to assist with Involuntary Restraint and Transportation issues, if applicable.

Nursing Home Calls

- It is expected that every paramedic response will be at a level concordant with his/her training and established pre-hospital care guidelines.
- Unless the physician gives a written or verbal “No-Code” order, it may be assumed that full resuscitative efforts will be undertaken by the EMTs or Paramedics if they are called to the nursing home. If a “No-Code” status has been determined as appropriate, the attending physician will write it in the patient’s chart. The EMT or Paramedic can take a verbal “No-Code” order from the attending physician by telephone if known to the EMT or Paramedic, or via Medical Control and relayed to the EMT or Paramedic.

Resuscitative efforts, once begun, will be terminated only upon agreement of the Medical Control Physician and/or the attending physician in consultation.

13. APPENDIX C – ADVANCED PROTOCOLS

Scope of Practice

Advance protocols are written for EMS personnel that are specifically trained in their use. Providers must have the specific approval by the MPD before using each protocol.

Cardiac Level One – BLS 12-Lead EKG

Designation of Condition: In an attempt to decrease time to balloon for patients with AMI, a pilot study for allowing BLS providers, in specific parts of the County, to perform 12-Lead EKG and activate the Cath Lab for STEMI patients.

ALL EMS PROVIDERS

- Indication
 - Non-traumatic Cardiac Chest Pain age 18 y/o and greater
- Procedure
 - After identifying the patient as above, perform a 12 lead EKG within the first ten minutes after patient contact.
 - If computer interpretation indicates "<<<Acute MI >>>," activate the STEMI System:
 - Begin expedited transport to the nearest available PCI-capable facility.
 - Administer aspirin per chest pain protocol.
 - Notify Medical Control physician at receiving facility with a short report of incoming STEMI patient, noting this is a BLS activation.
 - Transfer patient to appropriate ALS unit.
 - Medics evaluate patient enroute, using cardiac chest pain protocols. An additional report to receiving facility should be made as possible.

Dislocations and Fractures

Designation of Condition: Dislocations, and fractures with significant deformity, are at increasing risk for complications as time from injury increases, and edema sets in. Complications include neurovascular compromise, skin ischemia from tenting, excessive patient pain requiring large amounts of analgesics, and difficulty with extrication and rescue.

ALL EMS PROVIDERS

- If signs of compromise are present or imminent, gently straighten the limb and splint.

ALS PROVIDERS

- Consider IV analgesia with fentanyl and mild, conscious sedation with midazolam prior to the procedure. Monitor and record vital signs, airway and mentation status during and after procedure until patient has recovered. Be alert to a sudden drop in level of pain after successful reduction and immobilization, resulting in excessive sedation.
- In general, inline traction for fractures with a return to general anatomic alignment is sufficient.
- Immobilize and reassess frequently. Note splinting may need adjustment over time, as edema sets in.
- If pain increases, *revisualize* the injury and resplint.
- Specific conditions:
 - Shoulder dislocation: Generally anterior. Be alert for possible proximal humeral fracture. Hennipen technique, scapular manipulation, traction-countertraction.
 - Elbow dislocation: Extension and traction.
 - Finger dislocations: traction.
 - Hip: May be anterior or posterior. Be alert for pelvic fracture. Hip flexion, internal/external rotation.
 - Patella dislocation: full extension of leg with gentle pressure.
 - Knee dislocation: Most often anterior. Traction. Avoid pressure to popliteal fossa area.
 - Ankle dislocation: Almost always associated with unstable fracture. Flex knee to 90, traction of ankle.
 - Immobilize affected limb and reassess neurovascular status frequently.

Wound Care

Designation of Condition: Significant tissue trauma in a wilderness setting resulting in open wounds is at an increased risk of infection over an above what is normally encountered by EMS. More aggressive wound management is indicated. Primary goals are preventing further injury, cleaning and protecting the wound. Medication therapy should be considered but is second line.

Wounds must be assessed for: continued hemorrhage (or risk of such due to cleaning/manipulation), contamination, devascularization (including crush injury), and damage to underlying structures such as nerve bundles, muscles, tendons and bones.

ALL EMS PROVIDERS

- Clean wound with copious amounts of fluid. Sterile saline is first choice; if this is not available in sufficient quantities, potable water is acceptable. Gentle scrubbing action with wet gauze can help remove larger particles. 500-1000 ml may be sufficient.
- Cover wound with a wet-to-dry dressing: wet gauze well-wrung out loosely packed in the wound, with several layers of dry gauze over this.
- Reassess wound every 6 hours or earlier if excessive bleeding or pain is noted, leaving wet gauze in place unless it requires changing.
- Change wet-to-dry dressing every 12 hours.
- Splint as possible.

ALS PROVIDERS

- Consider analgesics IV for wounds requiring extensive cleaning.
- For wounds greater than 6 hours old, significantly contaminated, with crush or other devascularized tissue, or open fractures, administer Cefazolin 1 gm IV for adults, 25 mg/kg IV, up to 1 gm, for children, if not penicillin or cephalosporin allergic.

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14. PARAMEDIC DRUG SUPPLEMENT

County Wide Drug Therapy Protocol

The drug therapy protocol will be divided into three categories:

1. Required and Recommended Drugs
2. Optional Drugs
3. Allowed Drugs

Required and Recommended Drugs

These are medications that are required by the Snohomish County Medical Control Committee (SCMCC) to be on all ALS equipped units. The recommended medication re those that are required, but may have an optional medication listed that is comparable in effect.

Optional Drugs

These may be substituted for recommended drugs due to EMS coordinator preference or cost. Generic substitutions of all medications except Dilantin are generally allowed.

Allowed Drugs

These are drugs or therapies that are allowed in Snohomish County. The council feels that they are of value in the pre-hospital setting, but because of cost, training, and perhaps limited value in rapid and short transports, are to be used at the discretion of individual EMS Coordinators.

Additions/Deletions to Drug Therapy Protocol

If a medication has large benefits to the pre-hospital patient population, and delay in that drug's usage would be detrimental, then an EMS coordinator can request the Snohomish County MPD to have phone consultation with the other EMS coordinators, research the drug, and come to a decision regarding its usage.

Otherwise, normal protocol will be to present the medication for addition/deletion (or movement to another drug category) at the next regularly scheduled Medical Control Meeting.

Snohomish County EMS Medication Categories

Required (Recommended)

Acetaminophen
Acetylsalicylic Acid (Aspirin)
Adenosine
Albuterol
Atropine
Benzodiazepine (Diazepam)
Calcium Chloride
Dextrose 50% and 25%
Diltiazem
Diphenhydramine
Dopamine
Epinephrine 1:1,000
Epinephrine 1:10,000
Etomidate
Furosemide
Glucagon
Lidocaine
Magnesium Sulfate
Morphine
Naloxone
Nitroglycerin
Oxygen
Sodium Bicarbonate
Succinylcholine

Required (Optional Substitution)

Lorazepam, Midazolam

ILS Medications

Oxygen
Albuterol
Aspirin
Dextrose 50% and 25%
Epinephrine 1:1000
Naloxone
Nitroglycerin sublingual

Snohomish County EMS Medication Categories

Allowed Drugs

Amiodarone

Ammonia Inhalants

Barbiturates

Cefazolin

Fentanyl

Hydroxocobalamin

Hydroxyzine

Ipratropium

Ketorolac

Methylprednisolone

Ondansetron (Zofran)

Oxytocin

Procainamide

Promethazine

Terbutaline

Topical Ophthalmic Drops (Proparacaine)

Vasopressin

Vecuronium

(Optional Substitution)

Cyanide Antidote Kit

Dexamethasone

Rocuronium

ACETAMINOPHEN

CLASS OF DRUG

Analgesic, Antipyretic

INDICATIONS

1. Fever

CONTRAINDICATIONS

1. Hypersensitivity to the drug
2. Hepatic failure or impairment

DRUG INTERACTION

1. Phenothiazines - may produce hypothermia

ADMINISTRATION

Adult: 650-975 mg PO
Pediatric: 15 mg/kg PR

SPECIAL NOTES

None

ACETYLSALICYLIC ACID (ASA, ASPIRIN)

CLASS OF DRUG

Anti-inflammatory, analgesic, antipyretic, anticoagulant

INDICATIONS

1. Non-Traumatic Chest Pain

CONTRAINDICATIONS

1. Hypersensitivity
2. Bleeding disorders
3. Asthma (Relative)

ADMINISTRATION

Adult: 162-324 mg orally for ACS (prefer chewable)

Pediatric: Should not to be given to pediatric patients.

SPECIAL NOTES

1. All patients with suspected ACS and without contraindications receive aspirin.

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ADENOSINE (ADENOCARD®)

CLASS OF DRUG

Antidysrhythmic

INDICATIONS

1. Paroxysmal supraventricular tachycardia (PSVT), including PSVT associated with Wolff-Parkinson-White syndrome.

CONTRAINDICATIONS

1. Hypersensitivity
2. High degree A-V block and sick sinus syndrome, unless a pacemaker is in place

DRUG INTERACTION

1. Carbamazepine - increased likelihood of progressive heart blocks.
2. Dipyridamole - potentiates the effect of adenosine (reduce the dosage).
3. Xanthines - reduces effectiveness (a larger dosage may be required).
4. Nicotine - may increase risk of tachycardia.

ADMINISTRATION

Adult: [6 mg] rapid IVP (1-2 seconds) followed with a 30 cc flush. May be repeated in 1-2 minutes, a second dose of [12 mg] rapid IVP followed by a 20 cc flush. Single doses of greater than 12 mg should not be given. May be given up to three times and always follow each bolus with a 20 cc flush.

Pediatric: Initial: [0.1 mg/kg] rapid IVP. Repeat in 2-3 minutes if no change. Second and third dose at [0.2 mg/kg] rapid IVP.

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ADENOSINE (Cont.)

SPECIAL NOTES

1. May induce bronchospasm in reactive airway disease.
2. Safety in pregnancy is unknown.
3. Transient dysrhythmias, such as periods of asystole, are common and self-limiting, requiring no treatment unless they persist.
4. Side effects may include: facial flushing, headache, chest pain, dyspnea, lightheadedness, and nausea.
5. Must be given in the IV port most proximal to the heart.

ALBUTEROL (PROVENTIL®, VENTOLIN®)

CLASS OF DRUG

Sympathomimetic, Beta₂ selective adrenergic bronchodilator

INDICATIONS

1. Albuterol is used to treat reversible airway obstruction caused by:
 - a. Wheezing associated with asthma
 - b. COPD

CONTRAINDICATIONS

1. Hypersensitivity

DRUG INTERACTION

1. Beta adrenergic agents - potentiates the effects
2. MAO inhibitors - may lead to hypertensive crisis
3. Beta adrenergic blockers - decreases the effectiveness

ADMINISTRATION

Nebulizer

Adult: [2.5-5.0 mg] (up to 10 mg) in 3 ml of sterile NS given as inhalation therapy over 5-15 minutes, may be repeated as necessary.

Pediatric: [1.25-2.5 mg] (up to 5 mg) in 3 ml of sterile NS given as inhalation therapy over 5-15 minutes, may be repeated as necessary.

SPECIAL NOTES

1. Most side effects are dosage related.

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AMIODARONE (CORDARONE®)

CLASS OF DRUG

Antiarrhythmic (Class IIb)

INDICATIONS

1. Pulseless VF/VT
2. Unstable VT

CONTRAINDICATIONS

1. None, if the patient is in cardiac arrest with VF or VT.
2. High degree AV blocks or sinus node dysfunction with marked bradycardia unless a functional pacemaker is in place.
3. Congestive heart failure

DRUG INTERACTION

1. Enhanced bradycardia and hypotension when given with other beta-blockers or calcium channel blockers.

ADMINISTRATION

Adult:

Pulseless VT/VF	300 mg initial bolus IVP after epinephrine. May re-bolus with 150 mg.
Sustained VT	150 mg over 10 minutes. May re-bolus with 150 mg
Maintenance infusion:	1 gm in 250 cc IV fluid. For the first 6 hours 1.0 mg/min, then 0.5 mg/min
Pediatric:	Not recommended

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AMIODARONE (Cont.)

SPECIAL NOTES

1. Must be given concurrently with epinephrine in the pulseless patient
2. Cannot be administered via ET tube
3. Hypotension and bradycardia can occur on patients with a pulse

AMMONIA INHALANTS

CLASS OF DRUG

Respiratory/Nasal irritant

INDICATIONS

1. Decreased level of responsiveness with alcohol or other CNS depressant as likely cause.
2. Suspected feigning unconsciousness.

CONTRAINDICATIONS

1. Other organic cause of coma (head injury, DKA, etc.)

DRUG INTERACTION

1. None

ADMINISTRATION

Adult: Snap and wave under nose for 10-15 seconds, until the patient inspires.

SPECIAL NOTES

1. Be prepared for patient combativeness

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ATROPINE SULFATE

CLASS OF DRUG

Anticholinergic (parasympatholytic)

INDICATIONS

1. Symptomatic sinus bradycardia or A-V Blocks
2. Bradycardia associated with PEA
3. Asystole
4. Anticholinesterase poisonings - organophosphate, mushrooms (certain types), and nerve gases
5. Premedication for RSI in pediatrics (< 6 years old).

CONTRAINDICATIONS

1. None when indicated.

DRUG INTERACTION

1. Antihistamines, tricyclic antidepressants - additive effect

ADMINISTRATION

1. Cardiac Indications:

Adult: [0.5 mg] IV or ET every 3-5 minutes: max 3.0 mg (symptomatic bradycardia)
[1.0 mg] rapid IVP or ET every 3-5 minutes (asystole, PEA):
max 3 mg

Pediatric: [0.02 mg/kg] IVP minimum of 0.1 mg and maximum of 0.5 mg

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ATROPINE SULFATE (Cont.)

2. Anticholinesterase poisoning:

Adult: [2.0 mg] IVP repeated until symptoms abate

Pediatric: [0.05 mg/kg] IV, ET, or IO, repeated until symptoms abate

3. Mushroom Poisoning:

Adult: [2 mg] IVP, repeated to doses sufficient enough to control parasympathomimetic signs

SPECIAL NOTES

1. May be not be effective with high degree A-V block (2nd degree type II, 3rd degree) - do not delay pacing.
2. Bradycardia in the setting of an acute MI is common and probably beneficial. Don't treat the rate unless there are signs of poor perfusion (i.e. low blood pressure, mental confusion). Chest pain could be due to an ACS or to poor perfusion caused by the bradycardia itself.
3. Atropine increases the workload and myocardial O₂ consumption of heart. Beware of patients who have an ischemic myocardium. Administer supplemental oxygen.

BARBITURATES - PHENOBARBITAL

CLASS OF DRUG

Barbiturate, Anticonvulsant

MECHANISM OF ACTION

Decreases impulse transmission at cerebral cortex level through GABA agonist activity thus increasing seizure threshold.

INDICATIONS

1. Status Epilepticus: Control of seizures refractory to benzodiazepines

CONTRAINDICATIONS

1. Known hypersensitivity.
2. Hypotension.
3. Pregnancy (class D).
4. CNS Depression.

DRUG INTERACTION

1. Alcohol, CNS depressants, Antabuse, Lasix and sulfonamides potentiate effects and may exacerbate hypotension.
2. Theophylline, corticosteroids, Doxycycline and Quinidine may inhibit effects tricyclic antidepressants - additive affect

ADMINISTRATION

Adults: 100mg to 250mg slow IVP over 2 min

Pediatrics: 15mg/kg slow IVP over 2min)

SPECIAL NOTES

1. This drug may ONLY be utilized by paramedics SPECIFICALLY designated by the MPD directly.
2. Contact online medical control physician prior to administration.
3. Be alert to respiratory depression and impending need for ALS airway management.
4. Hypotension may ensue. Treat with 20mg/kg IV fluid bolus

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BENZODIAZEPINES

DIAZEPAM - VALIUM®, **MIDAZOLAM - VERSED®**, **LORAZEPAM - ATIVAN®**

CLASS OF DRUG

Anticonvulsant, anti-anxiety, sedative, muscle relaxant

INDICATIONS

1. Control of seizures
2. Sedation for procedures
3. Reduction of anxiety

CONTRAINDICATIONS

1. Hypersensitivity
2. CNS depression

DRUG INTERACTION

1. Additive effect to other CNS depressants such as alcohol, narcotics, etc

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BENZODIAZEPINES (Cont.)

ADMINISTRATION

Adults

Diazepam (Valium®): 2-10 mg SIVP

Lorazepam (Ativan®): 1 - 2 mg SIVP/IM

Midazolam (Versed®): 1-5 mg SIVP/IM

Note: HIGHER DOSES MAY BE REQUIRED

Pediatric:

Diazepam: 0.2 mg/kg IV
0.5 mg/kg PR

Lorazepam: 0.1 mg/kg IV/IM

Midazolam: 0.1 mg/kg IV/IM up to 2 mg for ages > 6 months

SPECIAL NOTES

1. Should not be mixed with other agents, or diluted with intravenous solutions. Give through the proximal end of IV tubing and then flush well.
2. Most likely to produce respiratory depression on patients who have taken other depressant drugs, especially alcohol and barbiturates.

CALCIUM PREPARATION

CALCIUM GLUCONATE, CALCIUM CHLORIDE, CALCIUM GLUCEPTATE

CLASS OF DRUG

Electrolyte

INDICATIONS

1. Used as antidote for calcium channel blocker overdoses
2. Symptomatic hyperkalemia
3. Magnesium sulfate overdoses
4. Black Widow spider bite

CONTRAINDICATIONS

1. Hypercalcemia

DRUG INTERACTION

1. Increase toxicity of cardiac glycoside

ADMINISTRATION

Calcium Gluconate

Adult: [5 - 10 ml] **SLOW** IVP (Do Not Exceed 2 ml/minute) repeat if necessary after 5 - 10 min.

Pediatric: [0.2 - 0.3 ml/kg] **SLOW** IVP of 10% solution

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CALCIUM PREPARATION (Cont.)

Calcium Chloride:

Adult: [5-10ml] by **SLOW** IVP. Repeat every 10 minutes as needed (1 ml of 10% = 100 mg of calcium chloride).

Pediatric: [0.1 - 0.2 ml/kg] by **SLOW** IVP. Repeat once in 10 minutes if needed.

NOTE: RAPID INJECTION CAN CAUSE HYPOTENSION, BRADYCARDIA AND DEATH.

SPECIAL NOTES

1. If heart is beating, rapid administration of calcium salts can produce bradycardia and/or arrest.
2. May increase cardiac irritability, i.e., PVC's, particularly in the presence of digitalis.
3. Local infiltration will cause tissue necrosis.

CEFAZOLIN (ANCEF , KEFZOL)

CLASS OF DRUG

Cephalosprin Antibiotic

INDICATIONS

1. Wound care as allowed under advanced protocols only

CONTRAINDICATIONS

1. Penicillin or cephalosporin allergy

ADMINISTRATION

Adult: 1 gm IV q 8 hrs

Pediatric (<17): 25 mg/kg IV up to 1 gm, q 8 hrs

Special Considerations

May be given slow IV push

May be given IM however IV is best route

DEXAMETHAXONE

CLASS OF DRUG

Corticosteroid

INDICATIONS

1. Alternative to Methylprednisolone for asthma and COPD

CONTRAINDICATIONS

1. Hypersensitivity

ADMINISTRATION

Adult: 10 mg IV

Pediatric: 0.6 mg/kg IV up to 10 mg

DEXTROSE (Oral and IV)

CLASS OF DRUG

Carbohydrate, nutrient, short acting osmotic diuretic

INDICATIONS

1. Symptomatic hypoglycemia
2. Unconsciousness of unknown origin

CONTRAINDICATIONS

1. Intra-cranial bleeds
2. Delirium tremens with dehydration
3. Administration through the same infusion set as blood.
4. Unconscious (for oral dextrose)
5. Suspected CVA

DRUG INTERACTION

1. None

ADMINISTRATION

1. Oral: [12-25 gm] of paste, may be spread with a tongue depressor or may use IV preparation

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DEXTROSE (Cont.)

2. IV:

Adult: [25 to 50 gm] slow IV push into patent vein, if patient is unable to protect airway or tolerate oral fluids. May be repeated as needed. Be prepared to restrain. May be given rectally (paramedic only).

Pediatric: Dilute 1:1 with sterile saline to make 25% solution (0.25 mg/ml)
Give [0.5 - 1.0 g/kg] slow IV push. May be given rectally (paramedic only).

SPECIAL NOTES

1. Attempts at documenting hypoglycemia via glucometry should be made before administration.
2. Must insure patent IV line, and recheck patency during administration.

DILTIAZEM HCL (CARDIZEM®)

CLASS OF DRUG

Calcium Channel Blocker; Coronary Vasodilator, Antidysrhythmic

INDICATIONS

1. Atrial Fibrillation or Atrial Flutter with rapid ventricular response
2. Paroxysmal Supraventricular Tachycardia

CONTRAINDICATIONS

1. Sick sinus syndrome except in the presence of a functioning ventricular pacemaker.
2. Patients with second- or third degree AV block except in the presence of a functioning ventricular pacemaker.
3. Patients with severe hypotension or cardiogenic shock
4. Patients who have demonstrated hypersensitivity to the drug
5. Patients with atrial fibrillation or atrial flutter associated with an accessory bypass tract such as in **WPW** syndrome or short PR syndrome
6. Patients with ventricular tachycardia

DRUG INTERACTION

1. Additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with Diltiazem HCl.

ADMINISTRATION

Adult: 0.25 mg/kg as a bolus administered over 2 minutes (20 mg is a reasonable dose for the average patient). If response is inadequate, a second dose may be administered after 15 minutes at 0.35 mg/kg.

Pediatric: Not usually used.

SPECIAL NOTES

1. None.

DIPHENHYDRAMINE HCL (BENADRYL®)

CLASS OF DRUG

Antihistamine, H₁ blocker

INDICATIONS

1. Allergic reactions
2. Anaphylaxis
3. Dystonic reaction to phenothiazines
4. Motion sickness

CONTRAINDICATIONS

1. Acute asthma (relative)

DRUG INTERACTION

1. Additive CNS depression with alcohol, sedatives, narcotics

ADMINISTRATION

Adults: [20-50 mg], slow IVP at a rate of 1ml/min or deep IM injection

Pediatric: [1 - 2 mg/kg], slow IVP; deep IM injection with a maximum dose of 50 mg

SPECIAL NOTES

1. May have an immediate effect in dystonic reactions.
2. No early benefit in allergic reactions

DOPAMINE HYDROCHLORIDE (DOPASTAT®, INTROPIN®)

CLASS OF DRUG

Potent sympathomimetic, dopaminergic

INDICATIONS

1. Primary indication is cardiogenic shock.
2. May be useful for other forms of shock
3. Used for refractory bradycardia unresponsive to atropine, and when pacing is unavailable.

CONTRAINDICATIONS

1. Tachydysrhythmias
2. Pheochromocytoma

DRUG INTERACTION

1. Hypotension and/or bradycardia with phenytoin
2. Reduced effects with Beta-adrenergic blocker

ADMINISTRATION

Adult: IV infusion ONLY - Mix 400 mg in 250 ml D₅W or NS to produce a concentration of 1600 mcg/ml. Infusion rates should start at [5 mcg/kg/min]. Gradual increase to 20 mcg/kg/min. usually achieves desired effect. (Other concentrations are used, so know what you are using). Use microdrip chamber or an infusion pump.

Pediatric: Mix 200 mg in 250 ml D₅W or NS to produce concentration of 800 mcg/ml. Rate starts [5 mcg/kg/min]. Titrate to effect. Do not exceed 20 mcg/kg/Min.

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EPINEPHRINE (ADRENALINE®) (1:1,000 and 1:10,000 solutions)

CLASS OF DRUG

Sympathomimetic

INDICATIONS

1. Severe Bronchospasm
2. Anaphylaxis
3. Cardiac Arrest
4. Symptomatic bradycardia

CONTRAINDICATIONS

1. None when indicated.

DRUG INTERACTION

1. Reduced effects with Beta-adrenergic blocker

ADMINISTRATION

1. Cardiac Arrest

Adult: [1 mg](1:10,000) every 3 - 5 minutes
IV preferred, may be given ET (2 - 2 1/2 times IV dose)

Pediatric: Initial: IV/IO 0.01 mg/kg (1:10,000)
ET 0.1 mg/kg (1:1000)

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EPINEPHRINE (Cont.)

2. Bradycardia

Adult:

& Pediatric: [1 mg/ 1:1,000] in 250 cc NS or D₅W administered at 2 - 10 mcg/min

3. Bronchospasm/Anaphylaxis

Adult: [0.3 - 0.5 mg] (1:1,000) SQ/IM
[0.3 - 0.5 mg] (1:10,000) IV or 1 mg ET (IF SEVERE OR NO RESPONSE TO SQ/IM) Repeat PRN

Pediatric: [0.01 mg/kg (1:1000)], SQ to a maximum dose of 0.3 mg

4. Anaphylactic Shock IV/IO Infusion (Drip)

Adult: 1 mg in 250 ml (4 mcg/ml). Infuse at 2-10 mcg/min

Pediatric: 1 mg in 250 ml (4 mcg/ml). 0.1-1.0 mcg/kg/min

SPECIAL NOTES

1. When used for allergic reactions, increased cardiac workload can precipitate angina and/or ACS in susceptible individuals.
2. Due to peripheral vasoconstriction, it should be used with caution on patients with peripheral vascular insufficiency.

ETOMIDATE (AMIDATE®)

CLASS OF DRUG

Sedative-Hypnotic

INDICATIONS

1. Adjunct in rapid sequence intubation
2. OVER 2 years of age

CONTRAINDICATIONS

1. None in the setting of rapid sequence intubation unless prior hypersensitivity to Etomidate.

DRUG INTERACTION

1. CNS depressants.

ADMINISTRATION

1. 0.3 mg/kg IV over 30-60 seconds (20 mg average for adult)
2. 0.15 mg/kg (half-dose) for all patients in shock

SPECIAL NOTES

1. Etomidate is a general sedative-hypnotic agent used for rapid sedation of a patient undergoing intubation.
2. It provides rapid, complete, and reproducible sedation at a standard dose without the adverse cardiovascular effects often seen with other sedative agents.
3. Onset of sedation-hypnosis is about 1 minute with duration of sedation about 3-10 minutes. Recovery time may be shortened by co-administration with IV Fentanyl.
4. May Cause the following:
 - a. Rapid and deep sedation
 - b. Mild local burning and venous irritation at site of injection
 - c. Mycolonus (muscular contractions)
 - d. Nausea and vomiting may occur if used without paralytics
 - e. Adrenal suppression (when used continuously as in the ICU setting)

FENTANYL (Sublimaze)®

CLASS OF DRUG

Narcotic analgesic

INDICATIONS

1. Moderate-severe pain
2. Adjunct for procedural sedation, rapid sequence intubation

CONTRAINDICATIONS

1. Hypersensitivity
2. Shock or volume depletion
3. Co-intoxicants
4. Caution in elderly patients

DRUG INTERACTION

1. Other CNS depressants
 - a. Alcohol
 - b. Benzodiazepines
 - c. Antiemetics
 - d. Sedative-hypnotics (e.g. Etomidate)

ADMINISTRATION

Adult/Pediatric: 3 mcg/kg IV/IM (recommend 50-100 mcg increments)

SPECIAL NOTES

1. Less nausea, histamine release than Morphine
2. Note 10-fold decrease in amount used: micrograms, not milligram

FUROSEMIDE (LASIX®)

CLASS OF DRUG

Potent loop diuretic

INDICATIONS

1. Pulmonary edema

CONTRAINDICATIONS

1. Hypovolemia
2. Hypotension

DRUG INTERACTION

1. Severe hypotension with antihypertensive and nitrates

ADMINISTRATION

Adult: For patients not currently taking Furosemide, [20 – 40 mg] slow IVP or [0.5 – 1.0 mg/kg] slow IVP (40 – 80 mg). Use lower dose if no previous exposure to the drug. If the patient is currently taking Furosemide, double the daily dose. Patients already on oral diuretics may require higher doses. You may repeat one dose PRN.

Pediatric: [1.0 mg/kg] slow IVP

SPECIAL NOTES

1. It can lead to profound angina with resultant shock and electrolyte depletion (particularly K^+). Therefore, do not use in Hypovolemic states and monitor closely, particularly after IV administration.
2. It should be used in children or pregnant women cautiously.

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GLUCAGON

CLASS OF DRUG

Hormone- hyperglycemic agent

INDICATIONS

1. Documented symptomatic hypoglycemia (BGL less than 60 mg/dl) when an IV cannot be started.
2. Beta blocker overdose with serious signs and symptoms

CONTRAINDICATIONS

1. Patients who will be unable to receive supplemental glucose, orally, IV or rectally after administration of glucagon.
2. Use with caution on patients with Pheochromocytoma.

DRUG INTERACTION

1. Hyperglycemic effects intensified and prolonged by epinephrine.
2. Will precipitate when mix with calcium.

ADMINISTRATION

Note: 1 mg = 1 unit

1. Hypoglycemia

Adult: [0.5 – 1 mg] IM, SQ, IVP, may repeat in 10 – 20 minutes if no response.

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GLUCAGON (Cont.)

Pediatric: [25 mcg/kg] IM, SQ, IVP, may repeat in 10 – 20 minutes if no response.

**THE PATIENT MUST BE GIVEN SUPPLEMENTAL GLUCOSE ASAP;
PO, IV, OR RECTAL.**

2. Beta Blocker Overdose

Adult: [3 to 10 mg] IVP over 1 minute. It. May be followed by an infusion of 2 – 5 mg/hr.

Pediatric: [0.1 mg/kg] IVP over 1 minute, repeat in 5 minutes if needed.

SPECIAL NOTES

1. The patient must be given supplemental glucose ASAP; PO, IV, or Rectal. If this is not possible, the patient may be better off without glucagon. Glucagon will release all of the patient's available glycogen. If the patient is not provided with glucose, the subsequent hypoglycemia will be greater than before glucagon.
2. Glucagon is supplied in a powder and must be reconstituted by sterile water or saline, 1 ml of normal saline for each 1 mg of powder and shaken well.

HYDROXOCOBALAMIN (CYANOKIT®)

CLASS OF DRUG

Hydroxylated active form of Vitamin B12

INDICATIONS

1. Known or suspected cyanide poisoning (reference Carbon Monoxide Poisoning Protocol)

CONTRAINDICATIONS

1. None

ADMINISTRATION

Adult: 5.0 GM over 15 minutes IV repeat x 1
Peds: 70 mg/kg single dose

SPECIAL NOTES

1. May experience transient hypertension

HYDROXYZINE (VISTARIL®)

CLASS OF DRUG

Mild anxiolytic agent with sedating and properties

INDICATIONS

1. Control of nausea and vomiting

CONTRAINDICATIONS

1. Hypersensitivity
2. Pregnant

ADMINISTRATION

Adult: 25-100 mg IM.

SPECIAL NOTES

1. None

IPRATROPIUM BROMIDE (ATROVENT®)

CLASS OF DRUG

Anticholinergic bronchodilator

INDICATIONS

1. Atrovent is used to treat reversible airway obstruction caused by:
 - a. Wheezing associated with asthma
 - b. COPD

CONTRAINDICATIONS

1. Hypersensitivity to the drug or peanuts (soybean)

DRUG INTERACTION

1. None

ADMINISTRATION

Nebulizer

Adult: 0.5 mg in 3 ml of sterile NS given as inhalation therapy over 5-15 minutes.

SPECIAL NOTES

1. Should be used with caution in patients with narrow-angle glaucoma

KETOROLAC (TORADOL®)

CLASS OF DRUG

Non-steroidal anti-inflammatory (NSAID)

INDICATIONS

1. Pain

CONTRAINDICATIONS

1. Hypersensitivity
2. Risk of bleeding
3. Asthma
4. Renal Failure
5. Pregnancy

ADMINISTRATION

Adult: 30 mg IV
15 mg IV for patient >65 years old
60 mg IM

SPECIAL NOTES

1. Ketorolac inhibits platelet aggregation and therefore can cause additional bleeding.
2. Patients that are surgical candidates should not receive Ketorolac as they are at risk for bleeding.
3. Not indicated for pediatric use

LIDOCAINE HYDROCHLORIDE (XYLOCAINE®)

CLASS OF DRUG:

Antidysrhythmic, local anesthetic

INDICATIONS

1. Sustained ventricular tachycardia
2. Ventricular fibrillation/pulseless ventricular tachycardia

CONTRAINDICATIONS

1. Hypersensitivity
2. High-degree AV Blocks

DRUG INTERACTION

1. Additive cardiac depression with phenytoin, quinidine, procainamide, and propranolol

ADMINISTRATION

1. IV Bolus technique

Adult:

2. Ventricular tachycardia: [1 -1.5 mg/kg]. If VT persists, [0.5-0.75 mg/kg] every 3 to 5 minutes, up to 3.0 mg/kg total. Start lidocaine infusion if VT converts (see below).

Ventricular fibrillation and pulseless VT: [1-1.5 mg/kg] (2-2 ½ times normal dose, ET) followed by defibrillation. May repeat to a max dose of 3 mg/kg. Start lidocaine infusion if VF converts (see below).

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LIDOCAINE HYDROCHLORIDE (Cont.)

3. IV Drip technique

Adult:

4. Mix 1gm of lidocaine in 250 ml D₅W or NS for a concentration of 4 mg/ml.
 - If up to 2 mg/kg has been administered, set drip at 2 mg/min
 - If 2 mg/kg has been administered, set drip at 3 mg/min
 - If 3 mg/kg has been administered, set drip at 4 mg/min

b. A second bolus after 10 minutes may be given per physician order.

Pediatric:

5. Mix 120 mg of lidocaine in 100 ml D₅W
 - Set drip at 20-50 µg/kg per min.
 -
6. **ET 2** – 2 /12 times the bolus dose (not preferred)

SPECIAL NOTES

1. For patients over 70 years of age, or with hepatic or renal failure, the loading dose remains the same, but maintenance infusion is run at half the normal rate.

MAGNESIUM SULFATE

CLASS OF DRUG

CNS depressant; antidysrhythmic; electrolyte

INDICATIONS

1. Initial treatment of seizures associated with eclampsia.
2. First-line antidysrhythmic in the treatment of Torsades de Pointes.
3. Acute asthma refractory to other more conventional treatment, or when the effects of beta-adrenergic medications contraindicate their use.

CONTRAINDICATIONS

1. Hypermagnesemia
2. Hypocalcemia
3. Anuria
4. Heart blocks

DRUG INTERACTION

1. Potentiates neuromuscular blocking agents

ADMINISTRATION

1. Ventricular ectopy refractory to lidocaine: [2 gm] slow IVP
2. Pulseless ventricular fibrillation and ventricular tachycardia refractory to lidocaine and bretylium: [2 gm] IVP followed by defibrillation at 360 to 400 joules
3. Ventricular tachycardia, or wide complex tachycardia, unresponsive to lidocaine: [2 gm] slow IVP
4. Treatment of seizures associated with Eclampsia: 4 gm slow IVP

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MAGNESIUM SULFATE (cont.)

5. Acute asthma: 1 gm slow IVP
6. Torsades de Pointes: [2 gm] IV push

SPECIAL NOTES

1. Monitor deep tendon reflexes often, especially those patients receiving a maintenance infusion.
2. Calcium Gluconate will reverse the toxic effects of magnesium sulfate.

METHYLPREDNISOLONE (MEDROL®, SOLU-MEDROL®)

CLASS OF DRUG

Glucocorticoid; anti-inflammatory; immunosuppressant

INDICATIONS

1. Asthma/COPD Exacerbation
2. Acute spinal cord injury if order on On-Line Medical Control (MUST be in contact with physician).

CONTRAINDICATIONS

1. Hypersensitivity

DRUG INTERACTION

1. Potential hypokalemia may increase risk of digitalis toxicity
2. May increase insulin requirement
3. Additive hypokalemia with diuretic

ADMINISTRATION

2 mg/kg IV up to 125 mg

SPECIAL NOTES

1. None.

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MORPHINE SULFATE

CLASS OF DRUG

Narcotic analgesic

INDICATIONS

1. Analgesia for patients with major pain such as burns, and isolated fractures
2. Treatment of acute pulmonary edema
3. Acute myocardial infarction
4. Sedation for procedures

CONTRAINDICATIONS

1. Hypersensitivity
2. Hypotension is a relative contraindication to use. Remember that some people will be hypotensive in response to pain itself. Be cautious.
3. Use with caution in patients with head injury as this may mask changes in their clinical condition.
4. Do not use in persons with respiratory difficulties because their respiratory drive might be depressed, except in pulmonary edema.
5. In the presence of major blood loss, the body's compensatory mechanisms may be suppressed by the use of morphine, and the hypotensive effect will become very prominent. Do not use it in these circumstances.

DRUG INTERACTION

1. Additive effects with other CNS depressants
2. MAO inhibitors can cause unpredictable and severe reactions, reduce dose to 25% of a usual dose.

(Continued next page)

MORPHINE (Cont.)

ADMINISTRATION

Adult: [2 - 20 mg] slow IV push until desired effect achieved (Use lowest effective dose to avoid complications)

Pediatric: [0.05 - 0.2 mg/kg] slow IVP titrated to effect with a maximum dose of 15 mg

SPECIAL NOTES

1. Take vital signs before and 2 minutes after administration.
1. Often causes vomiting; administer slowly.

NALOXONE (NARCAN®)

CLASS OF DRUG

Narcotic antagonist

INDICATIONS

1. Reversal of narcotic effects, particularly respiratory depression, due to narcotic drugs, whether ingested, injected, or administered in the course of treatment. Narcotic drugs include agents such as oxycontin, morphine, Demerol®, heroin, Dilaudid®, Percodan®, codeine, Lomotil®, propoxyphene (Darvon®), pentazocine (Talwin®).
2. For unconsciousness of unknown etiology to rule out (or reverse) narcotic depression

CONTRAINDICATIONS

1. Hypersensitivity
2. Absences of indication

DRUG INTERACTION

1. May induce narcotic withdrawal

ADMINISTRATION

Adult: [0.4 mg] IVP (2.0 mg total dose) - [0.8 mg] if IM, SQ, ET
Titrate to respiratory effort/rate. May be repeated at 2 - 3 minutes if needed

Pediatric: [0.01 mg/kg] to 5 yrs or 20 kg, IV, ET, IM, SQ, and IO
May be repeated at 0.1 mg/kg if no response

Neonate: [0.01 mg/kg] slow IVP, ET, IM, SQ, IO; repeat in 2-3 minutes if needed

(Mix 1 ml of naloxone, 0.4 mg in 9 ml of D₅W, which gives 0.04 mg/ml)

SPECIAL NOTES

1. The patient may quickly become conscious and combative.

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NITROGLYCERIN

CLASS OF DRUG

Anti-anginal agent/vascular dilating agent

INDICATIONS

1. Chest pain, anginal pain
2. Congestive heart failure with severe pulmonary edema

CONTRAINDICATIONS

1. Hypersensitivity
2. Severe hypotension

DRUG INTERACTION

1. Additive hypotension with beta-adrenergic blockers, antihypertensives, calcium channel blockers, and phenothiazines.
2. Tricyclic antidepressants and antihistamines may interfere with buccal absorption.

ADMINISTRATION

Adult:

1. Sublingual: [0.3 - 0.4 mg] tablet/spray. Repeat every 3 - 5 minutes as needed.
2. Ointment: ½"-2" to chest wall with Medical Control contact.

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NITROGLYCERIN (Cont.)

SPECIAL NOTES

1. Common side effects may include: throbbing headache, flushing, dizziness, and burning under the tongue (if these side effects are noted, the pills may be assumed potent, not outdated).
2. Less common effect: marked hypotension, particularly orthostatic.
3. Paramedics should use their supply of nitroglycerin, not the patient's.
4. Use with caution with patient not previously receiving nitroglycerin.
5. Generalized vasodilation may cause profound hypotension and reflex tachycardia.
6. NTG tablets lose potency easily, should be stored in a dark glass container with a tight lid, and not exposed to heat. NTG spray does not have this problem.
7. Use only with Medical Control on patients with systolic BP below 90 mmHg.

ONDANSETRON (ZOFRAN®)

CLASS OF DRUG

Serotonin receptor antagonist; antiemetic

INDICATIONS

1. Nausea
2. Vomiting

CONTRAINDICATIONS

1. Known hypersensitivity

ADMINISTRATION

Adult: 4 mg IV/IO
1-12 yrs: 2 mg IV/IO

SPECIAL NOTES

1. Works best with nausea associated with GI issues and medication reactions, such as opiates.
2. May repeat above dose once as needed.

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OXYGEN

CLASS OF DRUG

Gas

INDICATIONS

1. Suspected hypoxia or respiratory distress from any cause
2. Acute chest pain in which myocardial infarction is suspected
3. Shock (decreased oxygenation of tissue) from any cause
4. Trauma
5. Carbon monoxide poisoning

CONTRAINDICATIONS

1. None

DRUG INTERACTION

1. None

ADMINISTRATION

Adult & Pediatric:

Dosage	Indications
1. Low flow (NC 1 - 2 L/Min)	Patients with chronic lung disease with unusual dyspnea or other problems (see below).
2. Moderate flow (NC 4 - 6 L/Min)	Precautionary use for trauma, chest pain, etc.
3. High flow (NRB 10 - 15 L/Min)	Severe respiratory distress, either medical or traumatic, shock, or at providers discretion

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OXYGEN (Cont.)

SPECIAL NOTES

1. If the patient is not breathing adequately on his own, the treatment of choice is assisted ventilation, not just supplemental O₂.
2. A very small percentage of patients with chronic lung disease lack sensitivity to carbon dioxide levels and breathe only because of their hypoxic drive. Administration of O₂ **MAY** depress their respiratory drive. **DO NOT WITHHOLD OXYGEN IN CRITICALLY ILL PATIENTS BECAUSE OF THIS POSSIBILITY. BE PREPARED TO ASSIST VENTILATION IF NEEDED.** An increasing upward trend in patient's capnography may be determinate of pending respiratory depression due to supplemental oxygen.
3. Oxygen toxicity (overdose) is not a hazard from acute administration.
4. Nasal prongs work equally well on nose and mouth breathers.
5. Giving 100 % oxygen to all patients is unnecessary. If the patient has 96% O₂ saturation and is in no acute distress, a NRB is not necessary.

OXYTOCIN (PITOCIN®)

CLASS OF DRUG

Pituitary hormone - uterine vasoconstrictor

INDICATIONS

1. Control of post-partum hemorrhage, when other methods fail

CONTRAINDICATIONS

1. Potential of a remaining fetus

DRUG INTERACTION

1. Hypertension with vasopressors

ADMINISTRATION

Note: Injectable oxytocin (PITOCIN®) contains 10 USP units (20 mg) per ml

Adult

20 units in 1000 ml volume expander (NS or LR) started wide open.

SPECIAL NOTES

0. None

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PROCAINAMIDE HYDROCHLORIDE (PRONESTYL ®)

CLASS OF DRUG

Antidysrhythmic

INDICATIONS

1. Sustained ventricular tachycardia (with pulse) refractory to lidocaine
2. Management of ventricular dysrhythmias when lidocaine contraindicated

CONTRAINDICATIONS

1. Pre-existing QT prolongation or torsades de pointes
2. High AV blocks unless a pacemaker is in place.
3. Hypersensitivity

DRUG INTERACTION

1. Additive effect with other antidysrhythmics
2. Additive anticholinergic effects with other anticholinergics.
3. Neurological toxicity with lidocaine

ADMINISTRATION

Adult: [20- 30 mg/min] IVP until:

- a. The dysrhythmia is suppressed
- b. Hypotension ensues
- c. The QRS is widened by 50% of its original width
- d. A total of 17 mg/kg of the medication has been administered
- e. Infusion [1 gm] in 250 ml D₅W or NS at 1 to 4 mg per minute

Pediatric: Not currently recommended or given in pre-hospital settings.

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PROCAINAMIDE HYDROCHLORIDE (Cont.)

SPECIAL NOTES

1. May cause severe hypotension, bradycardia and heart blocks
2. Nausea and vomiting are common.

PROMETHAZINE (PHENERGAN®)

CLASS OF DRUG

Antiemetic

INDICATIONS

Treatment and prevention of nausea and vomiting.

CONTRAINDICATIONS

1. Hypersensitivity to phenothiazines
2. Comatose patients
3. CNS depression due to drugs
4. Children < 2yrs old, or critically ill or dehydrated.
5. Lactation

DRUG INTERACTION

1. CNS depressants -may increase, prolong or intensify the sedative action.
2. Anticholinergics - use caution
3. MAO inhibitors - use caution

ADMINISTRATION

Adults: [12.5-25 mg] PO, IM, IV, or PR

Children > 2yrs [0.25-0.5 mg/kg] PO, IM or PR
(Use should be limited to prolonged vomiting in children). Ondansetron is a better choice.

SPECIAL NOTES

1. Use as an adjunct if ondansetron fails.
2. Use cautiously in the elderly, in patients with hypertension, epilepsy, sleep apnea, cardiovascular disease, impairment of the liver, and pregnancy.
3. May caused marked drowsiness

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SODIUM BICARBONATE

CLASS OF DRUG

Alkalinizing agent

INDICATIONS

1. To correct metabolic acidosis found during prolonged cardiac arrest, after initial interventions.
2. May be used as an adjunct in other causes of metabolic acidosis such as near-drowning or diabetic ketoacidosis only **with on-line medical control**.
3. Overdoses of tricyclic antidepressants

CONTRAINDICATIONS

1. Suspected metabolic or respiratory alkalosis

DRUG INTERACTION

1. Inactivates most drugs, and must not given in the same IV at same time.
2. Causes calcium preparations to precipitate

ADMINISTRATION

1. Cardiac Arrest

Adult & Pediatric: [1 mEq/kg] IVP

2. Other special circumstances, such as tricyclic antidepressant overdose

Adult & Pediatric: [1 mEq/kg] IVP followed by 50 mEq in 1000 ml NS wide open.

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SODIUM BICARBONATE (Cont.)

SPECIAL NOTES

1. This agent is no longer a first-line drug for cardiac arrest as per ACLS algorithms.
2. Each amp of bicarbonate contains 44 or 50 mEq of Na⁺⁺. In persons with cardiac disease this will increase intra-vascular volume and further stress the heart.
3. Hyperosmolarity of the blood can occur because the NaHCO₃ is concentrated. This results in cerebral impairment.
4. These dosages are a very rough guide. Blood gasses should be obtained as soon as possible to direct further therapy.
5. Correct CPR, hyperventilation, defibrillation and drug therapy is more important than bicarbonate

SUCCINYLCHOLINE (ANECTINE®)

CLASS OF DRUG

Neuromuscular blocker (depolarizing).

INDICATIONS

1. To facilitate intubation
2. Terminating laryngospasm
3. Muscle relaxation

CONTRAINDICATIONS

1. Hypersensitivity
2. Skeletal muscle myopathies
3. Rhabdomyolysis
4. History of malignant hyperthermia
5. Major burns or crush injury greater than 24 hours old

DRUG INTERACTION

1. None

ADMINISTRATION

Adult & Pediatric: 1-1.5 mg/kg IV/IM

SPECIAL NOTES

1. May exacerbate hyperkalemic states
2. Be sure to use some form of sedation
3. Pre-treat pediatric patients with Atropine

TERBUTALINE (BRETHINE®)

CLASS OF DRUG

Bronchodilator, uterine smooth muscle relaxant

INDICATIONS

1. Asthma
2. Control of pre-term labor

CONTRAINDICATIONS

- 1 Hypersensitivity

DRUG INTERACTION

1. Additive effect with other adrenergic drugs
2. Beta-adrenergic blockers may negate effects.

ADMINISTRATION

1. Asthma

Adult: Small Volume Nebulizer (SVN): [1 - 3 mg] in 3 cc NS

SQ: [0.25 mg] every 15 - 30 minutes up to .5 mg in 4 hours

Pediatric: MDI: Only

SPECIAL NOTES

1. None

TOPICAL OPHTHALMIC ANESTHETIC (PROPARACAINE - OPTHAINÉ®, ALACAINE ®)

CLASS OF DRUG

Topical/local ophthalmic anesthetic

INDICATIONS

1. Ocular pain relief prior to irrigation of the eyes

CONTRAINDICATIONS

1. Hypersensitivity
2. Known or suspected trauma that may have produced intraocular injury.

DRUG INTERACTION

1. None

ADMINISTRATION

1. [1 - 2 drops] of 0.5% solution in affected eye. May repeat as needed

SPECIAL NOTES

1. Assess visual acuity as soon as possible.
2. Not an EMT-B drug.

VASOPRESSIN (PITRESSIN®)

CLASS OF DRUG

Hormone (antidiuretic)

INDICATIONS

1. May be used as an alternative pressor to epinephrine in the treatment of adult shock-resistant Ventricular Fibrillation.
2. Useful in hemodynamic support in vasodilatory shock (e.g. septic shock)

CONTRAINDICATIONS

1. Chronic renal failure
2. Known hypersensitivity to beef or pork proteins

DRUG INTERACTION

1. None

ADMINISTRATION

Adult: [40 units] IV, IO and ET in a single dose

SPECIAL NOTES

1. Potent vasoconstrictor. Increased peripheral vascular resistance may provoke cardiac ischemia and angina.
2. Not recommended for responsive patients with coronary artery disease.

VECURONIUM (NORCURON®)

CLASS OF DRUG

Long acting paralytic (non-depolarizing)

INDICATIONS

1. Continued paralysis after Succinylcholine administration and successful intubation if necessary

CONTRAINDICATIONS

1. Hepatic disease

ADMINISTRATION

Adult: 0.1 mg/kg IV.

SPECIAL NOTES

1. Remember to use some kind of sedative (Versed preferred) in conjunction with the paralytic.
2. Paralysis will mask seizure activity, use with caution in susceptible patients.

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