EMS Scope of Practice Guidance

Authorized EMS certified provider (EMR, EMT, AEMT, Paramedic) scope of practice provisions in law include: Medical Direction (18.71.205 RCW, 246.976.920 WAC), environment of practice (246-976-182 WAC) and training (18.73.081 RCW). In general, EMS certified providers are only authorized to provide care under the authority of the Medical Program Director (MPD) and in compliance with Department of Health (department) approved MPD patient care protocols. MPD's are appointed by the Secretary of the Department of Health. EMS certified providers are only authorized to provide care in the pre-hospital emergent environment unless practicing under programs authorized by RCW 35.21.930. EMS certified providers are authorized to perform skills and procedures listed in this guidance document if a department approved MPD patient care protocol is in place. Other regulations may apply.
January 13, 2020

Eric Cooper, MPD  
812 NW 83rd St  
Seattle, WA 98117

Dear Dr. Cooper:

Please be advised that the Snohomish County MPD Protocols, dated January 1, 2020, are approved. We will place an electronic copy on the MPD SharePoint site and a hard copy in our archives for reference.

Prehospital patient care protocols are defined in WAC 246-976-010 as “department-approved, written orders adopted by the MPD under RCW 18.73.030(15) and 70.168.015(27) which direct the out-of-hospital care of patients. These protocols are related only to delivery and documentation of direct patient treatment. The protocols meet or exceed statewide minimum standards developed by the department in rule as authorized in chapter 70.168 RCW.”

Thank you for the hard work and collaboration demonstrated in completing this project. Please let me know if you have any questions or concerns.

Regards,

Catie Holstein, EMS Program Manager  
Office of Community Health Systems, Emergency Care System  
Washington State Department of Health  
P.O. Box 47853  
Olympia, WA 98504-7853  
Phone: (360) 236-2841  
catie.holstein@doh.wa.gov
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Cardiogenic Shock
Prehospital Cardiac Triage Destination Procedure
Pulmonary Edema and Congestive Heart Failure
Cardiac Arrest - Adult Universal Algorithm
AHA ACLS Cardiac Arrest Algorithm (2018)
AHA ACLS Bradycardia Algorithm (2018)
Atrial Fibrillation/Flutter
AHA ACLS Tachycardia Algorithm (2015)
Left Ventricular Assist Device (LVAD)
LVAD Algorithm

CARDIAC EMERGENCIES - PEDIATRIC

General Guidelines
Cardiac Arrest - Pediatric Universal Algorithm
AHA ACLS Pediatric Cardiac Arrest Algorithm (2018)
Pediatric Bradycardia
PALS Bradycardia Algorithm
Pediatric Supraventricular Tachycardia
PALS Tachycardia Adequate Perfusion
Pediatric Wide Complex Tachycardia
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MEDICAL EMERGENCIES

Abdominal Pain—Not Related to Pregnancy or Trauma
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Asthma
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Cerebrovascular Accident (CVA)
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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 proactive in the implementation of these protocols and should not withhold or delay any indicated intervention. Providers must remember to “FIRST DO NO HARM”.

Periodic revisions will be made in order to reflect the best possible care for our patients that is consistent with current acceptable medical practices. These revisions must be made with the established EMS leadership of each service in conjunction with local medical community involvement. Reviews and revisions will be logged in the revision appendix and noted on each protocol. This version was approved by the DOH on January 13, 2020 and is entitled Version 4. Subsequent additions or corrections between updates will be noted as Version 4.1, 4.2, etc. These protocols must replace and supersede all prior EMS protocols in Snohomish County.

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 digital copy of this protocol by written request from their service Medical Director. Contact the Snohomish County EMS Office for further information.
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 Eric Cooper, MD, FACEP.

Continuous Quality Improvement / Quality Assurance
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/QA is defined as a proactive involvement in issues and applications to constantly assess the value and direction of the EMS system. Components of CQI/QA 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/QA process is mandatory to function within the system.

The primary focus of CQI/QA is on “system performance”. Specifically, CQI/QA focuses on the bigger picture of our system, including protocols, guidelines, equipment, training and standard operating procedures. The overall goal is to identify system modifications that will improve patient care.

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 filing a complaint with the Washington State Department of Health.

All 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.
Guidelines, Protocols and Checklists

This document contains both general guidelines and specific EMS protocols for use by EMS responders in Snohomish County. 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:

- Provide standing medical orders for pre-hospital providers.
- 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 prehospital 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 prehospital 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 prehospital providers as an independent field practitioner.

Any deviation from a protocol must have prior approval from MEDICAL CONTROL.
EMS Checklists

Checklists are scientifically proven to significantly improve patient care. Further they enhance consistency, quality and teamwork.

Medical Program Director approved EMS checklists must be used on all high acuity calls.

- Checklists must be used in real-time.
- Checklist use must be noted in the EHR.
- Checklist use will be reviewed on all QA cases.

All providers on scene are responsible to assure checklists are used.

- It is the expectation that the MSO or BC will initiate the use of the checklist if an officer or lead medic has not or cannot execute the checklist.
- Two providers or less on scene: checklist should be initiated when time allows and as soon as possible.

Available Checklists and Guides Include, but are not Limited to:

<table>
<thead>
<tr>
<th>Clinical:</th>
<th>Procedural:</th>
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<tbody>
<tr>
<td>• Anaphylaxis</td>
<td>• Cardioversion</td>
</tr>
<tr>
<td>• Asthma</td>
<td>• Double Sequential DEFIB</td>
</tr>
<tr>
<td>• Cardiac Arrest</td>
<td>• Intubation (RSI)</td>
</tr>
<tr>
<td>• Post Arrest/ROSC</td>
<td>• Post Intubation</td>
</tr>
<tr>
<td>• Chest Pain</td>
<td></td>
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</tbody>
</table>
| • CHF/Pulmonary Edema | **Guides:**
| • COPD | • Alternative Destination |
| • Seizure | • Downgrade |
| • Sepsis | • Non-Transport / Refusal |
| • Stroke | • Freestanding ED |
| • Syncope |   • Anticoagulant List |
| • Trauma | • BLS Canceling ALS |

Special Situations:

- Crush Injury
- Dive Injury
- Eclampsia
- LVAD

*The current checklists are in a separate document and can be found on the Snohomish County EMS website under Member Resources at [www.snocountyems.org](http://www.snocountyems.org)*

*Many thanks to South Snohomish County Fire & Rescue for sharing their resources.*
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 must be utilized. MEDICAL CONTROL must 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. Competent, rational adults have a right to accept or refuse treatment recommendations. Patients considering refusing treatment or transport must be educated about their decision. They need to be able to demonstrate that they understand the potential reasons for concern and when to seek further treatment.

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., and/or not within the catchment area)

When in doubt, contact MEDICAL CONTROL and fully document all of your actions.
Patient Care Responsibility

The authorized individual with the requested level of certification as recognized by the Washington State Department of Health, who is duly dispatched, is in charge of patient care.

These protocols must 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, or present on scene, be prevented from making patient contact, regardless of patient condition.
- The appropriately trained and dispatched provider first on scene must be in charge of patient care, unless and until that provider requests a higher trained, EMS system participating provider who has arrived on scene. 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. Repeated abandonment of a patient to a lesser level of care will be reported to the State of Washington Department of Health.
- All patient contacts and interventions must be documented in the EHR.

Receiving Medical Facility

In general, patients with non-life-threatening injuries or disease states will be delivered to the Emergency Department of their or their family’s choice. 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 a Specific Center (Trauma, Cardiac, and/or Stroke). 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, or the patient is transported by physician order to his/her place of residence.

Paramedics are not required to remain with a patient if ALS care is not warranted. Following a full patient assessment and examination, a Paramedic or Advanced EMT may transfer a patient to an EMT 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 must be documented by entering an 'ALS Assessment' into the flow chart of the patient’s care report. This is the only time ALS Assessment is to be utilized.

In the event of a transfer from ALS/AEMT to a lower level of care, the Paramedic/AEMT 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 patient report is provided to the appropriate receiving personnel.
- A verbal turnover report should include all pertinent history and assessment findings including (ref: COP: "EHR User Policy")
  - Any medications administered
  - Any treatments given
  - Summary of vital signs during transport
  - Should the provider deliver a medication infusion (epinephrine, lidocaine, norepinephrine) the provider MUST document the following items: name of drug, amount of drug, amount of IV bag, volume infused prior to turnover, rate of administration, and the nurse’s name receiving the patient.
- All patient contacts must be documented. The ENTIRE (locked) report must be completed within 120 minutes from transfer of care.
  - A care report is required for all transported and non-transported patients, to include patient lift assists.
  - Transporting agencies finishing reports at hospitals within their response zone may respond to another emergency incident provided a verbal report has been given to the receiving physician. Any unfinished report(s) must be finished immediately after the second incident.
Agencies still utilizing handwritten reports must provide a COMPLETE copy of the patient care report at the hospital **BEFORE** leaving the ED.

Any medical information added after a report has been locked MUST be included in the "appended narrative" section and a new copy sent to the receiving facility.

**Utilization of Private Ambulance**

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

- When specifically dispatched by the EMS agency having jurisdiction
- 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 must contact the appropriate emergency dispatch agency.

**Transfer of care by paramedics of an ALS patient to a private RN ambulance service for transport must only occur with direct online MEDICAL CONTROL approval. Transport by air ambulance is an exception to this rule.**
EMS PROTOCOLS

Protocol Format

SCEMS Protocols are progressive-developing in stages and advancing step by step. Each provider is expected to perform to his/her level of certification and training, encompassing all care that precedes that level. At no time should a provider perform procedures that he/she has not been trained to perform, even if it falls within their level of certification.

Definitions:

**All EMS Providers**: Includes certified Emergency Medical Responders (unless specified otherwise), EMT, Advanced EMT and Paramedics.

**BLS and Above Providers**: Basic Life Support (BLS) care provided by certified EMTs, Advanced EMTs and Paramedics.

**AEMT and Above Providers**: Advanced EMT (AEMT) care provided by certified Advanced EMTs and Paramedics.

**ALS Providers**: Advanced Life Support (ALS) care provided by certified 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 interventions 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 EHR
- If the provider is attempting to look up or gain information on a specific drug or it's interactions, Poison Control is an appropriate resource. Providers should obtain the name of the poison control consultant for the patient care report. Providers can then contact MEDICAL CONTROL for treatment and transport decisions, as poison control does not serve as MEDICAL CONTROL.
- If a patient refuses an exam, document physical exam findings you are able to visualize.
Documentation Guidelines

In addition to documentation requirements in WAC 246-9796-330/246-976-430, SCEMS and/or the MPD, usually through the ESO/Documents Standard or similar workgroup will require certain information to be obtained in the Electronic Health Record (EHR). These will usually be broadcast through email minutes from the workgroup meeting, Policy Development and Implementation Committee (PDIC), and/or MEDICAL CONTROL Committee (MCC).

FLOW CHART

The following must be documented in the FLOW CHART

- All procedures
- All medications administered, including those given prior to arrival (PTA)
- All IV starts, including unsuccessful attempts
- All IV fluids given
- All contacts with online MEDICAL CONTROL
- All ALERTS (Trauma/Stroke/STEMI/Sepsis)

VITALS

The following must be documented in the VITALS

- All cardiac arrest’s initial rhythm, any change in rhythm, and the final rhythm
- All 12-lead EKGs with interpretation

ALS ASSESSMENT TAB

- The ALS Assessment Tab must be used every time a Paramedic downgrades patient care to a lower level provider
- The ALS Assessment Tab must not be used for anything else.

BLS ASSESSMENT TAB

- The BLS Assessment Tab must be used every time an AEMT or EMT cancels an ALS provider prior to that provider arriving on scene
- The BLS Assessment Tab must not be used for anything else.

CHEST PAIN/DISCOMFORT IMPRESSION VS. CHEST PAIN, NON-CARDIAC

- The primary or secondary impression of Chest pain/discomfort must only be used for patients considered to have a possible acute coronary syndrome and require a 12-lead EKG and the consideration of Aspirin administration. Otherwise utilize chest pain, non-cardiac
AIRWAY MANAGEMENT

Airway Management - General
Indications: Patients with failure to oxygenate, ventilate, or protect their airway due to a decreased level of consciousness or state of respiratory failure. Underlined items in this overview refer to multiple protocols, procedures, and medications located in the following pages.

All EMS Providers
- Head-tilt/Chin-lift or jaw thrust as appropriate
- Oropharyngeal Airway (OPA)
- Nasopharyngeal Airway (NPA)
- Bag-Valve-Mask (BVM) assistance

BLS and Above Providers
- Supraglottic Airway Placement (protocol follows)
- Supraglottic Airway Removal (protocol follows)

ALS Providers
- Endotracheal intubation
  - Direct and video laryngoscopy
  - Drug Assisted Intubation (protocol follows)
  - Rapid Sequence Intubation (protocol follows)
  - Delayed Sequence Intubation (protocol follows)
- Pre-Intubation
  - Pre-Oxygenate
    - Utilize 2 sources of Oxygen including nasal cannula at 15 lpm for a minimum of 3 minutes to get O2 saturation >=94%
    - 2 person BVM with PEEP valve as needed
  - Continuous O2, ETCO2, and cardiac monitoring
  - Consider pretreatment with/be prepared to administer Atropine (0.02mg/kg, max 0.5mg) to patients <6 yr old who develop bradycardia not due to hypoxia.
  - Do not assist with BVM ventilations after induction unless SPO2 drops below 93% or pre-existing metabolic acidosis is suspected
  - Refer to appropriate medication dosing protocols
  - Routine preparation and use of the Bougie is expected

Cont.
Airway Management - General Cont.

- Confirmation of Endotracheal Intubation
  - Continuous ETCO2 monitoring MUST be performed on all intubated patients
  - ETCO2 should not be used as the sole indicator of successful tube placement
  - Other confirmation methods include:
    - Visualization of the tube passing through the cords
    - Bilateral and equal breath sounds
    - Absence of breath sounds over the epigastrium
    - Use of esophageal bulb detector or Toomey syringe
  - Reconfirm tube placement after each move and at transfer of care
- Post intubation management (protocol follows)
- Difficult airway management (protocol follows)
  - Cricothyrotomy - Surgical (adult only) (procedure follows)
  - Cricothyrotomy - Needle (pediatric only) (procedure follows)
- Documentation of intubation
  - Description of all attempts at airway management
    - *For purposes of reporting intubation, an attempt shall be defined as any time a laryngoscopy blade passes the lips with intent to manage the airway*
  - ETCO2 numerical values and waveforms must be recorded in the EHR
  - SPO2 before, during, and after intubation
  - Tube depth at time of placement, after moves, and at transfer of care
# Airway Management - Drug Assisted Intubation (DAI)

**ALS Providers** Airway management in a patient with an intact gag reflex

<table>
<thead>
<tr>
<th>Indications</th>
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<tbody>
<tr>
<td>Use of sedation to facilitate endotracheal intubation in the appropriate patient when paralytics are undesirable</td>
<td></td>
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<table>
<thead>
<tr>
<th>Contraindications</th>
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<tbody>
<tr>
<td>Patient less than 13 kg</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
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</table>

**Preparation**

- Pre-Oxygenate
  - Utilize 2 sources of Oxygen including Nasal Cannula at 15 lpm for a minimum of 3 minutes to get O2 saturation >=94%
  - 2 person BVM with PEEP valve as needed
- Continuous O2, ETCO2, and cardiac monitoring

<table>
<thead>
<tr>
<th>Medication</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Either Etomidate, OR Ketamine, OR Versed</td>
<td></td>
</tr>
</tbody>
</table>
  - Refer to medication dosing protocols

<table>
<thead>
<tr>
<th>Verification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous ETCO2 monitoring MUST be performed following intubation</td>
<td></td>
</tr>
<tr>
<td>Utilize multiple methods to confirm endotracheal tube placement</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reassess immediately and frequently</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Assessment may include full set of vital signs, lung sounds, O2 saturation, and ETCO2</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of all attempts at airway management</td>
<td></td>
</tr>
<tr>
<td>ETCO2 numerical values and waveforms must be recorded in the EHR</td>
<td></td>
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<tr>
<td>SPO2 before, during, and after intubation</td>
<td></td>
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<tr>
<td>Tube depth at time of placement, after moves, and at transfer of care</td>
<td></td>
</tr>
</tbody>
</table>
Airway Management - Delayed Sequence Intubation (DSI)

**ALS Providers** Method of pre-oxygenation of the altered, combative, and/or agitated patient requiring airway management

<table>
<thead>
<tr>
<th>Indications</th>
<th></th>
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<tbody>
<tr>
<td>● Use of sedation with Ketamine to facilitate pre-oxygenation in the appropriate patient</td>
<td></td>
</tr>
<tr>
<td>● Provider assumes total responsibility for protecting the patient's airway</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Patient less than 13kg</td>
<td></td>
</tr>
<tr>
<td>● Contraindications to Ketamine</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Preparation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Pre-Oxygenate</td>
<td></td>
</tr>
<tr>
<td>○ Utilize 2 sources of Oxygen including Nasal Cannula at 15 lpm for a minimum of 3 minutes to get O2 saturation &gt;=94%</td>
<td></td>
</tr>
<tr>
<td>○ 2 person BVM with PEEP valve as needed</td>
<td></td>
</tr>
<tr>
<td>● Continuous O2, ETCO2, and cardiac monitoring</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Ketamine</td>
<td></td>
</tr>
<tr>
<td>○ Refer to medication dosing protocols</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Continuous ETCO2 monitoring MUST be performed following intubation</td>
<td></td>
</tr>
<tr>
<td>● Utilize multiple methods to confirm endotracheal tube placement</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reassess immediately and frequently</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Assessment may include full set of vital signs, lung sounds, O2 saturation, and ETCO2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Response to medication</td>
<td></td>
</tr>
<tr>
<td>● ETCO2 numerical values and waveforms must be recorded in the EHR</td>
<td></td>
</tr>
<tr>
<td>● SPO2 before, during, and after intubation</td>
<td></td>
</tr>
<tr>
<td>● Tube depth at time of placement, after moves, and at transfer of care</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● A small percentage of patients may respond well to the procedure, obviating the need for endotracheal intubation. Refer to CPAP procedure</td>
<td></td>
</tr>
</tbody>
</table>
Airway Management - Rapid Sequence Intubation (RSI)

**ALS Providers** Airway management in a patient with an intact gag reflex

<table>
<thead>
<tr>
<th>Indications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Use of sedation and paralysis to facilitate endotracheal intubation in the appropriate patient</td>
<td></td>
</tr>
<tr>
<td>• Provider assumes total responsibility for protecting the patient’s airway</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Patient less than 13kg</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
</tr>
</thead>
</table>

**Preparation**

- Pre-Oxygenate
  - Utilize 2 sources of Oxygen including Nasal Cannula at 15 lpm for a minimum of 3 minutes to get O2 saturation >=94%
  - 2 person BVM with PEEP valve as needed
- Continuous O2, ETCO2, and cardiac monitoring

<table>
<thead>
<tr>
<th>Medication</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Induction</td>
<td></td>
</tr>
<tr>
<td>- Either Etomidate, OR Ketamine, OR Versed</td>
<td></td>
</tr>
<tr>
<td>■ Refer to medication dosing protocols</td>
<td></td>
</tr>
<tr>
<td>• Paralysis</td>
<td></td>
</tr>
<tr>
<td>- Either Succinylcholine OR Rocuronium</td>
<td></td>
</tr>
<tr>
<td>■ Refer to medication dosing protocols</td>
<td></td>
</tr>
</tbody>
</table>

**Verification**

- Continuous ETCO2 monitoring MUST be performed following intubation
- Utilize multiple methods to confirm endotracheal tube placement

**Reassess immediately and frequently**

- Assessment may include full set of vital signs, lung sounds, O2 saturation, and ETCO2

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Description of all attempts at airway management</td>
<td></td>
</tr>
<tr>
<td>• ETCO2 numerical values and waveforms must be recorded in the EHR</td>
<td></td>
</tr>
<tr>
<td>• SPO2 before, during, and after intubation</td>
<td></td>
</tr>
<tr>
<td>• Tube depth at time of placement, after moves, and at transfer of care</td>
<td></td>
</tr>
</tbody>
</table>
Airway Management - Post Intubation Management

**ALS Providers** Ongoing sedation and maintenance of an advanced airway

<table>
<thead>
<tr>
<th>Indications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Patients with an advanced airway in place and potential/actual gag reflex</td>
<td></td>
</tr>
<tr>
<td>● To be addressed immediately following verification and securing of the tracheal tube</td>
<td></td>
</tr>
<tr>
<td>● Provider assumes total responsibility for protecting the patient’s airway</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● None except as related to medication protocols</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
</tr>
</thead>
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<tr>
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<tbody>
<tr>
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<tr>
<td>● Utilize multiple methods to confirm endotracheal tube placement</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Securing the tube</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Commercial tube securing devices preferred over tape or makeshift devices</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Medication - Refer to medication dosing protocols</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Do not use Etomidate for continued sedation</td>
<td></td>
</tr>
<tr>
<td>● Benzodiazepines with or without opiates should be used to keep patient sedated unless otherwise already obtunded</td>
<td></td>
</tr>
<tr>
<td>○ No maximum dose as long as BP is acceptable</td>
<td></td>
</tr>
<tr>
<td>● Ketamine may be used for continued sedation</td>
<td></td>
</tr>
<tr>
<td>● Further paralysis should be avoided if possible, in favor of adequate sedation</td>
<td></td>
</tr>
<tr>
<td>○ The shortest-acting non-depolarizing agent that will provide adequate paralysis should be chosen</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reassess immediately and frequently</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Assessment may include full set of vital signs, lung sounds, O2 saturation, and ETCO2</td>
<td></td>
</tr>
<tr>
<td>● Decrease supplemental Oxygen concentration to lowest level needed to maintain O2 saturation &gt;93% (except for suspected carbon monoxide poisoning)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
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</thead>
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<tr>
<td>● Description of all attempts at airway management</td>
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<tr>
<td>● SPO2 before, during, and after intubation</td>
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<td>● Tube depth at time of placement, after moves, and at transfer of care</td>
<td></td>
</tr>
</tbody>
</table>
Airway Management - Difficult Airway

**ALS Providers** Airway management in a patient with predictable or proven barriers

<table>
<thead>
<tr>
<th>Indications</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Provider is unable to secure an endotracheal tube after three unsuccessful laryngoscopy attempts</td>
</tr>
<tr>
<td>● O2 saturation &lt;90% at onset of, during, or in between laryngoscopy attempts</td>
</tr>
<tr>
<td>● The need for, or use of needle or surgical cricothyrotomy</td>
</tr>
<tr>
<td>● Use of a supraglottic airway after an unsuccessful laryngoscopy attempt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predicting difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Anatomic</td>
</tr>
<tr>
<td>○ Large incisors, small mandible, short neck</td>
</tr>
<tr>
<td>● Health states</td>
</tr>
<tr>
<td>○ Arthritis of the cervical spine, obesity, etc.</td>
</tr>
<tr>
<td>○ Critically ill patients and those with high metabolic may desaturate rapidly</td>
</tr>
<tr>
<td>● Disease states of the oropharynx, throat or airway</td>
</tr>
<tr>
<td>○ Cancer, esophageal varices, etc.</td>
</tr>
<tr>
<td>● Mechanism of injury</td>
</tr>
<tr>
<td>○ Trauma to the face and/or neck trauma, cervical spine immobilization</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Predict difficulty and prepare backup plans accordingly</td>
</tr>
<tr>
<td>● Utilize all tools and skills, consider having most experienced provider attempt</td>
</tr>
<tr>
<td>● Routine preparation and use of the Bougie is expected</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>● An attempt shall be defined as any time a laryngoscopy blade passes the lips with intent to manage the airway</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Description of all attempts at airway management</td>
</tr>
<tr>
<td>● SPO2 before, during, and after intubation attempts</td>
</tr>
<tr>
<td>● Complete the Difficult Airway QA report form</td>
</tr>
</tbody>
</table>
Capnography*

**All Providers**

### Indications
Monitoring ventilation, perfusion, and/or metabolic states
- Intubated patients (mandatory)
- CPAP Patients (mandatory)
- Should be utilized on all respiratory patients
- Suspected Sepsis, Diabetic Ketoacidosis, Metabolic Emergencies, Trauma and Overdoses

### Contraindications
- None in above situations

### Procedure

- ✓

#### Proper equipment
- Dynamic capnography and capnometry device (i.e. LP 12 or 15)
- Waveform monitoring is critical

#### Values
- Normal ETCO2 is 35-45 mmHg
- ETCO2 for TBI should be maintained at 35-40 mmHg
- Suspected Sepsis <25 mmHg
- Suspected Diabetic Ketoacidosis <30 mmHg
- Increased mortality in trauma <30 mmHg
- 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.)

### Reassess

- Full set of vital signs every 5-15 minutes depending on patient condition
- Continuous ETCO2 monitoring

### Document
- Documentation should include indication of both the waveform and numerical value
- A copy of the strip will be attached to the report
- Physical exam findings

*This protocol appears identically in two places - both Airway and Appendix A - Procedures
Continuous Positive Airway Pressure (CPAP)

**ALS Providers** Continuous airway pressure for patients with impending failure

### Indications
- Conscious patients with severe respiratory distress due to
  - Congestive heart failure (CHF) with pulmonary edema
  - Near drowning with pulmonary edema
  - Exacerbation of asthma
  - Exacerbations of Chronic Obstructive Pulmonary Disease (COPD)

### Contraindications
- Patient less than 12 yr old
- Unconscious or unable to self-maintain airway
- Respiratory arrest or inadequate respiratory effort
- Facial trauma or deformities
- Penetrating chest trauma or pneumothorax
- Recent GI surgery or bleeding
- Persistent nausea/emesis

### Procedure
- ✓

### Notes
- Continuous ETCO2 monitoring MUST be performed on all CPAP patients
- Advise receiving hospital ASAP so they can prepare
- Monitor patient for gastric distension which may lead to vomiting

### Reassess immediately and frequently
- Assessment may include full set of vital signs, lung sounds, O2 saturation, and ETCO2

### Document
- ETCO2 numerical values and waveforms must be recorded in the EHR
- SPO2 before, during, and after CPAP placement
- Patient response to treatment
# Cricothyrotomy (Surgical) - Adult Only

**ALS Providers** Surgical placement of an ET tube through the cricothyroid membrane

<table>
<thead>
<tr>
<th>Indications</th>
<th>Contraindications</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Unconscious adult with immediate life-threatening airway compromise</td>
<td>● Pediatric patients</td>
</tr>
<tr>
<td>● Other methods of airway management are ineffective or contraindicated</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterile technique</td>
<td></td>
</tr>
<tr>
<td>Proper equipment</td>
<td></td>
</tr>
<tr>
<td>● 6.0 Endotracheal tube appropriate for most adults or equivalent tracheostomy tube</td>
<td></td>
</tr>
<tr>
<td>● Routine preparation and use of the Bougie is expected</td>
<td></td>
</tr>
<tr>
<td>Identify landmarks</td>
<td></td>
</tr>
<tr>
<td>● The cricothyroid membrane is located midline on the anterior neck between the inferior thyroid cartilage and above the cricoid ring</td>
<td></td>
</tr>
<tr>
<td>Insertion</td>
<td></td>
</tr>
<tr>
<td>● Make a vertical incision through the skin over the cricothyroid membrane 2-3 cm in length with sufficient depth to expose the cricothyroid membrane OR Make a single horizontal incision through skin and easily identifiable cricothyroid membrane</td>
<td></td>
</tr>
<tr>
<td>● Horizontally puncture the membrane with the scalpel and access the trachea</td>
<td></td>
</tr>
<tr>
<td>● Insert a cuffed endotracheal tube and advance cuff 2 cm past the opening</td>
<td></td>
</tr>
<tr>
<td>● Verify placement by visualizing oropharynx to ensure tube is not misdirected</td>
<td></td>
</tr>
<tr>
<td>● Secure the tube</td>
<td></td>
</tr>
</tbody>
</table>

Reassess immediately and frequently

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Description of all attempts at airway management</td>
<td></td>
</tr>
<tr>
<td>● SPO2 before, during, and after procedure</td>
<td></td>
</tr>
<tr>
<td>● Patient response to procedure</td>
<td></td>
</tr>
</tbody>
</table>

⚠ **NOTE:** The service’s Supervising Physician will review all cricothyrotomy attempts immediately
Cricothyrotomy (Needle - aka Needle Cric) - Pediatric Only

**ALS Providers** Needle puncture through the cricothyroid membrane to facilitate ventilation

### Indications
- Unconscious pediatric with immediate life-threatening airway compromise
- Other methods of airway management are ineffective or contraindicated

### Contraindications
- Non-pediatric patients

### Procedure
- **Sterile technique**
- **Proper equipment**
  - 15 mm adapter from a 3.0 tube or Jet Ventilator
  - 12-16-gauge angiocatheter
- **Identify landmarks**
  - The cricothyroid membrane is located midline on the anterior neck between the inferior thyroid cartilage and above the cricoid ring
- **Insertion**
  - Draw up 2.5ml of Normal Saline with a 5ml syringe and attach to an appropriate gauge catheter-over-needle device
  - Insert the needle through the cricothyroid membrane at a 45 to 60-degree caudal angle (toward the feet) while aspirating for air
  - Ventilate through the catheter with BVM OR Jet Device at highest concentration of Oxygen until adequate chest rise
  - Allow for adequate exhalation (OPA / NPA)
  - Secure the catheter
- **Reassess immediately and frequently**
  - Assessment may include full set of vital signs, lung sounds, O2 saturation, and ETCO2

### Document
- Description of all attempts at airway management
- SPO2 before, during, and after procedure
- Patient response to procedure

⚠ **NOTE**: The service’s Supervising Physician will review all cricothyrotomy attempts immediately
### Supraglottic Airway Placement

#### BLS and Above Providers

**Indications**
- Unconscious patient with an unprotected airway
- Rescue device in a difficult airway

**Contraindications**
- Intact gag reflex
- Ingestion of caustic material

**Procedure**

<table>
<thead>
<tr>
<th>Preparation</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Oxygenate</td>
<td></td>
</tr>
<tr>
<td>☀ Oxygenate patient for 1-2 minutes via BVM and check for gag reflex</td>
<td></td>
</tr>
<tr>
<td>☀ Check for and remove if possible, any dentures/plates</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insertion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Position head in neutral position and with gloved hand, move tongue forward</td>
<td></td>
</tr>
<tr>
<td>Suction as needed (recommended prior to placement of IGel)</td>
<td></td>
</tr>
<tr>
<td>Insert the supraglottic airway following the natural curvature of the airway</td>
<td></td>
</tr>
<tr>
<td>If significant resistance is encountered remove the supraglottic airway, ventilate briefly and re-attempt</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attach a BVM and ventilate the patient</td>
<td></td>
</tr>
<tr>
<td>Assess lung sounds and chest rise</td>
<td></td>
</tr>
<tr>
<td>Assess SPO2</td>
<td></td>
</tr>
<tr>
<td>Placement should be reassessed every time the patient is moved</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reassess immediately and frequently</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment may include full set of vital signs, lung sounds, and O2 saturation</td>
<td></td>
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<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of all attempts at airway management</td>
<td></td>
</tr>
<tr>
<td>SPO2 before, during, and after placement</td>
<td></td>
</tr>
</tbody>
</table>

#### ALS and Above Providers

**Verification**
- Continuous ETCO2 monitoring must be performed following placement

<table>
<thead>
<tr>
<th>Reassess immediately and frequently</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment will also include ETCO2 monitoring</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ETCO2 numerical values and waveforms must be recorded in the EHR</td>
<td></td>
</tr>
</tbody>
</table>
Supraglottic Airway - Removal Without ET Placement

**BLS and Above Providers**

**Indications**
- Return of gag reflex

**Contraindications**
- None when gag reflex returns OR ALS provider places ET tube

**Procedure**

<table>
<thead>
<tr>
<th>✓ Preparation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Turn on suctioning device</td>
</tr>
<tr>
<td>• Turn the patient on his/her side and be prepared to suction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>✓ Removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Deflate balloons (if present) as per specific manufacturer recommendations</td>
</tr>
<tr>
<td>• Remove the supraglottic airway and suction as necessary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>✓ Removal at Request of Paramedic or MD</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A paramedic or physician may choose to remove the device to replace it with an endotracheal tube</td>
</tr>
<tr>
<td>• The patient’s airway is the responsibility of the provider who placed the SGA until he/she:</td>
</tr>
</tbody>
</table>
  - Educates higher-level medical personnel to the specifics of the device |
  - Ensures MD or ALS personnel make an informed decision to remove the device |

<table>
<thead>
<tr>
<th>Reassess immediately and frequently</th>
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</thead>
<tbody>
<tr>
<td>• Assessment may include full set of vital signs, lung sounds, and O2 saturation</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Physical findings and reason for removal</td>
</tr>
<tr>
<td>• SPO2 before, during, and after removal</td>
</tr>
</tbody>
</table>

**ALS and Above Providers**

**Verification**
- Continuous ETCO2 monitoring must be performed following placement

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<tr>
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<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>• ETCO2 numerical values and waveforms must be recorded in the EHR</td>
</tr>
</tbody>
</table>
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 Acute Coronary Syndrome (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, as needed to obtain a normal O2 saturation ≥ 94%.
- Providers should transport patients according to WA DOH Prehospital Cardiac Triage Destination Procedure
- Nitroglycerin administration is contraindicated in patients who have recently taken phosphodiesterase inhibitors (erectile dysfunction medications) - contact MEDICAL CONTROL.

**BLS and Above Providers**
- Administer chewable baby Aspirin 324mg.
- If systolic BP >110 mmHg may administer patient’s own Nitroglycerin every 3-5 minutes up to a total of three doses.
- Perform 12-lead EKG if trained and approved by the MPD.

**AEMT and Above Providers**
- En route, initiate isotonic IV, titrate to LOC, HR and end organ perfusion.
Cardiac Chest Pain Cont.

**ALS Providers**

- 12-lead EKG is required on all patients with chest pain suspected to be of cardiac origin and should be accomplished within 10 minutes of arriving on scene. As time permits, serial 12-lead EKGs should be obtained.
- If systolic BP >110 mmHg administer 0.4mg Nitroglycerin SL, repeating dose every 3-5 minutes as needed.
- If pain persists and patient remains hemodynamically stable may use either
  - Fentanyl per protocol
  - If fentanyl is unavailable, Morphine per protocol
- The goal of treating cardiac chest pain is to make the patient comfortable as much as possible without delaying the patient’s arrival at the hospital. Short scene times are crucial and should be limited to 15 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
- Providers should transport patients according to WA DOH Prehospital Cardiac Triage Destination Procedure

AEMT and Above Providers

- Initiate 2 large-bore isotonic IVs; titrate to maintain LOC, HR and end organ perfusion. If BP <90 mmHg systolic, administer a fluid challenge of 250cc (20ml/kg for pediatric) and reassess.

ALS Providers

- Move to vasopressors if refractory hypotension (<90 mmHg systolic) after 500cc bolus. Titrate BP to between 90-110 mmHg systolic to maintain LOC, HR, and end organ perfusion).
  - Norepinephrine is the preferred agent unless the patient is also bradycardic and hypotensive
  - Epinephrine drip in bradycardic and hypotensive patients
Prehospital Cardiac Triage Destination Procedure

**State of Washington**

**Prehospital Cardiac Triage Destination Procedure**

**Assess Applicability for Triage**
- Post cardiac arrest with ROSC
- ≥ 21 years of age with symptoms lasting more than 10 minutes but less than 12 hours suspected to be caused by coronary artery disease:
  - Chest discomfort (pressure, crushing pain, tightness, heaviness, tramping, burning, aching sensation), usually in the center of the chest lasting more than a few minutes, or that goes away and comes back.
  - Pain or discomfort in 1 or both arms, neck, jaws, shoulders, or back.
  - Shortness of breath with or without chest discomfort.
  - Epigastric (stomach) discomfort, such as unexplained indigestion, belching, or pain.
  - Other symptoms may include sweating, nausea/vomiting, lightheadedness.

**NOTE:** Women, diabetics, and geriatric patients might not have chest discomfort or pain. Instead, they might have nausea/vomiting, back or jaw pain, fatigue/weakness, or generalized complaints.

**Assess High Risk Criteria**
In addition to symptoms in Box 1, pt. has 4 or more of the following:
- Age ≥ 55
- 3 or more CAD risk factors:
  - family history
  - high blood pressure
  - high cholesterol
  - diabetes
  - current smoker
- Aspirin use in last 7 days
- ≥ 2 anginal events in last 24 hours, including current episode
- Known coronary disease
- ST deviation ≥ 0.5 (if available)
- Elevated cardiac markers (if available)

**Unstable patients (life-threatening arrhythmias, severe respiratory distress, shock) unresponsive to EMS treatment should be taken to the closest hospital.**

**If EMS personnel still suspect an acute coronary event, contact medical control for destination. If not, transport per regional patient care procedures.**

**Assess Applicability for Triage**
- Post cardiac arrest with ROSC
- ≥ 21 years of age with symptoms lasting more than 10 minutes but less than 12 hours suspected to be caused by coronary artery disease:
  - Chest discomfort (pressure, crushing pain, tightness, heaviness, tramping, burning, aching sensation), usually in the center of the chest lasting more than a few minutes, or that goes away and comes back.
  - Pain or discomfort in 1 or both arms, neck, jaws, shoulders, or back.
  - Shortness of breath with or without chest discomfort.
  - Epigastric (stomach) discomfort, such as unexplained indigestion, belching, or pain.
  - Other symptoms may include sweating, nausea/vomiting, lightheadedness.

**NOTE:** Women, diabetics, and geriatric patients might not have chest discomfort or pain. Instead, they might have nausea/vomiting, back or jaw pain, fatigue/weakness, or generalized complaints.

**Assess Immediate Criteria**
- Post cardiac arrest with return of spontaneous circulation
- Hypotension or pulmonary edema
- EKG positive for STEMI (if available)

**Assess Transport Time and Determine Destination by Level of Prehospital Care**

**BLS/ALS**

**Level I Cardiac Hospital with 30 minutes**

**Level I Cardiac Hospital with 60 minutes**

**ALS**

**Level I Cardiac Hospital with 30 minutes**

**Go to Level I Cardiac Hospital and alert destination hospital en route ASAP**

**Level II Cardiac Hospital 30 minutes closer than Level I?**

**Level II Cardiac Hospital with 60 minutes**

**Go to Level I Cardiac Hospital and alert destination hospital en route ASAP**

**Level II Cardiac Hospital 60 minutes closer than Level I?**

**Go to closest Level II Cardiac Hospital and alert destination hospital en route ASAP**

* Slight modifications to the transport times may be made in county operating procedures. See page 2.
  Consider ALS and air transport for all transports greater than 30 minutes.
  If there are two or more Level I facilities to choose from within the transport timeframe, patient preference, insurance coverage, physician practice patterns, and local rotation agreements may be considered in determining destination.
  This applies if there are two or more Level I facilities to choose from.

DOH 345-856 April 2011
Why triage cardiac patients?
The faster a patient having a heart attack or who's been resuscitated gets treatment, the less likely he or she will die or be permanently disabled. Patients with unstable angina and non-ST elevation acute coronary syndromes (UA/NSTEMI) are included in the triage procedure because they often need immediate specialized cardiac care. This triage procedure is intended to be part of a coordinated regional system of care that includes dispatch, EMS, and both Level I and Level II Cardiac Hospitals.

How do I use the Cardiac Triage Destination Procedure?
A. Assess applicability for triage - If a patient is post cardiac arrest with ROSC, or is over 21 and has any of the symptoms listed, the triage tool is applicable to the patient. Go to the "Assess Immediate Criteria" box. NOTE: Women, diabetics, and geriatric patients often have symptoms other than chest pain/discomfort so review all symptoms with the patient.
B. Assess immediate criteria - If the patient meets any one of these criteria, he or she is very likely experiencing a heart attack or other heart emergency needing immediate specialized cardiac care. Go to "Assess Transport Time and Determine Destination" box. If the patient does not meet immediate criteria, or you can't do an ECG, go to the "Assess High Risk Criteria" box.
C. Assess high risk criteria - If, in addition to meeting criteria in box 1, the patient meets four or more of these high risk criteria, he or she is considered high risk for a heart attack or other heart emergency needing immediate specialized cardiac care. These criteria are based on the TIMI risk assessment for unstable angina/non-STEMI. If the patient does not meet the high risk criteria in this box, but you believe the patient is having an acute coronary event based on presentation and history, consult with medical control to determine appropriate destination. High risk criteria definitions:

- 3 or more CAD (coronary artery disease) risk factors:
  - Age ≥ 55 year old: epidemiological data for WA show that incidence of heart attack increases at this age
  - Family history: father or brother with heart disease before 55, or mother or sister before 65
  - High blood pressure: ≥ 140/90, or patient/family report, or patient on blood pressure medication
  - High cholesterol: patient/family report or patient on cholesterol medication
  - Diabetes: patient/family report
  - Current smoker: patient/family report

- Aspirin use in last 7 days: any aspirin use in last 7 days.
- ≥ 2 anginal events in last 24 hours: 2 or more episodes of symptoms described in box 1 of the triage tool, including the current event.
- Known coronary disease: history of angina, heart attack, cardiac arrest, congestive heart failure, balloon angioplasty, stent, or bypass surgery.
- ST deviation ≥ 0.5 mm (if available): ST elevation ≥ 0.5 mm is significant; transient ST elevation ≥ 0.5 mm for < 30 minutes is treated as ST-segment depression and is high risk; ST elevation ≥ 0.5 mm for more than 30 minutes places these patients in the STEMI treatment category.
- Elevated cardiac markers (if available): CK-MB or Troponin I in the "high probability" range of the device used. Only definitely positive results should be used in triage decisions.

D. Determine destination - The general guideline is to take a patient meeting the triage criteria directly to a Level I Cardiac Hospital within reasonable transport times. For BLS, this is generally within 30 minutes transport time, and for ALS, generally 60 minutes transport time. See below for further guidance. Regional patient care procedures and county operating procedures may provide additional guidance.

E. Inform the hospital en route so staff can activate the cath lab and call in staff if necessary.

What if a Level I Cardiac Hospital is just a little farther down the road than a Level II?
You can make slight changes to the 30/60 minute timeframe. The benefits of opening an artery faster at a Level I can outweigh the extra transport time. To determine whether to transport beyond the 30 or 60 minutes, figure the difference in transport time between the Level I Cardiac Hospital and the Level II Cardiac Hospital. For BLS, if the difference is more than 30 minutes, go to the Level I Cardiac Hospital. For ALS, if the difference is more than 60 minutes, go to the Level II Cardiac Hospital.

BLS examples:
A) Minutes to Level I minus minutes to Level II = 29: go to Level I
B) Minutes to Level I minus minutes to Level II = 35: go to Level II

ALS examples:
A) Minutes to Level I minus minutes to Level II = 45: go to Level I
B) Minutes to Level I minus minutes to Level II = 68: go to Level II

NOTE: We recommend ALS use a fibrinolytic checklist to determine if a patient is ineligible for fibrinolysis. If ineligible, transport to closest Level I hospital even if it’s greater than 60 minutes or rendezvous with air transport.

What if there are two or more Level I or II facilities to choose from?
If there are two or more of the same level facilities to choose from within the transport times, patient preference, insurance coverage, physician practice patterns, and local rotation agreements may be considered in destination decision.

DOH 348-050 April 2011

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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 instead of cardiac origin. Explore differential diagnoses.

All EMS Providers
- Establish Primary Management
- ALS intercept recommended

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

ALS Providers
- EKG and 12-Lead
- CPAP for respiratory distress
- Consider intubation as needed.
- Administer Nitroglycerin SL, per protocol.
  - Nitroglycerin administration is contraindicated in hypotensive patients, as well as patients who have recently taken phosphodiesterase type 5 inhibitors (erectile dysfunction medications) - contact MEDICAL CONTROL.
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 en route at the first opportunity. Early access to CPR and early defibrillation are critical to successful cardiac resuscitation. BLS personnel should never wait for paramedic arrival before utilizing the AED. *Also reference Dead at Scene Protocol.*

- Establish Primary Management.
- Orchestrate resuscitation as personnel allow. ALS care should follow current AHA ACLS cardiac arrest guidelines.
- High quality CPR is the priority. CPR should be started immediately while the AED is applied and continued until the AED is ready to analyze and shock. Deliver shock as soon as possible. High Performance CPR (HPCPR) is the preferred method in adult cardiac arrest. Provide continuous compressions at a rate between 100-120bpm for 2 minutes. The second rescuer should perform ventilations on every 10th upstroke of a compression for patients who are not intubated. In the intubated patient breaths should be delivered every 6 seconds without attention to synchrony with chest compressions. At no time should the provider performing compressions stop or pause for ventilation.
- Solo rescuer
  - Compressions only
  - If respiratory arrest is suspected cause for cardiac arrest or if not trained in HPCPR follow AHA guidelines - 30:2
  - Integrate AED as available
- Perform 2 minutes of HPCPR (follow AHA CPR guidelines if not trained in HPCPR) THEN check for rhythm/pulse.
  - If no pulse: check rhythm and repeat defibrillation sequence as advised/indicated.
- 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 2 minutes of CPR before pulse check; though the patient may have electrical activity or a pulse, the body benefits from the increased cardiac output generated by CPR.

Patients with a Return of Spontaneous Circulation (ROSC) with a suspected cardiac cause of arrest, MI, or a shockable rhythm, should be transported to a facility with cardiology and PCI capability, bypassing other facilities.
AHA ACLS Cardiac Arrest Algorithm (2018)

**Start CPR**
- Give oxygen
- Attach monitor/defibrillator

**Rhythm shockable?**

**VF/pVT**
- Shock

**CPR 2 min**
- IV/IO access
- Epinephrine every 3-5 min
- Consider advanced airway, capnography
- Amiodarone or lidocaine
- Treat reversible causes

**Asystole/PEA**
- CPR 2 min
- IV/IO access
- Epinephrine every 3-5 min
- Consider advanced airway, capnography
- Treat reversible causes

**Rhythm shockable?**

**Shock Energy for Defibrillation**
- Biphasic: Manufacturer recommendation (e.g., initial dose of 120-200 J), if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- Single: 360 J

**Drug Therapy**
- Epinephrine IV/IO dose: 1 mg every 3-5 minutes
- Amiodarone IV/IO dose: First dose: 300 mg bolus. Second dose: 150 mg.
- Lidocaine IV/IO dose: First dose: 1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

**Advanced Airway**
- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

**Return ofSpontaneous Circulation (ROSC)**
- Pulse and blood pressure
- Abrupt sustained increase in PETCO₂ (typically >40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

**Reversible Causes**
- Hypovolemia
- Hypoxia
- Hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

**CPR Quality**
- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If PETCO₂ <10 mm Hg, attempt to improve CPR quality.
  - Intra-arterial pressure
  - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality.

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Bradycardia With a Pulse Algorithm

Assess appropriateness for clinical condition. Heart rate typically <50/min if bradyarrhythmia.

Identify and treat underlying cause
- Maintain patent airway; assist breathing as necessary
- Oxygen (if hypoxemic)
- Cardiac monitor to identify rhythm; monitor blood pressure and oximetry
- IV access
- 12-Lead ECG if available; don’t delay therapy

Persistent bradyarrhythmia causing:
- Hypotension?
- Acutely altered mental status?
- Signs of shock?
- Ischemic chest discomfort?
- Acute heart failure?

Monitor and observe

Atropine
If atropine ineffective:
- Transcutaneous pacing OR
- Dopamine infusion OR
- Epinephrine infusion

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

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

Epinephrine
IV Infusion:
2-10 mcg per minute

Consider:
- Expert consultation
- Transvenous pacing
Atrial Fibrillation/Flutter

Designation of Condition: The patient may have a heart rate >120bpm 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 prehospital environment. This risk should be balanced with the known risk of embolic complications with conversion of a-fib/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

AEMT and Above Providers

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

ALS Providers

- 12-lead EKG
- If stable:
  - Diltiazem 0.25mg/kg SIVP, may repeat x 1 at 0.35mg/kg (these are maximum doses - titrate to effect of controlling heart rate).
- Consider MEDICAL CONTROL advice
- If unstable requiring cardioversion:
  - Consider premedication with Midazolam or Ketamine as appropriate.
  - Atrial Fibrillation - Synchronized cardioversion at 120-200J, and then increase in stepwise fashion as needed for conversion (if manufacturer has device specific recommendation for A-Fib, utilize this setting).
  - Atrial Flutter - Synchronized cardioversion at 50-100J, and then increase in stepwise fashion.
Assess appropriateness for clinical condition. Heart rate typically ≥150/min if tachyarrhythmia.

**Identify and treat underlying cause**
- Maintain patent airway; assist breathing as necessary
- Oxygen (if hypoxemic)
- Cardiac monitor to identify rhythm; monitor blood pressure and oximetry

**Persistent tachyarrhythmia causing:**
- Hypotension?
- Acutely altered mental status?
- Signs of shock?
- Ischemic chest discomfort?
- Acute heart failure?

**Yes**
- Synchronized cardioversion
  - Consider sedation
  - If regular narrow complex, consider adenosine

**No**

**Wide QRS? ≥0.12 second**

**Yes**
- IV access and 12-lead ECG if available
- Consider expert consultation

**No**
- Vagal maneuvers
- Adenosine (if regular)
- β-Blocker or calcium channel blocker

**Doses/Details**

**Synchronized cardioversion:**
Initial recommended doses:
- Narrow regular: 50-100 J
- Narrow irregular: 120-200 J biphasic or 200 J monophasic
- Wide regular: 100 J
- Wide irregular: defibrillation dose (not synchronized)

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

**Antiarrhythmic Infusions for Stable Wide-QRS Tachycardia**

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

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

**Sotalol IV dose:**
100 mg (1.5 mg/kg) over 5 minutes. Avoid if prolonged QT.
Left Ventricular Assist Device (LVAD)

Designation of Condition: LVADs are devices implanted into a patient’s heart and central blood vessels (Aorta and/or Pulmonary Artery) to help circulate blood and improve cardiac output. They are used as a bridge to support patients until cardiac transplant, or as definitive end of life care. Patients with these devices may live or visit our community and call upon EMS for emergent care.

Considerations when caring for LVAD patients:
- No palpable pulse
- NIBP may not register
- Pulse ox may not register
- Are anti-coagulated and can have obvious or occult blood loss and shock
- Have a 4-7% yearly incidence of hemorrhagic or ischemic stroke
- Can have sepsis from device infection
- Can be awake and look well during malignant dysrhythmia such as V-fib/V-tach

**All EMS Providers**
- Establish primary management
- Contact UW VAD Coordinator @ 206-598-6190 (or appropriate VAD coordinator) and report an emergency situation that requires immediate contact
- Bring/keep all VAD equipment and back-up equipment, and patient companion with the patient
- Determine if device is functioning
  - Device hum should be heard during auscultation of abdomen
  - Look/listen for alarms and trouble shoot with VAD coordinator
  - Make sure power and pump are connected, no loose cables
- Determine MAP by doppler
- Assess blood glucose level
- Call for ALS intercept in all LVAD patients

**AEMT and Above Providers**
- Initiate isotonic IV; titrate to maintain MAP 65-80

**ALS Providers**
- 12-lead EKG for all LVAD patients

⚠ **NOTE:**
- Reference sepsis, stroke, diabetic, protocols as indicated
- Follow most up to date AHA and University of Washington Guidelines for cardiac arrest in LVAD patients
- LVAD is not a contraindication for defibrillation or cardioversion
- Transport to LVAD Center if system resources and patient conditions allow
LVAD Algorithm

Assist ventilation if necessary and assess perfusion
- Normal skin color and temperature?
- Normal capillary refill?

Assess and treat non-LVAD causes for altered mental status, such as
- Hypoxia
- Blood glucose
- Overdose
- Stroke

Assess LVAD function
- Look/listen for alarms
- Listen for LVAD hum

MAP >50 mm Hg and/or PETCO₂ >20 mm Hg?**

Yes
- MAP >50 mm Hg and/or PETCO₂ >20 mm Hg?

Yes
- Do not perform external chest compressions
- Perform external chest compressions

No
- Assess LVAD function

Yes
- LVAD functioning?

Yes
- Attempt to restart LVAD
  - Driveline connected?
  - Power source connected?
  - Need to replace system controller?

No
- LVAD restarted?

No
- Follow local EMS and ACLS protocols
- Notify VAD center and/or medical control and transport

*The PETCO₂ cutoff of >20 mm Hg should be used only when an ET tube or tracheostomy is used to ventilate the patient. Use of a supraglottic (eg, King) airway results in a falsely **
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 Examiner’s 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.

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

ALS Providers
- Paramedics should follow current AHA/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 en route 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 following current American Heart Association Guidelines.

- Establish Primary Management.
- Orchestrate resuscitation.
- High Performance CPR (HPCPR) is the preferred method in pediatric (non-neonatal) cardiac arrest. Providers should provide continuous compressions at a rate between 100-120bmp for 2 minutes. The second rescuer should perform ventilations on every 10th upstroke of a compression for patients not intubated. At no time should the provider performing compressions stop or pause for ventilation.
- Providers should follow current HPCPR and American Heart Association guidelines regarding CPR and AED use.
- Perform HPCPR while the AED is being readied to shock. Sole rescuer 30:2. (Follow ACLS guidelines if not trained in HPCPR).
- Attach defibrillation electrodes to patient during CPR if personnel available (pediatric attenuators and pads preferred if available).
- Check rhythm (push “analyze”).
- Defibrillate once at pre-programmed setting if advised (pediatric pads).
- Perform 2 minutes of BLS HPCPR 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.

Cont.
Defibrillation should always be followed by 2 minutes of CPR before pulse check. Though the patient may have electrical activity or an undetected pulse, the body benefits from the increase cardiac output.

HPCPR is the preferred method of delivery of CPR. For those agencies not trained in HPCPR, one-person BLS CPR rates are 30:2, (follow all AHA guidelines)

AED use in the child should use pediatric pads/attenuator as designed by the manufacturer, if unavailable an AED may be used.

It is expected that personnel will follow the most current HPCPR guidelines. Following the most current AHA guidelines are an acceptable alternative.
AHA ACLS Pediatric Cardiac Arrest Algorithm (2018)

1. Start CPR
   - Give oxygen
   - Attach monitor/defibrillator

2. Yes: Rhythm shockable?
   - VF/pVT

3. Shock

4. CPR 2 min
   - IO/IV access

5. Yes: Rhythm shockable?

6. CPR 2 min
   - Epinephrine every 3-5 min
   - Consider advanced airway

7. Shock

8. CPR 2 min
   - Amiodarone or lidocaine
   - Treat reversible causes

9. No: Asystole/PEA

10. CPR 2 min
    - IO/IV access
    - Epinephrine every 3-5 min
    - Consider advanced airway, capnography

11. Yes: Rhythm shockable?

12. CPR 2 min
    - Treat reversible causes

13. No: If no signs of return of spontaneous circulation (ROSC), go to 10 or 11
    - If ROSC, go to Post–Cardiac Arrest Care

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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 titrate Oxygen as needed. Assess rate and depth of ventilation.

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

**ALS Providers**
- Neonate - (Age Birth-Discharge from Hospital - usually 2 days old)
- Reference and follow neonatal protocol.
- Infant/Child - (Age >Neonate-Adolescence)
- If heart rate <60bpm, and signs of poor perfusion, despite adequate oxygenation and ventilation for 30 seconds, begin CPR
- Epinephrine
  - IV/IO (1:10,000) 0.01mg/kg
  - ET (1:1,000) 0.1mg/kg (0.1ml/kg) - if no IV/IO available
  - Repeat dose every 3-5 minutes
- Atropine Sulfate, IVP, IO or ET, 0.02mg/kg (0.5mg max single dose) for signs of increased vagal tone or AV block. Atropine may be repeated once.
- Consider transcutaneous pacing.
PALS Bradycardia Algorithm

- **BLS Algorithm**: Assess and support ABCs as needed
  - Provide oxygen
  - Attach monitor/defibrillator

**Is bradycardia causing severe cardio-respiratory compromise?**
(poor perfusion, hypotension, respiratory difficulty, altered consciousness)

- **No**
  - Observe
  - Support ABCs
  - Consider transfer or transport to ALS facility

- **Yes**
  - **Perform chest compression**
    - If despite oxygenation and ventilation:
      - Heart rate <60/min in infant or child and poor systemic perfusion
  - **Epinephrine***
    - IV/IO: 0.01 mg/kg (1:10 000; 0.1 mL/kg)
    - Tracheal tube: 0.1 mg/kg (1:1000; 0.1 mL/kg)
    - May repeat every 3 to 5 minutes at the same dose
  - **Atropine*** 0.02 mg/kg (minimum dose: 0.1 mg)
    - May be repeated once
  - Consider **cardiac pacing**

*Give atropine first for bradycardia due to suspected increased vagal tone or primary AV block.

**If pulseless arrest develops, see Pulseless Arrest Algorithm**
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.

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

ALS Providers
- 12-lead EKG
- Vagal Maneuvers
- If IV/IO access readily available give:
  - Adenosine 0.1mg/kg, follow rapid NS 2-5ml bolus. Maximum dose is 6mg.
  - Adenosine may be doubled and repeated once if SVT persists. Maximum dose is 12mg.
- If IV/IO access is unattainable or Adenosine is not successful and/or patient is unstable, synchronized cardioversion.
  - Synchronized cardioversion: 0.5J/kg, 1J/kg and 2J/kg.
- Contact MEDICAL CONTROL for consideration of Amiodarone 5mg/kg over 30 minutes.
PALS Tachycardia Adequate Perfusion

- BLS Algorithm: Assess and support ABCs as needed
- Provide oxygen
- Attach monitor/defibrillator
- Evaluate 12-lead ECG if practical

**QRS duration normal for age (approximately ≤0.08 sec)**

- Evaluate rhythm

**QRS duration wide for age (approximately >0.08 sec)**

- What is the QRS duration?

**Probable sinus tachycardia**
- History compatible
- P waves present/normal
- HR often varies with activity
- Variable RR with constant PR
- Infants: rate usually <220 bpm
- Children: rate usually <180 bpm

**Probable supraventricular tachycardia**
- History incompatible
- P waves absent/abnormal
- HR not variable with activity
- Abrupt rate changes
- Infants: rate usually >220 bpm
- Children: rate usually >180 bpm

**Probable ventricular tachycardia**

**During evaluation**
- Provide oxygen and ventilation as needed
- Support ABCs
- Confirm continuous monitor/pacer attached
- Consider expert consultation
- Prepare for cardioversion
  - 0.5 to 1.0 J/kg (consider sedation)

**Identify and treat possible causes**
- Hypoxemia
- Hypovolemia
- Hyperthermia
- Hyper-/hypokalemia and metabolic disorders
- Tamponade
- Tension pneumothorax
- Toxins/poisons/drugs
- Thromboembolism
- Pain

**Consider vagal maneuvers**
- Establish vascular access
- Consider adenosine 0.1 mg/kg IV (maximum first dose: 6 mg)
- May double and repeat dose once (maximum second dose: 12 mg)
- Use rapid bolus technique

**Consider alternative medications**
- Amiodarone 5 mg/kg IV over 20 to 60 minutes
  (Do not routinely administer amiodarone and procainamide together)
  
  or

- Procainamide 15 mg/kg IV over 30 to 60 minutes
  (Do not routinely administer amiodarone and procainamide together)
  
  or

- Lidocaine 1 mg/kg IV bolus

⚠ NOTE: Only applies to medications in the formulary. Procainamide is not in the formulary.
Pediatric Wide Complex Tachycardia

Designation of Condition: The patient will have a pulse and show sustained wide complex tachycardia on the monitor.

**All EMS Providers**
- Establish Primary Management
- ALS intercept required.
- Secure airway and administer 100% Oxygen.

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

**ALS Providers**

**Stable**
- Monomorphic and regular, no evidence or history of Wolf Parkinson White, then Adenosine
  - If IV/IO access readily available give:
    - Adenosine 0.1mg/kg, follow rapid NS 2-5ml bolus. Maximum dose is 6mg.
    - Adenosine may be doubled and repeated once if SVT persists. Maximum dose is 12mg.
  - If IV/IO access is unattainable or Adenosine is not successful and/or patient is unstable, synchronized cardioversion.
    - Synchronized cardioversion: 0.5J/kg, 1J/kg and 2J/kg.
- Contact MEDICAL CONTROL for consideration of:
  - Amiodarone 5mg/kg IV bolus over 30 minutes.
  - Lidocaine may be used if Amiodarone is not available or contraindicated [1mg/kg]. If VT persists, start drip. May re-bolus x 1 if drip delayed by greater than 15 minutes (mix 120mg of Lidocaine in 100ml D5W). Set drip at 20-50mcg/kg/min

**Unstable**
- Consider sedation, per protocol
- Synchronized cardioversion 0.5-1J/kg
- If rhythm fails to convert, then repeat synchronized cardioversion at 2J/kg up to 2 attempts.
- Ventricular fibrillation 2-4J/kg and move to cardiac arrest algorithm
PALS Tachycardia Poor Perfusion

- BLS Algorithm: Assess, support ABCs

- Initiate CPR
- See pulseless arrest algorithm

- Pulse present?
  - Yes
  - Provide oxygen and ventilation as needed
  - Attach monitor/defibrillator

- QRS duration normal for age (approximately ≤0.08 sec)
  - Evaluate the tachycardia
    - During evaluation
      - Provide oxygen and ventilation as needed
      - Support ABCs
      - Confirm continuous monitor/pacer attached
      - Consider expert consultation
      - Prepare for cardioversion (consider sedation)
    - Identify and treat possible causes
      - Hypoxemia
      - Hypovolemia
      - Hyperthermia
      - Hyper/hypokalemia and metabolic disorders
      - Tamponade
      - Tension pneumothorax
      - Toxins/poisons/drugs
      - Thromboembolism
      - Pain

  - Probable sinus tachycardia
    - History compatible
    - P waves present/normal
    - HR often varies with activity
    - Variable RR with constant PR
    - Infants: rate usually <220 bpm
    - Children: rate usually <180 bpm
    - Immediate cardioversion with 0.5 to 1.0 J/kg
      (may increase to 2 J/kg if initial dose is ineffective)
      - Use sedation if possible
      - Sedation must not delay cardioversion
      - or
      - Immediate IV/IQ adenosine
        - Adenosine: use if IV access is immediately available
        - Dose: Adenosine 0.1 mg/kg IV/IQ (maximum first dose: 6 mg)
        - May double and repeat dose once (maximum second dose: 12 mg)
        - Technique: use rapid bolus technique

- Probable supraventricular tachycardia
  - History incompatible
  - P waves absent/abnormal
  - HR not variable with activity
  - Abrupt rate changes
  - Infants: rate usually >220 bpm
  - Children: rate usually >180 bpm

- Probable ventricular tachycardia
  - Immediate cardioversion 0.5 to 1.0 J/kg
    (consider sedation, do not delay cardioversion)

- Evaluate the tachycardia

- QRS duration wide for age (approximately >0.08 sec)
  - Consider alternative medications
    - Amiodarone 5 mg/kg IV over 20 to 60 minutes
      or
    - Procainamide 15 mg/kg IV over 30 to 60 minutes
      (Do not routinely administer amiodarone and procainamide together)
      or
    - Lidocaine 1 mg/kg IV bolus
      (wide-complex only)
    - Consult pediatric cardiologist
    - 12-lead ECG

⚠ NOTE: Only applies to medications in the formulary. Procainamide is not in the formulary.
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 - refer to Cardiac Chest Pain protocol and transport in care of ALS. Remember that abdominal pain may be related to undiagnosed pregnancy in any female of child-bearing years - keep a high index of suspicion for ectopic pregnancy which may be associated with uncontrollable hemorrhage.

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

AEMT and Above Providers
- Initiate isotonic IV, titrate to maintain LOC, HR and end organ perfusion.

ALS Providers
- Cardiac monitoring
- Consider 12-lead EKG
- Consider antiemetics and analgesics for acute pain
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, adequate 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 immobilization.
- Consider ALS intercept.

**BLS and Above Providers**
- Assess blood glucose level.
- If blood glucose level is <80mg/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, consider naloxone per Narcotic Overdose protocol.
  - Be prepared for combativeness if the patient responds to above treatment.

**AEMT and Above Providers**
- Initiate isotonic IV. Titrate to maintain LOC, HR and end organ perfusion.
- 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 supraglottic airway.

**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 (oral mucosa swelling)
- Respiratory: wheezing/stridor
- Cardiovascular: hypotension, cyanosis
- GI: cramps, emesis, diarrhea
- Neurologic: AMS, seizures

Severity (respiratory, cardiovascular and neurologic systems differentiate)
- Mild: hives, itching, mild respiratory distress (e.g. wheezing)
- Severe: angioedema, severe respiratory distress (stridor, tachypnea, hypoxia), cardiovascular collapse (signs of shock)

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 mild hives not associated with breathing or swallowing problems are unlikely to develop into more severe symptoms later.
Allergic Reactions and Anaphylaxis - Management

**All EMS Providers**
- Establish Primary Management
- Titrate Oxygen commensurate to the patient’s level of distress.

**BLS and Above Providers**

Unstable:
- Diffuse progressive hives, severe respiratory distress/anaphylaxis (hypoxia and/or hypotension):
  - Administer Epinephrine 1:1,000 via auto-injector (Epi-Pen®/ Epi-PenJr®) or Check and Inject kit
- Adults (>30kg): adult 0.3mg IM, consider ½ dose for adults with active cardiovascular symptoms, hypertension, or history of hypersensitivity to Epinephrine.
- Children (<30kg): pediatric 0.15mg IM
- May repeat once in 3-5 minutes if hypotension or severe dyspnea is still present

**AEMT and Above Providers**

Stable:
- Initiate an isotonic IV. Titrate to maintain LOC, HR and end organ perfusion.
- Albuterol 5-10mg via nebulizer, if wheezing or decreased breath sounds.

Unstable:
- Diffuse progressive hives, severe respiratory distress/anaphylaxis (hypoxia and/or hypotension);
- Administer Epinephrine 1:1,000 IM
  - Adult dosage (>8 yr) 0.3mg 1:1,000 IM, may repeat once in 3-5 minutes if hypotension or severe dyspnea is still present
  - Pediatric dosage 0.01mg/kg 1:1,000 IM up to 0.3mg, may repeat once in 3-5 minutes if hypotension or severe dyspnea is still present
- Initiate aggressive isotonic fluid therapy, multiple large bore lines (1-2L)

Cont.
**ALS Providers**

- Continue Epinephrine 1:1,000 IM every 3-5 minutes
- Epinephrine administration.
- Epinephrine drip is preferred to bolus dosing.
- Epinephrine drip should be considered as necessary for refractory hypotension per formulary.
- If adult patient is perfusing too poorly to absorb the Epinephrine via IM, administer Epinephrine 1:10,000 0.1mg SIVP over 5 minutes. Repeat as necessary, but only when severe hypotension and/or hypoxia justify the cardiovascular risk of IV.
- Cardiac monitoring, consider 12-lead EKG

⚠ **NOTE**: Cardiac monitoring and 12-lead EKG should be performed on every adult patient who has received Epinephrine

- Consider Diphenhydramine 25-50mg IVP or IM in the adult. 1mg/kg IV or IM in pediatric patients.
- Consider 125mg Methylprednisolone (Solu-Medrol) IV, 2mg/kg pediatric dose.
- All pediatric dosages max out at adult dose
Anti-Emetics

All EMS providers

Indications
- Treatment of nausea and or vomiting, any cause

Contraindications
- Allergy to any of the medications

Administration
- Alcohol pad
  - Hold 2.5cm (1 inch) from nose and inhale for up to 60 seconds
  - Repeat every 2 minutes as needed for 3 doses
  - May repeat process in 20 minutes

ALS Providers

Administration
- Ondansetron (Zofran) per protocol
- Promethazine (Phenergan) per protocol

Document
- Full set of vital signs
- Treatment name in flowchart
- Response to medication
- Signs of untoward reaction to medication if present
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 generally reveals respiratory distress, decreased air movement and wheezing, however wheezing may not be present. Absence of wheezing with decreased breath sounds is often a sign of impending respiratory arrest.

All EMS Providers
- Establish Primary Management
- If patient presents with dyspnea and wheezing BLS providers may assist with the patient’s own Albuterol via MDI after contact with MEDICAL CONTROL.
- Titrate Oxygen commensurate to the patient’s level of distress.

AEMT and Above Providers
- 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 1:1,000 via Epi-Pen® IM or Check-and-Inject.
    - Adults 0.3mg IM - Children 0.01mg/kg IM up to 0.3mg
    - Epinephrine should be administered judiciously to patients with a history of coronary artery disease and/or hypertension or over the age of 45.
  - Administer Albuterol via nebulizer
    - Children who appear to be <8 yr, 2.5mg up to standard adult doses.
    - Adults and children >8 yr, 5-10mg. Repeat 5mg 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.
- If non-threatening asthma attack the AEMT may CONTACT MEDICAL CONTROL for Albuterol nebulizer at above doses
- 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.

Cont.
Asthma Cont.

ALS Providers
- EKG and 12-lead if ACS suspected, or if Epinephrine has been given
- Combine 1st nebulizer with 0.5mg Atrovent (same dose for adult/pediatric). Subsequent nebulizers should be Albuterol only. Nebulized medications show little effect when bronchospasm severely limits tidal volume. E.g. a silent chest.
- Use continuous waveform capnography.
- If severe signs and symptoms persist may repeat Epinephrine IM dosages every 3-5 minutes.
- CPAP
- Methylprednisolone 125mg IV (2mg/kg pediatrics)
- Magnesium Sulfate Adult: 2gm in 100-250ml NS over 20 minutes, pediatrics 50mg/kg up to adult dose IV over 20 minutes.
- All pediatric dosages max out at adult dose.
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.

- Exposure to Carbon Monoxide may cause flu-like symptoms; headache, dizziness, fatigue, nausea, and vomiting. Symptoms could progress to syncope, chest pain, dyspnea, and central nervous symptoms including confusion, hallucinations, and seizures. Always consider CO poisoning when multiple medical patients are found in the same residence with no other apparent cause. 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 non-rebreather. Assist ventilation with 100% Oxygen via BVM as needed.
- Ensure the safety of asymptomatic people at the scene prior to transport.

**ALS Providers**
- If CO poisoning is secondary to inhalation of combustible products and significant altered mentation is present, consider administration of cyanide antidote.
- Advanced airway management as indicated.
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, determine time last seen normal.
  - When possible obtain the phone number of a family member to provide history to the hospital staff
- FAST Assessment (if YES to any of the following and within time range, patient meets CODE STROKE criteria).
  - Face (unilateral facial droop?).
  - Arms (unilateral drift or weakness?).
  - Speech (slurred or abnormal?).
  - Time Last Normal (determine time patient last SEEN normal).
- For positive FAST and LKN <24 hours, determine stroke severity score (LAMS):
  - Facial Droop - 1 point if present, 0 points if absent
  - Arm Drift - 2 points if falls rapidly, 1 point if drifts down slowly, 0 points if steady
  - Grip Strength - 2 points if no real effort can be made, 1 point if grip present and weak, 0 points if grip full strength
  - Add Up the Points - A score of >=4 is Severe
- Stroke patients should never receive Aspirin or Nitroglycerin by EMS providers.
- High blood pressure should NOT be treated.
- Transport for LKN:
  - <4.5 hours: Any Stroke Severity Score - Closest Stroke Center.
    - Notify receiving facility of a Code Stroke.
  - 4.5-24 hours:
    - Stroke Severity Score >=4
      - Transport to the nearest Level I Stroke Center with endovascular capability, provided transport time is no more than 30 minutes greater than the nearer Level II or Level III Stroke Center.
      - Notify receiving facility of a Code Stroke
    - Stroke Severity Score <4
      - Closest Stroke Center
  - >24 hours: Closest Stroke center.

Cont.
Cerebrovascular Accident Cont.

**BLS and Above Providers**
- Assess blood glucose level
- If BGL <80mg/dl, administer Dextrose per protocol.

**AEMT and Above Providers**
- Initiate IV en route; titrate to maintain LOC, HR and end organ perfusion (do not delay transport).

**ALS Providers**
- Maintain airway and intubate as needed.
  If patient is being ventilated, ensure that capnography is maintained at 35-45 mmHg, unless herniation is imminent. If herniation is imminent, hyperventilate and maintain capnography at 30-35 mmHg.

⚠ **NOTE:**
- To decrease scene times, stable Code Stroke patients may be transported BLS if ALS provider not yet on scene.
- Code Stroke patients should be transported with EMT-IV or higher if on scene. Start IV en route.
- Consider signs suggesting intracranial hemorrhage and transport to closest Stroke Center with neurological services.
- When in doubt contact MEDICAL CONTROL.
Prehospital Stroke Triage Destination Procedures

State of Washington
Prehospital Stroke Triage Destination Procedure

Purpose
The purpose of the Prehospital Stroke Triage and Destination Procedure is to identify stroke patients in the field and take them to the most appropriate hospital. Like trauma, stroke treatment is time-critical – the sooner patients are treated, the better their chances of survival and recovering function. For strokes caused by a blood clot in the brain (ischemic), clot-busting medication must be administered within 4.5 hours from the time they first have symptoms. For most bleeding strokes (hemorrhagic), time is also critical. Currently, there are no accurate tools to distinguish between an ischemic and hemorrhagic stroke in the field so there is no difference in prehospital triage.

This triage tool, along with protocol guidelines and other state policies, are the framework for the Washington State Emergency Cardiac and Stroke System. Regional patient care procedures (PCPs) and especially county operating procedures (COPs) define exactly how the system will work in each community based on its unique EMS resources and stroke centers. The formula for success will look slightly different in each community. Use this tool to develop PCPs and COPs that get the right patient to the right treatment in time, using local resources effectively and efficiently.

Stroke Assessment – F.A.S.T.
The F.A.S.T. assessment tool (also known as the Cincinnati Prehospital Stroke Scale + Time) is a simple but pretty accurate way to tell if someone might be having a stroke. It’s easy to remember: Facial droop, Arm drift, Speech, + Time. If face, arms, or speech is abnormal, it’s likely the patient is having a stroke. Immediately transport the patient to a stroke center. Regional patient care procedures and county operating procedures may provide additional guidance. Alert the hospital on the way. Transport should not be delayed for IV or EKG monitoring.

<table>
<thead>
<tr>
<th>TEST</th>
<th>NORMAL</th>
<th>ABNORMAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial droop:</td>
<td>Ask the patient to show his or her teeth or smile.</td>
<td>Both sides of the face move equally.</td>
</tr>
<tr>
<td>Arm drift:</td>
<td>Ask the patient to close his or her eyes and extend both arms straight out for 10 seconds. The palms should be up, thumbs pointing out.</td>
<td>Both arms move the same or both arms do not move at all.</td>
</tr>
<tr>
<td>Speech:</td>
<td>Ask the patient to repeat a simple phrase such as “Firefighters are my friends.”</td>
<td>The patient says it correctly, with no slurring.</td>
</tr>
<tr>
<td>Time:</td>
<td>Ask the patient, family or bystanders the last time the patient was seen normal. Encourage family to go to the hospital to provide medical history, or obtain contact information for a person who can provide medical history.</td>
<td></td>
</tr>
</tbody>
</table>

Stroke Warning Signs
- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- Sudden confusion, trouble speaking or understanding
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, loss of balance or coordination
- Sudden, severe headache with no known cause

DOH 346-049 October 2012
Additional Destination Considerations:

- If there are two or more stroke centers of the nearest facility capable of definitive care, the patient outside of the IV tPA time window may be considered for treatment at the facility with the shorter travel time.
- Any additional transport time should not take

**Step 4: Determine Destination**

- Time Last Known Normal is > 4.5 Hrs
- Time Last Known Normal & Stroke Severity Score
- Stroke Severity Score 4 or more
- Stroke Severity (LAS,)
Add up the points: a score of 2 or 4 is interpreted as "severe."
Grip strength: gets 2 points if no real effort can be made, 1 point if grip is clearly there but weak, and 0 points if grip seems of full strength.
Arm drift (have patient hold arms up in air): 2 points if in arm falls rapidly, 1 point if drifts slowly down and arm drift (does patient hold arms up in air): 0 points if absent.
Facial droop 8: gets 2 points; 0 points if absent.
Assess severity: The stroke severity assessment scores the FAST stroke screen. Patients get points for deficits.

Move on to assessing stroke severity:
FAST is positive (face or arms or speech is abnormal): it's likely the patient is having a stroke and the EMS provider should consider calling a stroke. If FAST is negative, stroke is less likely, and standard destination procedures apply. It's likely the patient is having a stroke if the patient is having a stroke.

Do a FAST Stroke Screen Assessment (facial droop, arm drift, speech changes; time since LKN is a simple way to tell if it's likely the patient is having a stroke.

Steps to determine destination:

Time since last known normal (LKN) which helps determine eligibility for tPA and thrombectomy.

Stroke Severity Score to determine if a patient meets criteria for "severe" stroke.

FAST Stroke Score to identify a patient with a high probability of stroke.

There are 3 key elements to determine the appropriate destination hospital:

More complex interventions, only available in level I and a smaller number of level II stroke centers.

If it, 2, or 3 stroke centers.

If a patient presents to EMS with a severe stroke, they are more likely to have a blockage of a large vessel and can benefit from thrombectomy. Patients with a severe stroke must be administered within 4.5 hours from the time the patient was last known normal, a treatment can be given in WA DOH.

The purpose of the Prehospital Triage and destination procedure is to identify the stroke patients in the field and take them to the most appropriate hospital, which might not be the nearest hospital. Stroke treatment is time-critical— the sooner patients are treated, the better their chances of survival and recovery function.
the field and it was a stroke alert.

Result(s) or reason why not: blood glucose level; LKN time (including unknown); and whether the hospital was notified from

Document: Key medical history, medication list and next of kin phone contacts; time on scene; Fast assessment and

determined protocol.

within 24 hours of LKN and severity of 4 or more, call a CODE STROKE according to county operating procedures or locally

Notification: Immediately notify the destination hospital of incoming stroke. If the patient is within 4.5 hours LKN, or

Stroke Center

Endovascular capability provided transport time is no more than 30 minutes greater than the nearest level II or level III

Time since LKN is 4.5 hours to 24 hours and "Severe" (score ≥ 4): Transport to the nearest level I stroke center with

Time since LKN is 4.5 hours to 24 hours but not "Severe" (score < 4): Transport to the nearest stroke center

Time since LKN is > 24 hours and ANY stroke severity score: Transport to the nearest stroke center

Determine Destination:

Symptoms, or for example, someone discovers a patient with symptoms but saw them normal 2 hours prior.

the patient or bystander noticed the onset, LKN could also be prior to symptoms starting if a patient delays reporting.

Reprinted patient woke up in the morning with symptoms and was normal when they went to bed, time LKN is the time they

Determine time since LKN: It is important to use the LKN time as opposed to when symptoms were first noticed. If a
COPD Exacerbation

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

**All EMS Providers**
- Establish Primary Management
- Titrate Oxygen commensurate to the patient’s level of distress.

**AEMT and Above Providers**
- If there is no Paramedic on scene, the AEMT may CONTACT MEDICAL CONTROL for:
  - Albuterol nebulizer:
    - Adults 5mg. Repeat 5mg 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.
- Combine 1st Albuterol nebulizer with 0.5mg Atrovent. Subsequent nebulizers should be Albuterol only.
- CPAP
- Methylprednisolone 125mg IV.
- Intubation as needed.
Croup

Designation of Condition: Pediatric illness marked by signs of upper airway inflammation. When severe, child will have stridor 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 1:1,000 diluted in 3ml’s NS via nebulizer.
    - >2yr: 0.5mg/kg per dose (maximum of 5mg total administration)
    - <2yr: 0.25mg/kg per dose (maximum of 5mg total administration)
  - If dosing cannot be accomplished in single neb treatment, split up the medication and administer as a continuous neb, adding the remaining medication when needed.
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 pertinent history, along with blood glucometry, is required prior to the 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 as indicated for hypoglycemia. Do not administer oral glucose (Dextrose) to any patient who has a compromised airway or decreased level of consciousness.
- Repeat BGL should be performed and recorded after all interventions.

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

**Hypoglycemia**
- If Blood Glucose Level is <80mg/dl (pediatric 60, neonate 45) and associated signs of hypoglycemia exist:
  - Adult: administer Dextrose per protocol
  - Pediatric: D10 or D25 per protocol
  - Neonate: D10 or D12.5 per protocol
  - 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.
- If patient also has suspected CVA, start at lower dosing.

**Hyperglycemia**
- Waveform capnography should be utilized to identify metabolic acidosis (signs of DKA: high BGL, tachycardia, compensatory tachypnea, ETCO2 less than 30 mmHg).
- For possible DKA, a fluid bolus for the adult patient of 500ml isotonic fluid should be administered. If lung fields remain clear, follow with an additional 500ml of isotonic fluid. Pediatric patients receive 10ml/kg bolus repeated once.

**ALS Providers**
- If unable to obtain IV/IO access in the adult patient, administer Glucagon 1mg 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).
Extrapyramidal Reactions

- Designation of Condition: A response to a medication marked by acute dystonia (muscle spasms) or akathisia (motor restlessness). Medications of concern include phenothiazine (e.g. Thorazine, Compazine, Phenergan) or butyrophenone (e.g. Haldol, Droperidol) and are often prescribed as antipsychotics and antiemetics.

**All EMS Providers**
- Establish Primary Management

**AEMT and Above Providers**
- En route, initiate an isotonic IV. Titrate to maintain LOC, HR and end organ perfusion.

**ALS Providers**
- Diphenhydramine 25-50mg IVP or IM (Pediatric dose 1mg/kg IVP or IM).
- All pediatric dosages max out at adult dose.
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

**AEMT and Above Providers**
- Initiate IV, titrate to maintain LOC, HR and end organ perfusion.
Hyperkalemia - Elevated Potassium Level (Abnormal Lab Values)

Designation of Condition: Hyperkalemia is an often-asymptomatic condition that is discovered during routine lab testing, but it can lead to significant arrhythmias or sudden death. Providers may encounter patients at local clinics with a predetermined diagnosis or suspect the diagnosis from EKG findings (abnormal and wide QRS) or from history taking. Signs of hyperkalemia include generalized fatigue, weakness, paresthesias, paralysis, and palpitations.

Special concern is warranted for patients with rhabdomyolysis, severe dehydration, excited delirium, crush injuries, or history of renal failure or dialysis. Any patient reported to have missed a dialysis session should be considered to have potential hyperkalemia and requires ALS evaluation including a 12-lead EKG. While not required in all situations, ALS transport is recommended as potentially life-threatening arrhythmias can occur without warning at almost any level of hyperkalemia.

**All EMS Providers**
- Establish primary management
- Arrange for ALS evaluation or intercept

**ALS Providers**
- Medical control should be contacted early for cases of presumed hyperkalemia
- Large bore IV access
- 12-lead EKG
- If there are EKG changes in the setting of known or suspected hyperkalemia administer EITHER
  - Calcium Gluconate
    - Adult: 15-30ml SLOW IVP (Do not exceed 2ml/minute) repeat if necessary after 5-10 minutes
    - Pediatric: 0.5ml/kg SLOW IVP (Do not exceed 1ml/minute) repeat if necessary after 5-10 minutes
  - OR
    - Calcium Chloride
      - Adult: 5-10ml SLOW IVP (Do not exceed 2ml/minute) repeat if necessary after 5-10 minutes
      - Pediatric: 0.2ml/kg SLOW IVP (Do not exceed 1ml/minute) repeat if necessary after 5-10 minutes

Cont.
Hyperkalemia Cont.

- **Calcium administration special notes;**
  - Calcium Chloride is approximately three times more concentrated than Calcium Gluconate accounting for the dosage difference.
  - Calcium is caustic and must be administered through the largest vein possible
  - Calcium should be withheld in patients taking digoxin until MEDICAL CONTROL can be consulted

- **Concurrent therapies**
  - Albuterol via nebulizer 5mg (pediatric dose 2.5mg)
  - Sodium Bicarbonate 1 mEq/kg maximum 50 mEq IV adult and pediatric (must use separate IV or thoroughly flush after calcium)
  - All pediatric dosages max out at adult dose.
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 the patient to hypothermia include: exhaustion, diabetes, hypothyroidism, iron deficiency, anorexia, renal failure, and many medications or drugs including tricyclic antidepressants, antipsychotics, narcotics, benzodiazepines, steroids, caffeine, alcohol and nicotine. Hypothermic arrests and near-drowning events deserve full resuscitative attempts. CONTACT MEDICAL CONTROL for direction.

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.

AEMT and Above Providers
- Initiate isotonic IV fluids.
Opiate 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.
- Refer to EMT Nasal Naloxone protocol (next page)

**AEMT 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 0.4-4mg for adults or 0.1mg/kg for pediatrics (max dose 4mg), IV/IO/IN/IM/SQ Repeat Naloxone every 2 minutes if necessary; titrate to respiratory improvement. High doses may be required for synthetic narcotics.
- Titrating to level of consciousness is not necessary unless it involves airway protection.
- 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 (supraglottic).

**ALS Providers**
- Monitor cardiac rhythm, treat as appropriate.
- If prompt improvement does not occur, see protocol for unconscious/unresponsive.
- Monitor waveform capnography to assure adequate ventilations.
- Consider endotracheal intubation as necessary.
EMT Naloxone Administration for Opiate Overdose in Adults

A paramedic level of response should be dispatched simultaneously to all respiratory arrest responses.

**All EMS Providers**

**Indications**
- Respiratory compromise
- Abnormal breathing
- RR <6 and/or episodes of apnea
- Decreased level of consciousness
- Pinpoint pupils

**Contraindications:** None when used in a life-threatening emergency

- Scene - Size-Up: Personnel Safety, drug paraphernalia (needles, cooking material, pill bottles etc.).
- Intervention:
  - Obtain history as possible
  - Rapid physical assessment
    - ALOC
    - Respiratory rate, abnormal breathing
    - Pulse rate, BP if possible
    - Pupillary size, look for pinpoint pupils
    - Evidence of drug use (needle tracks, syringes, pills, powder)
  - If pulseless: Follow Cardiac Arrest protocol
    - Apnea with pulse: Assist ventilation as needed. Use oral/nasal airway and supraglottic airway as indicated.
  - Administer Naloxone (Narcan)
    - Open kit and/or load 2-4mg (2ml) Naloxone in syringe
    - Attach atomizer to syringe
    - Place atomizer into nostril
    - Briskly compress syringe to administer 1-4mg (depending on concentration) of atomized spray, no more than 1ml per nostril.
  - Reevaluate LOC, respirations, and pulse continuously. Provide rescue breathing and CPR as needed. Naloxone IN will take 3-5 minutes to take effect. Spontaneous breathing is the goal.
  - If no improvement after initial dose, may repeat the dose and consider other causes of altered mental status
  - Be prepared to manage patient agitation and combativeness.

⚠ **NOTE:** Supraglottic airway should be used only if Naloxone has no effect and CPR is continued
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.

AEMT 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 2mg IV, ET, IO, IM every 1-3 minutes repeated until symptoms abate.
- Pediatric [0.05mg/kg] IV, ET, IO every 1-3 minutes repeated until symptoms abate.
- CONTACT MEDICAL CONTROL for additional doses if needed.
Poisoning/Overdose

All EMS Providers
- Determine scene safety
- Ensure appropriate Personal Protective Equipment
- Establish Primary Management
- Maintain airway and ventilations as needed
- Obtain history:
  - Type/amount ingested
    - Route of ingestion (inhaled, injected, ingested, skin exposure)
    - Timing of exposure
    - History of other drugs/ETOH use
    - Pre-existing medical history
    - Consider calling the Poison Center at 800-709-0911 or 800-222-1222
  - Still need to contact MEDICAL CONTROL for direction
- If seizing, refer to Seizure protocol
- If suspected opiate overdose, refer to Narcotic Overdose protocol
- If suspected organophosphate overdose refer to Organophosphate protocol
- If suspected tricyclic antidepressant overdose, refer to TCA Overdose protocol
- If inhaled poison:
  - Remove patient to fresh air
  - Administer Oxygen
- If skin/eye contamination:
  - Remove contaminated clothes
  - Remove gross contamination
  - Decontaminate as appropriate per ChemTrec/ MSDS/ Poison Control or HazMat guidelines or advice

BLS and Above Providers
- Determine blood glucose levels
- Monitor vital signs
- Consider BVM-assisted ventilation for inadequate respiratory effort
  - Avoid supraglottic airway in known caustic ingestion

AEMT and Above Providers
- Initiate isotonic IV; titrate to maintain LOC, HR and end organ perfusion.
- Administer Dextrose per protocol for hypoglycemia

ALS Providers
- Cardiac monitor, pulse oximetry - treat any dysrhythmias per appropriate protocol
- Intubate as indicated
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
- Oxygen, assisted ventilations as needed
- 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.

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

**ALS Providers**
- If patient's mentation has not returned to normal baseline, ALS transport is required.
- If seizure is prolonged or if more than 2 seizures occur without an intervening lucid period, administer one of the following.
  - Midazolam
    - 1-2mg IV/IO/IM dose, not to exceed 5mg total administered
    - Pediatric dose 0.1mg/kg up to standard adult dosing
    - For Intranasal Midazolam see following chart on the next page.
  - Lorazepam
    - 1-2mg IV/IO/IM dose not to exceed 6mg.
    - Pediatric dose 0.05mg/kg IV/IO/IM not to exceed 2mg should be diluted 1:1 with NS.

Cont.
Seizures/Convulsions Cont.

- Diazepam
  - Adult: 2-10mg SIVP/IO/dose, up to a maximum of 20mg
  - Pediatric:
    - Children 6 months-5 yr: 0.2mg/kg SIVP or IO
      - Maximum single dose 2mg
      - Maximum total administration of 5mg
    - Children >5 yr: 1mg SIVP or IO
      - Maximum single dose 2mg
      - Maximum total administration of 10mg
  - Diazepam may be administered rectally via a lubricated 3cc syringe. The pediatric rectal dose is 0.5mg/kg.
- Titrate for effect. May repeat dose as needed for seizure control.
- Monitor airway after Benzodiazepine administration.
- Contact MEDICAL CONTROL for Benzodiazepine doses in excess of the above.
- If febrile seizure consider Acetaminophen
  - Adult: 650mg (max dose)
  - Pediatric: 15mg/kg PR or PO >6 months
- All pediatric dosages max at adult dose unless otherwise specified
## Intranasal Midazolam Dosing chart**

<table>
<thead>
<tr>
<th>Patient age (years)</th>
<th>Weight (kg)</th>
<th>IN Midazolam vol in ml* 5mg/ml concentration Vol. Dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
<td>3kg</td>
<td>0.3ml 0.6mg</td>
</tr>
<tr>
<td>&lt;1yr</td>
<td>6kg</td>
<td>0.4ml 1.2mg</td>
</tr>
<tr>
<td>1yr</td>
<td>10kg</td>
<td>0.5ml 2.0mg</td>
</tr>
<tr>
<td>2yr</td>
<td>14kg</td>
<td>0.7ml 2.8mg</td>
</tr>
<tr>
<td>3yr</td>
<td>16kg</td>
<td>0.8ml 3.2mg</td>
</tr>
<tr>
<td>4yr</td>
<td>18kg</td>
<td>0.9ml 3.6mg</td>
</tr>
<tr>
<td>5yr</td>
<td>20kg</td>
<td>1.0ml 4.0mg</td>
</tr>
<tr>
<td>6yr</td>
<td>22kg</td>
<td>1.0ml 4.4mg</td>
</tr>
<tr>
<td>7yr</td>
<td>24kg</td>
<td>1.1ml 4.8mg</td>
</tr>
<tr>
<td>8yr</td>
<td>26kg</td>
<td>1.2ml 5.2mg</td>
</tr>
<tr>
<td>9yr</td>
<td>28kg</td>
<td>1.3ml 5.6mg</td>
</tr>
<tr>
<td>10yr</td>
<td>30kg</td>
<td>1.4ml 6.0mg</td>
</tr>
<tr>
<td>11yr</td>
<td>32kg</td>
<td>1.4ml 6.4mg</td>
</tr>
<tr>
<td>12yr</td>
<td>34kg</td>
<td>1.5ml 6.8mg</td>
</tr>
<tr>
<td>Small teenager</td>
<td>40kg</td>
<td>1.8ml 8.0mg</td>
</tr>
<tr>
<td>Adult or grown teenager</td>
<td>&gt;50kg</td>
<td>2.0ml 10.0mg</td>
</tr>
</tbody>
</table>

** This volume is based on the calculated dose PLUS 0.10ml dead space in the device (the amount of medication that will remain within the syringe and atomizer tip and therefore will not be delivered to the child). The total volume is then rounded off to the next highest 0.1ml. Slightly higher doses may be appropriate at the lower range of volume (in smaller children) due to measurement difficulties and possible underdosing which may not stop the seizure. In some children a higher dose (0.3mg/kg) may be more appropriate according to studies.
To calculate intranasal Midazolam manually, use the below formula:

- Assess weight: children weight in kg = 10 + 2 (Age in years) or Broselow tape
- Calculate appropriate dose of midazolam using the following formula:
  - Children: Total kg X 0.2mg = total mg dose of midazolam, maximum of 10mg.
  - Adults over 50kg: 10mg (2ml) of midazolam.
  - Total volume in milliliters of midazolam (5mg/ml concentration) = (Total mg dose divided by 5mg/ml) + 0.1ml for dead space of device.

- Load syringe with appropriate milliliter volume of midazolam (use only 5mg/ml concentration) and attach nasal atomizer.
- Place the patient supine.
- Place atomizer within the nostril.
- Briskly compress syringe to administer 1/2 of the volume as atomized spray.
- Remove and repeat in other nostril, so all the medication is administered.
- Ventilate using a BVM device PRN.

If seizures persist 5 minutes after treating, consider repeating dose of midazolam intranasally, or switch to intramuscular or intravenous dosing. Secure airway as necessary.
Sepsis

Designation of Condition: Sepsis is the combination of SIRS (Systemic Inflammatory Response) and a presumed source of infection. Sepsis runs a continuum from mildly abnormal vital signs to septic shock and altered mental status (ranging from delirium to lethargy). Early recognition and fluid resuscitation are paramount. Blood pressure is often normal in sepsis and worsens as septic shock occurs.

Prehospital sepsis criteria include a suspected or documented infection with any 2 of the following:
- HR >90
- RR >20
- Temp <36.0°C (96.8°F) or >38°C (100.4°F)

A CODE SEPSIS should be initiated for any patient found to meet Sepsis Criteria who also exhibits any of the following:
- BP <90 or relative hypotension (history of hypertension on meds and has an SBP of 100, with other signs of sepsis)
- Lactate >2 mmol/L ETCO2 <25
- Signs of shock: altered mental status, lethargy, poor peripheral perfusion, ischemic EKG changes, high flow O2 required to maintain SPO2, etc.

CODE SEPSIS requires ALS evaluation, aggressive fluid resuscitation (goal of 20ml/kg), and early notification to the receiving hospital.

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.
- High flow Oxygen in shock states.
- Consider ALS intercept for all patients that meet sepsis criteria unless transport will be significantly delayed.
- ALS intercept required for all patients who meet CODE SEPSIS CRITERIA or exhibit altered mental status, shock, hypotension or airway compromise.

BLS and Above Providers
- Glucometry

Cont.
Sepsis Cont.

**AEMT and Above Providers**
- Initiate multiple isotonic IV’s. In septic patients titrate IV fluids to maintain LOC, HR and end organ perfusion. For patients meeting CODE SEPSIS CRITERIA, IV fluid goal is 20ml/kg.
  - Reassess pulmonary function after every fluid bolus
- If BGL <80mg/dl administer Dextrose per protocol.

**ALS Providers**
- Airway management as indicated
- Monitor EKG, ETCO2, consider 12-lead EKG
- Consider vasopressor after adequate fluid resuscitation (20ml/kg)
  - Norepinephrine 8-12mcg/min Titrate down to 2-4mcg/min to BP between 90-110 to maintain LOC, HR and end organ perfusion.
- Consider Acetaminophen
  - Adult: 650mg (max dose)
  - Pediatric: 15mg/kg PR or PO >6 months
- All pediatric dosages max at adult dose.
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 requesting ALS intercept as appropriate. If ALS provider is on scene a full ALS evaluation should be performed.

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
- If BGL <80mg/dl administer Dextrose per protocol.

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

ALS Providers
- Cardiac monitoring
- 12-lead EKG
- ETCO2 monitoring
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

**AEMT 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 1 mEq/kg (maximum single dose of 50 mEq), May give up to 2 repeat doses, ten minutes apart, for a total of three doses)
- Titrates to blood pressure if hypotensive, otherwise administer 500cc bolus, then TKO. Multiple IV lines are encouraged.
- Treat any dysrhythmias per appropriate ACLS protocol.
- If seizing, refer to Seizure protocol.
Evaluation at Birth - APGAR Scoring System

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

<table>
<thead>
<tr>
<th>Evaluation Factor:</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Rate</td>
<td>Absent</td>
<td>&lt;100</td>
<td>&gt;100</td>
</tr>
<tr>
<td>Respiratory Effort</td>
<td>Absent</td>
<td>Slow or Irreg.</td>
<td>Strong Cry</td>
</tr>
<tr>
<td>Muscle Tone</td>
<td>Limp</td>
<td>Some Flexion</td>
<td>Active Motion</td>
</tr>
<tr>
<td>Reflex Irritability</td>
<td>None</td>
<td>Some Motion</td>
<td>Vigorous</td>
</tr>
<tr>
<td>Color</td>
<td>Blue or Pale</td>
<td>Blue Ext./Pink</td>
<td>Core Body Pink</td>
</tr>
</tbody>
</table>
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, and stimulation.
- Clean, dry and wrap baby in clean sheet, towel or blanket. Cover the head and place the infant skin-to-skin to mother's chest covered by a blanket.
- If the baby's respirations and movement are depressed or abnormal despite above, follow Neonatal Resuscitation protocol.
- Urgent clamping of cord only indicated if neonatal resuscitation needed.
- Oxygen blow-by as needed.
- Firmly massage the fundus after delivery of neonate as needed to control bleeding.
- Gently deliver the placenta; do not pull on the umbilical cord.

**AEMT and Above Providers**
- Initiate large bore isotonic IV’s 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 care according to normal delivery.
- Delivery of the lower extremities is generally easily accomplished.
- You may have to reach inside and deliver each leg individually.
- 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 should be delivered in 3-5 minutes.
- The shoulders are delivered by sweeping the anterior arm out rotating the fetus so that the other arm is anterior and sweep the second arm out.
- The infant will then usually rotate so that the back faces anteriorly.
- Cover infant with towel and gently raise legs. While inserting finger into mouth and gently flexing head allowing head to easily deliver. The maneuver is to tuck not pull.
- 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.
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 and delivery is imminent, IMMEDIATE intervention is required. Attempt gentle loosening of cord with fingers as a first maneuver.
- Deliver baby as per normal delivery unless the cord is too tight to allow normal delivery.
  - If cord is too tight it should be clamped, cut, and immediate delivery of infant should proceed.
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**

- 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 en route 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.
- Establish Primary Management
- **DO NOT** delay delivery if birth appears imminent.
- There is no need for regular suctioning just because meconium is present. Only suction if the child is non-vigorous.
- 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, initiate BVM (Oxygen titrated to effect) and provide tactile stimulation.
- If HR is less than 60, begin CPR (you can palpate umbilical cord for fetal pulse).
- Proceed following current American Heart Association Guidelines.

All cardiac arrest care should at all levels follow the MOST CURRENT AHA Guidelines in the event this document is not up to date.
Tocolysis of Labor

Designation of Condition: The need to stop contractions. This should only be done under the direction of the primary present Obstetrician and or MEDICAL CONTROL.

All EMS Providers
  ● Establish primary management

AEMT and Above Providers
  ● Initiate isotonic IV; titrate to maintain LOC, HR, and end organ perfusion

ALS Providers
  ● Administer Magnesium Sulfate 6gm SIVP in 250ml over 20 minutes.
  ● Respiratory depression/arrest, hypotension, areflexia may be caused by too rapid administration or overdose of Magnesium Sulfate. These effects can be reversed by Calcium Gluconate 1gm SIVP over 5-10 minutes
Vaginal Hemorrhage

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 baby, firmly massage the fundus. If bleeding persists, more aggressive fundal massage is required.
- 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.

**AEMT and Above Providers**
- En route, initiate 2 large bore IVs of isotonic fluids, titrate to maintain LOC, HR and end organ perfusion. Aggressive fluid resuscitation is encouraged.
Pre-Eclampsia/Eclampsia

Designation of Condition: Pre-eclampsia and Eclampsia are hypertensive disorders specific to pregnancy. They occur late in pregnancy (after the 20th week) or up to six weeks after delivery. Pre-eclampsia is characterized by hypertension (140/90), protein in the urine, hyperreflexia, increased edema, headache, and/or visual disturbances. The patient will often present generally ill, pale, with edema in the face and hands. Pre-eclampsia can progress to Eclampsia as evidenced by seizures. Eclampsia is a life-threatening event. There may be accompanying pulmonary edema.

- History of a previous seizure disorder should be determined.
- When in doubt contact MEDICAL CONTROL.

**All EMS Providers**
- Establish Primary Management
- Position patient on her left side if feasible

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

**ALS Providers**
- Eclampsia no longer seizing:
  - Administer Magnesium Sulfate 4gm IV in 100-250ml NS over 15-20 minutes
- Eclampsia with active seizure:
  - Administer Magnesium Sulfate 6gm IV in 100-250ml NS over 15-20 minutes
- Consider concurrent Benzodiazepine administration per Seizure protocol.
- If no IV/IO access contact MEDICAL CONTROL for IM dosing.
- May repeat Magnesium Sulfate 2gm IV in 100-250ml NS over 15-20 minutes if patient has a second seizure after first administration completion.
- Respiratory depression/arrest, hypotension, areflexia may be caused by too-rapid administration or overdose of Magnesium Sulfate. Effects can be reversed by Calcium Gluconate 1gm IV over 5-10 minutes.
Agitated or Violent Patient

Safety of the patient, public, and EMS providers must be considered. At the first indication of a dangerous situation, notify law enforcement.

- Patients are potentially dangerous when there is an indication of:
  - Suicidal or self-destructive behavior
  - A threat against others
  - An underlying medical, traumatic, psychiatric, or substance abuse disorder causing an altered mental status

Scene security, including moving the patient to a safe location, should occur prior to treatment.

- EMS team members should enter and depart the scene together. 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 must leave.

- Any medical and traumatic needs must be addressed per appropriate protocol.
Involuntary Restraint and Transport

Designation of Condition: It is appropriate to use restraints, chemical and/or physical, when a patient is believed to represent a danger to themselves, or, when a patient lacks capacity to understand the consequences of their actions and is felt to be a danger to themselves or others because of an acute medical, traumatic, mental health, or chemical dependency disorder. The reason for the restraints must be explicitly documented in the narrative section of the electronic health record.

All EMS Providers

- Ensure scene safety and establish primary management
- Attempt crisis intervention and de-escalation techniques
- Physical restraints must be used in a humane manner, offering the patient as much dignity as possible
- Explain to the patient and their family the reason for the restraints
- Use the least restrictive restraints possible
- Never place the restrained patient in the prone position or use hobble restraints
- In addition to any extremity restraints, appropriate securement to the gurney for patient transport is required
- All physically restrained patients must have their airway, circulatory, and respiratory status monitored and documented along with physical assessment and vital signs
  - Document glucometry if mental status is altered
  - Document full set of vital signs every 5-15 minutes
  OR
  - Document barriers preventing full set of vital signs every 5-15 minutes
- Evaluate for hyperthermia
- The ongoing need for restraints must be documented
- Restraints must be removed when the provider deems it is safe to do so.
Agitated or Violent Patient/ Excited Delirium: Chemical Sedation

Designation of Condition: Excited delirium is a condition of extreme agitation and aggressive behavior that may progress to sudden death with the use of physical control measures. Signs and symptoms include paranoia, disorientation, hallucination, incoherent speech, seemingly superhuman strength, tachycardia, and hyperthermia. Drugs, alcohol, history of mental illness, and head trauma may contribute to the condition. In addition to scene safety measures, law enforcement involvement, and de-escalation techniques, chemical sedation may be employed to prevent worsening the condition.

**All EMS Providers**
- Establish Primary Management
- Document glucometry as soon as feasible

**AEMT and Above Providers**
- Initiate isotonic IVF; titrate to maintain LOC, HR, end organ perfusion

**ALS Providers**
The goal is to achieve behavioral control and prevent harm to the patient, the public, law enforcement, and EMS responders.

- All chemically sedated patients must also have IV access established, 12-lead EKG, cardiac, ETCO2, and pulse Oxygen saturation monitoring as soon as feasible
- Airway and ventilatory support may be required
- For patients who deteriorate, consider hyperthermia, and hyperkalemia with metabolic acidosis, and treat per protocol
- Benzodiazepines:
  - Valium: 2-10mg IV/IO, max of 20mg
  - Ativan: 1-2mg IV/IO/IM, max of 6mg
  - Versed: 1-2mg IV/IO/IM max of 5mg
    - Contact MEDICAL CONTROL for higher doses
  - Intranasal versed per dosing chart (10mg for adult)
- Ketamine:
  - 4mg/kg IM once or 1mg/kg IV/IO, may repeat 0.5mg/kg IV/IO once
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 toxicological 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, and is refusing care, patient may be released per protocol.
- Taser barbs may be removed as per individual agency policy.

**AEMT 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.
- May be released per protocol.
- Cautious use of medication per Chemical Restraint protocol as needed. Monitor neurologic status and vital signs frequently. Be prepared to secure airway and ventilation prior to administration. In cases of cardiac arrest in this setting, consider Excited Delirium and empirical treatment for hyperkalemia/metabolic acidosis with Sodium Bicarbonate and Calcium Gluconate, per standard ACLS guidelines for hyperkalemia.
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. Discussions 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 EMT 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.

**AEMT and Above Providers**
- If shock potential is present, 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.
- Contact MEDICAL CONTROL to assist with snake identification and assure antivenin resources.

**AEMT and Above Providers**
- En route, 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**
- Morphine per protocol.
- Fentanyl per protocol
Burns - Rule of Nines

Rule of Nines
(Figures represent anterior and posterior)

<table>
<thead>
<tr>
<th></th>
<th>Adult</th>
<th>Child</th>
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<tbody>
<tr>
<td>Head</td>
<td>9%</td>
<td>18%</td>
</tr>
<tr>
<td>Chest/Back</td>
<td>18%</td>
<td>18%</td>
</tr>
<tr>
<td>Arm</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Leg</td>
<td>18%</td>
<td>14%</td>
</tr>
<tr>
<td>Pubis/perineum</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

- The size of the patient's hand (including fingers) 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.
Burns - Classification

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.

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
- All partial thickness burns of <20% in adults and <10% in children
- Full thickness injuries of <10% body surface area

⚠️ NOTE:
- Certain types of burns such as electrical or scalding burns may not have the severity be fully apparent on the initial exam.
- In general patients may need to go to the nearest appropriate trauma center for stabilization prior to transport to nearest burn center. Contact MEDICAL CONTROL for transport decision / recommendations.
Burns - 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.

**AEMT and Above Providers**
- En route, initiate isotonic IV.
  - 125ml for ≤5yr
  - 250ml for 6yr to 40kg patient weight
  - 500ml for greater than 40kg patient weight
  - If burned surface area >20%, bolus patient with 20cc/kg (may repeat).
  - DO NOT place IV in burned skin region unless absolutely necessary.
- Consider ALS intercept for pain medications.

**ALS Providers**
- Morphine per protocol
- Fentanyl per protocol.
- 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.

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

Cont.
Crush Injuries Cont.

**ALS Providers**
For significant muscle mass involvement, (e.g. one complete lower extremity), longer than 30 minutes:

During Entrapment
- Monitor EKG, ETCO2 and SPO2.
- Titrate isotonic fluids to systolic BP of 100 mm/Hg, LOC and end organ perfusion. 1500ml per hour recommended for prolonged extrication.
- Auscultate lung sounds frequently, check for pulmonary edema.
- Sodium Bicarbonate 50 mEq IV per hour.
- Fentanyl or Morphine per protocol

Before Removal of Crushing Force
- Coordinate removal with rescue personnel.
- 1000mL isotonic IV fluid bolus.
- Sodium Bicarbonate 50 mEq IV bolus immediately before release of force.
- Remove crushing force slowly.

After Removal of Crushing Force
- Titrate isotonic IVs to BP of 100 mm/Hg, LOC and end organ perfusion.
- Levophed per protocol.
- Treat dysrhythmias per Cardiac Emergencies Protocol.
  - Calcium per protocol.
  - Sodium Bicarbonate per protocol.
  - Albuterol nebulizer
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 welder’s burn (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**
- Proparacaine: instill 2 drops of anesthetic solution before irrigation. Proparacaine is contraindicated in the presence of penetrating eye injuries. When in doubt, CONTACT MEDICAL CONTROL.
- Patients that receive proparacaine must 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, motion, 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, 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.

**AEMT and Above Providers**
- Initiate isotonic IV, on unaffected side, to maintain LOC, HR, and end organ perfusion.

**ALS Providers**
- Morphine per protocol
- Fentanyl per protocol
- See Analgesia and Sedation protocol.
Hemorrhage

Designation of Condition: The patient will have external hemorrhage.

**All EMS Providers**
- Standard hemorrhage control (direct pressure, elevation, pressure bandage).
- Hemostatic Dressing Indications & Procedure
  - Device utilized must be commercially produced impregnated gauze.
  - Hemorrhage from head, trunk or extremities refractory to direct pressure, elevation, splinting and proximal artery compression.
  - May be used with tourniquet
  - 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/Device/Procedure
  - 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.
  - Any commercially available tourniquet device may be used.
  - Apply 1 to 2 inches proximal to injury site (or per device instructions).
  - 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 EHR.
  - Reassess every 3 minutes for additional bleeding, tighten as needed.
- Tourniquet Removal
  - Contact MEDICAL CONTROL for approval to remove if tourniquet time may be greater than 1 hour.
  - 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 Cerebrospinal Fluid (CSF) leak.

**All EMS Providers**
- Monitor serial GCS and document every 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.

**AEMT and Above Providers**
- If BGL <80mg/dl, treat per hyperglycemia protocol at lower dose limits
- Titrate IV NS to keep systolic BP >90 mmHg
- Do not administer Nitroglycerin or otherwise attempt to lower the blood pressure.

**ALS Providers**
- If patient is being ventilated, ensure that ETCO2 is maintained at 35-40 mmHg, unless herniation is imminent. If herniation is imminent, maintain ETCO2 between 30-35 mmHg with goal of getting patient to OR. Prolonged hyperventilation to 30-35 mmHg portends worse outcome.
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, supraglottic airway as indicated.
- Begin immediate transport to appropriate facility if ALS not imminent.

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

**ALS Providers**
- Consider causes of shock and treat accordingly
- Check and continuously monitor ETCO2
- Hypovolemic
  - Initiate large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.
  - Bolus 20cc/kg as needed and reassess.
  - Vasopressors per protocol
- Obstructive - Tension Pneumothorax
  - Needle Decompression.
- Distributive - Spinal
  - Initiate large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.
  - Vasopressors per protocol

⚠ **NOTE:**
- Avoid over-resuscitation with IVF, especially in penetrating trauma. Treat to level of consciousness, systolic BP of 90 may be acceptable
- Exception is head trauma with TBI, avoid any hypotension with IVF and vasopressors per protocol
Spinal Motion Restriction (SMR)

Designation of Condition: SMR is indicated for trauma patients when there is a suspicion of spinal injury or the patient complains of pain in the area of the vertebral column. Caution should be exercised in patients <8 or >70 yr 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 drug or alcohol intoxication
- 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.
- For those with high risk mechanism (as defined by protocol) in a c-collar, but not on a backboard requiring SMR:
  - HOB elevation not more than 30-degrees
  - Remain supine on gurney
  - Restriction from turning, bending, sitting up, or rolling on own
  - Enough personnel to insure the ability to move and roll the patient

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.
Spinal Assessment Decision Chart

**Spinal Assessment**

- Pain, tenderness, deformity along midline spine
- Any neurological deficit or symptom
- Prior spinal surgery, arthritis, or disease affecting spine
- Altered mental state
- Alcohol or drug intoxication
- Painful or distracting injury

**Yes**

- Altered mental status
- Neurological deficit or symptoms
- Thoracic or lumbar pain, tenderness or deformity
- High Risk Mechanism* AND
  - Alcohol or drug intoxication
  - Communication barriers
  - Distracting injuries
- Intubated trauma patients

**No**

- **Don’t immobilize**

**Yes**

- All others
- Isolated back pain
- Ambulatory
- Long transports

**No**

- C-Collar only

---

*High Risk Mechanism*

<table>
<thead>
<tr>
<th>MVC ejection</th>
<th>Motorcycles</th>
<th>MVC rollover</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVC &gt; 60 MPH</td>
<td>Pedestrian struck</td>
<td>Sports injuries</td>
</tr>
<tr>
<td>Age &lt; 3 y/o</td>
<td>Age &gt; 65 y/o</td>
<td>Axial load to spine (diving injury)</td>
</tr>
<tr>
<td>Bicycle struck or collision</td>
<td>Motorized recreation vehicles</td>
<td></td>
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</table>
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.
- 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.

**AEMT and Above Providers**
- Initiate 1-2 large bore isotonic IVs. Titrate to maintain LOC, HR, and end organ perfusion.

**ALS Providers**
- Morphine per protocol.
- Fentanyl per protocol.
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**
- Patients who meet CDC Trauma Criteria
- Anticipated arrival of >=3 seriously injured patients.
Washington State Trauma Triage Destination Procedures

State of Washington
Prehospital Trauma Triage (Destination) Procedure

Purpose

The Trauma Triage Procedure was developed by the Centers for Disease Control in partnership with the American College of Surgeons, Committee on Trauma. The guidelines have been adopted by the Department of Health (DOH) based on the recommendation of the State EMS and Trauma Steering Committee.

The procedure is described in the attached algorithm. The guidelines represent the current best practice for the triage of trauma patients. The algorithm allows EMS and Trauma Responders to quickly and accurately determine if the patient is a major trauma patient. Major trauma patients must be taken to the highest appropriate level trauma facility in the defined system within 30 minutes transport time (Air or Ground).

The “defined system” is the trauma system that exists within an EMS and Trauma Care Region.

Explanation of Procedure

Any certified EMS and Trauma responder can identify a major trauma patient and activate the trauma system. This may include asking for Advanced Life Support response or air medical evacuation.

Step (1) Assess the patient’s vital signs and level of consciousness using the Glasgow Coma Scale. Step 1 findings require activation of the trauma system. They also require rapid transport to the highest, most appropriate trauma center within 30 minutes transport time (ground or air). If unable to manage the patient’s airway, consider meeting up with an ALS unit or transporting to the nearest facility capable of definitive airway management.

Step (2) Assess the anatomy of injury. Step 2 findings require activation of the trauma system. They also require rapid transport to the highest, most appropriate trauma center within 30 minutes transport time (ground or air). The presence of the specific anatomical injuries even with normal vital signs, lack of pain or normal levels of consciousness still require calling medical control and activating the trauma system.

Step (3) Assess biomechanics of the injury and address other risk factors. The conditions identified are reasons for the provider to transport to a trauma center. The destination trauma center need not be the highest level trauma center. Medical control should be contacted as soon as possible.

Step (4) has been added to assess special patients or system considerations. Risk factors coupled with “Provider Judgment” are reasons for the provider to contact Medical Control and discuss appropriate transport for these patients. In some cases, the decision may be to transport to the nearest trauma center.

Regional Patient Care Procedures (PCP’s) and Local County Operating Procedures (COPS) provide additional detail about the appropriate hospital destination. PCP’s and COP’s are intended to further define how the system operates. The Prehospital Trauma Triage procedure and the Regional Patient Care Procedures work in a "hand in glove" fashion to address trauma patient care needs.
Washington State Trauma Triage Destination Procedures

**Measure Vital Signs & Level Of Consciousness**
- Glasgow Coma Scale < 13 or
- Systolic Blood Pressure < 90 mmHg
- Respiratory Rate < 10 or > 29 per minute or need for Ventilator support (~20/min in infant aged < 1 year)

**STEP 1**

**Assess Anatomy of Injury**
- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g., flail chest)
- Two or more proximal long bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

**STEP 2**

**Assess Mechanism of Injury & Evidence of High-Energy Impact**
- Falls
  - Adults: > 20 ft. (1 story = 10 ft.)
  - Children: > 10 ft. or 2-3 times height of child
- High-Risk Auto Crash
  - Intrusion, including roof > 12 inches occupant site, > 13 inches any site
  - Ejection (partial or complete) from automobile
  - Death in same passenger compartment
  - Vehicle telemetry data consistent with a high-risk injury
- Auto vs. pedestrian/bicyclist thrown, run over, or with significant (>20 mph) impact
- Motorcycle crash > 20 mph

**STEP 3**

**Assess Special Patient or System Considerations**
- Older Adults
  - Risk of injury or death after age 55 years
  - Systolic BP < 110 may represent shock after age 65
  - Low impact mechanisms (e.g., ground level) fall may result in severe injury
- Children
  - Should be triaged preferentially to pediatric capable trauma center
- Anticoagulants and bleeding disorders
  - Patients with head injury are at high risk for rapid deterioration
- Burns
  - Without other trauma mechanism, triage to burn facility
- Pregnancy > 20 weeks
- EMS provider judgment

**STEP 4**

**When in Doubt, Transport to a Trauma Center!**

Take patient to the system's highest appropriate level Trauma Center within 30 minutes transport time (Air or Ground)

**System** is defined as the Regional or Local EMS and Trauma System.

Transport to closest appropriate trauma center within 30 minutes transport time (Air or Ground), which, depending upon the defined trauma system, need not be the highest level trauma center.

Contact medical control and consider transport to a trauma center or a specific resource hospital.

Transport according to local protocol & Regional PCP.
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
- All providers must request to speak directly to the ED physician in the following cases:

<table>
<thead>
<tr>
<th>Patients requiring advanced airway measures</th>
<th>Any critically ill patient who appears to be having a life-threatening event</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEMI</td>
<td>All Step 1 and Step 2 CDC Trauma</td>
</tr>
<tr>
<td>Cricothyrotomy</td>
<td>Application of a Tourniquet</td>
</tr>
<tr>
<td>Morphine doses greater than 20mg</td>
<td>Termination of resuscitation as indicated in TOR Protocol</td>
</tr>
<tr>
<td>ALS wants to transfer field call to RN car</td>
<td>Pediatric non cardiac arrest uses of Amiodarone</td>
</tr>
<tr>
<td>Fentanyl doses greater than 3mcg/kg</td>
<td>Anytime protocol indicates Contact MEDICAL CONTROL</td>
</tr>
</tbody>
</table>

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...”
## APPENDIX A - PROCEDURES

### Analgesia and Sedation in the Non-Intubated Patient

**ALS Providers**

<table>
<thead>
<tr>
<th>Indications Analgesia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Pain management in injured patients that may require extrication, splinting, and/or immobilization/spinal motion restriction</td>
<td></td>
</tr>
<tr>
<td>● Pain management in patients undergoing painful procedures including but not limited to traction splints, needle thoracostomy, transcutaneous pacing, and cardioversion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indications Sedation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Sedation in patients undergoing painful procedures including but not limited to traction splints, needle thoracostomy, transcutaneous pacing, and cardioversion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Depressed level of consciousness that will require airway management (reference airway management protocol)</td>
<td></td>
</tr>
<tr>
<td>● Hemodynamic instability is a relative contraindication. Patients may require appropriate fluid resuscitation and vasopressor use, and reduced doses of analgesics and sedatives</td>
<td></td>
</tr>
<tr>
<td>● Weight &lt;13kg</td>
<td></td>
</tr>
<tr>
<td>● Use caution mixing a narcotic and Benzodiazepine as can cause respiratory depression, start with low doses and titrate to effect. Be prepared to manage airway</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper equipment</td>
<td></td>
</tr>
<tr>
<td>● IV/IO access as indicated/available</td>
<td></td>
</tr>
<tr>
<td>● Cardiac monitoring</td>
<td></td>
</tr>
<tr>
<td>● Pulse oximetry</td>
<td></td>
</tr>
<tr>
<td>● ETCO2 monitoring</td>
<td></td>
</tr>
<tr>
<td>● Suction (in case of emesis)</td>
<td></td>
</tr>
<tr>
<td>● Narcan</td>
<td></td>
</tr>
<tr>
<td>● RSI equipment</td>
<td></td>
</tr>
</tbody>
</table>

Cont.
## Analgesia and Sedation in the Non-Intubated Patient Cont.

<table>
<thead>
<tr>
<th>Administration Analgesia</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Ketamine per protocol (provides analgesia and sedation while maintaining hemodynamics)</td>
<td>OR</td>
</tr>
<tr>
<td>● Morphine or Fentanyl per protocol</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Administration Sedation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Ketamine per protocol (provides analgesia and sedation while maintaining hemodynamics)</td>
<td>OR</td>
</tr>
<tr>
<td>● Benzodiazepine per protocol</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Continuous assessment during procedure, then every 5-15 minutes depending on patient condition</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Full set of vital signs, O2 saturation, ETCO2</td>
<td></td>
</tr>
<tr>
<td>● Response to medication</td>
<td></td>
</tr>
<tr>
<td>● Signs of untoward reaction to medication or complication from procedure</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Time of procedure/medication administration</td>
<td></td>
</tr>
<tr>
<td>● Physical exam findings before and after procedure/medication administration, including lung sounds</td>
<td></td>
</tr>
<tr>
<td>● Patient response to procedure/medication administration</td>
<td></td>
</tr>
<tr>
<td>● Any complication to procedure/medication administration</td>
<td></td>
</tr>
</tbody>
</table>

Notes: This protocol is for use during the procedure. Patients may have already received narcotics, benzodiazepines, and/or ketamine. Start with lower doses and titrate to effect.
### Automated External Defibrillation

**ALL EMS Providers**

<table>
<thead>
<tr>
<th>Indications</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconscious and pulseless patient</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient with a pulse</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper equipment</td>
<td></td>
</tr>
<tr>
<td>LIFEPAK AED or Similar</td>
<td></td>
</tr>
<tr>
<td>Patch Placement</td>
<td></td>
</tr>
<tr>
<td>Anterior/Lateral or Anterior/Posterior placement are acceptable</td>
<td></td>
</tr>
<tr>
<td>Refer to device specific recommendations</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine unresponsiveness</td>
<td></td>
</tr>
<tr>
<td>Establish Primary Management and check pulse</td>
<td></td>
</tr>
<tr>
<td>Call for ALS intercept</td>
<td></td>
</tr>
<tr>
<td>Perform HPCPR until AED is ready to analyze and shock (30:2 if your agency has not been trained in HPCPR)</td>
<td></td>
</tr>
<tr>
<td>Attach AED while performing HPCPR, press ANALYZE, and follow device directions</td>
<td></td>
</tr>
<tr>
<td>Perform 2 minutes of HPCPR followed by rhythm check and defibrillate (if needed), repeated until resuscitation successful or efforts terminated</td>
<td></td>
</tr>
<tr>
<td>Continue above cycle until pulse returns (ROSC) or efforts terminated (TOR)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Return of Spontaneous Circulation (ROSC)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assess level of consciousness, respiratory effort, and vital signs</td>
<td></td>
</tr>
<tr>
<td>Support airway as needed</td>
<td></td>
</tr>
<tr>
<td>Prepare for transport or intercept with ALS</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reassess immediately then every 5 minutes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full set of vital signs, level of consciousness, respiratory effort</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of arrest, AED utilization, and attach digital record whenever possible (i.e. CodeStat)</td>
<td></td>
</tr>
<tr>
<td>Physical exam findings before and after procedure</td>
<td></td>
</tr>
</tbody>
</table>
Capnography*

_All EMS Providers_

**Indications** Monitoring ventilation, perfusion, and/or metabolic states
- Intubated patients (mandatory)
- CPAP Patients (mandatory)
- Should be utilized on all respiratory patients
- Suspected Sepsis and Diabetic Ketoacidosis

**Contraindications**
- None in above situations

<table>
<thead>
<tr>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

**Proper equipment**
- Dynamic capnography and capnometry device (i.e. LP 12 or 15)
- Waveform monitoring is critical

**Values**
- Normal ETCO2 is 35-45 mmHg
- ETCO2 for Traumatic Brain Injury should be maintained at 35-40 mmHg
- Suspected Sepsis <25 mmHg
- Suspected Diabetic Ketoacidosis <30 mmHg
- 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.)

**Reassess every 5-15 minutes depending on patient condition**
- Full set of vital signs
- Continuous ETCO2 monitoring

**Document**
- Documentation should include indication of both the waveform and numerical value
- A copy of the strip will be attached to the report
- Physical exam findings

*This protocol appears identically in two places - both Airway and Appendix A - Procedures*
Intranasal Medication Administration

**All EMS Providers**

**Indications**
Nasal administration of approved medications
- Currently available for administration of Naloxone and Midazolam
- Other medications may be approved in the future

**Contraindications**
- None when indicated by protocol
- If patient has obstructing blood or mucus, suctioning should occur prior to administration (or consider alternate route)

<table>
<thead>
<tr>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

- Proper equipment
  - Mucosal atomizer device (i.e. MAD Nasal™)

<table>
<thead>
<tr>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

- Using a 1ml or 3ml syringe, draw the appropriate amount of medication into the syringe
- No more than 1ml per nostril
- Place the MAD tip onto the syringe and place in nostril.
- Briskly compress the syringe plunger and deliver approximately half of the medication
- Move the device over to the opposite nostril and administer the remainder of the medication

<table>
<thead>
<tr>
<th>Reassess immediately then every 5-15 minutes depending on patient condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

- Full set of vital signs
- Response to medication
- Signs of untoward reaction to medication

<table>
<thead>
<tr>
<th>Document</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
</tr>
</tbody>
</table>

- Time of procedure/medication administration
- Physical exam findings before and after procedure/medication administration
- Patient response to procedure/medication administration
Intraosseous Access

**EMT IV Tech & AEMT Providers – Trained in Intraosseous Access**

**ALS Providers** Alternative to venous access

<table>
<thead>
<tr>
<th>Indications</th>
<th>The administration of life-saving fluids and medications after peripheral attempts are unsuccessful.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• May be first-line for cardiac or respiratory arrest.</td>
</tr>
<tr>
<td></td>
<td>• Providers may use humeral head, proximal tibial, distal tibial, and distal femur (pediatric only) sites commensurate with their training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Previous orthopedic surgery, fracture, or infection in limb</td>
</tr>
<tr>
<td></td>
<td>• Absence of landmarks, excessive soft tissue</td>
</tr>
</tbody>
</table>

| Procedure | ✓ |

<table>
<thead>
<tr>
<th>Sterile technique</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Proper equipment</th>
<th>EZ-IO® Power Driver and Needle Set, sized appropriately</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Identify landmarks</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Proximal humerus - 1 to 2 cm above the surgical neck, on the most prominent aspect of the greater tubercle</td>
</tr>
<tr>
<td></td>
<td>• Proximal tibia - appx 2 cm medial to the tibial tuberosity and appx 2 cm distal, along the flat aspect of the tibia</td>
</tr>
<tr>
<td></td>
<td>• Distal tibia - appx 3 cm proximal to the most prominent aspect of the medial malleolus</td>
</tr>
<tr>
<td></td>
<td>• Distal femur (pediatric only) - just proximal to the patella (maximum 1 cm) and appx 1-2 cm medial to midline</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insertion</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Tibia and Femur insert at 90-degree angle</td>
</tr>
<tr>
<td></td>
<td>• Humerus insert at 45-degree angle</td>
</tr>
<tr>
<td></td>
<td>• Consider initial push of 2% Lidocaine for IO anesthesia</td>
</tr>
<tr>
<td></td>
<td>○ Adult 40mg</td>
</tr>
<tr>
<td></td>
<td>○ Pediatric 1mg/kg up to adult dose</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reassess immediately then every 5-15 minutes depending on patient condition</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Full set of vital signs</td>
</tr>
<tr>
<td></td>
<td>• Patency of access site</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Document</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Time of procedure</td>
</tr>
<tr>
<td></td>
<td>• Physical exam findings before and after procedure</td>
</tr>
</tbody>
</table>
# Orogastric Tube

**ALS Providers** Reduce gastric and thoracic pressure

<table>
<thead>
<tr>
<th>Indications</th>
<th>Contraindications</th>
</tr>
</thead>
</table>
| • Gastric decompression of a cardiac arrest patient after intubation or rescue airway placement to improve ability to ventilate | • Known esophageal varices or stricture, esophageal or stomach cancer  
• Gastric bypass surgery  
• Penetrating neck trauma |

<table>
<thead>
<tr>
<th>Procedure</th>
</tr>
</thead>
</table>
| ✓ Proper equipment  
• Dual lumen gastric or “sump” tube  
• Powered suction device |

<table>
<thead>
<tr>
<th>Identify landmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Estimate the length needed by measuring the tube from the corner of the mouth to the earlobe and down to the xiphoid process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insertion</th>
</tr>
</thead>
</table>
| • Insert the tube through the oropharynx until the marked depth is reached  
• If tube coils in the posterior pharynx, direct laryngoscopy can be utilized to place the tube  
• Using a large syringe, instill 30ml of air into tube and auscultate over epigastrium for air sounds  
• Aspirate for gastric contents and then utilize low intermittent suction  
• Secure with tape |

<table>
<thead>
<tr>
<th>Reassess immediately then every 5-15 minutes depending on patient condition</th>
</tr>
</thead>
</table>
| • Full set of vital signs  
• Evaluate stomach contents |

<table>
<thead>
<tr>
<th>Document</th>
</tr>
</thead>
</table>
| • Time of procedure  
• Physical exam findings before and after procedure |
Needle Thoracostomy

**ALS Providers** Needle decompression of suspected tension pneumothorax

<table>
<thead>
<tr>
<th>Indications - Signs of Tension Pneumothorax:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Acute respiratory distress or failure AND</td>
<td></td>
</tr>
<tr>
<td>• Hypotension not responsive to fluid bolus AND</td>
<td></td>
</tr>
<tr>
<td>• Unilateral absent or decreased breath sounds</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contraindications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• None in above situation</td>
<td></td>
</tr>
</tbody>
</table>

| Procedure | ✓ |

- Sterile technique
- Proper equipment  
  • 4.5-8 cm thoracostomy needle
  • Largest gauge available angiocath is acceptable however should be minimum 4.5 cm in length
- Identify landmarks  
  • Mid-clavicular line - 2nd or 3rd intercostal space
  • Mid-axillary line - 5th intercostal space
- Insertion  
  • Insert at 90-degree angle
  • Keep insertion superior to the rib
  • Note for sounds of air escaping
- Reassess immediately and then at least every five minutes  
  • Respiratory distress level
  • Lung sounds
  • Full set of vital signs
  • Continuous ETCO2 monitoring
- Document  
  • Time of procedure
  • Physical exam findings before and after procedure
  • Patient response to procedure

When in doubt contact MEDICAL CONTROL
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 in shorter transport times (versus ground) and/or provide advanced field care such as blood transfusion.
2. A critical medical patient would benefit from the shorter transport time from a remote area.
3. Multiple Casualty Incident

Consideration of air transport must take into account the following inherent times: dispatch of Airlift, time en route 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. See also Termination of Resuscitation/Withholding Resuscitation protocols.

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
- Sustained time down prior to arrival without CPR in progress with presenting rhythm of asystole in warm adults.
- EMS personnel must notify the coroner of cases where they encounter a deceased patient who dies suddenly, accidentally, violently, or from unknown causes, or under suspicious, unnatural, or criminal circumstances. This requirement is fulfilled if law enforcement on scene is expected to contact the medical examiner.

⚠ 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 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.
- **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.
- **Resuscitation** includes attempts to restore failed cardiac and/or ventilatory function by procedures such as endotracheal intubation, mechanical ventilation, chest compressions, and defibrillation.

**Resuscitation may be withheld if:**
- 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 must be considered potentially revivable and resuscitation efforts must 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 en route 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.
Interfacility Transport

Interfacility 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. EMS providers are to operate within their scope of practice and training. 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, unless the physician states the patient’s needs exceed the current resources available. 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.

Cont.
Interfacility Transport Cont.

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 interfacility 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 en route 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 condition. 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.

⚠ NOTE: Cross reference with Just in Time Training Protocol
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 MEDICAL CONTROL Physician unless the patient’s private physician is available, or you cannot contact the MEDICAL CONTROL 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 online medical direction (MEDICAL CONTROL Physician) 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 prehospital 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 MEDICAL CONTROL Physician for record keeping purposes
  - Responsibility reverts back to MEDICAL CONTROL 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.
Intervening Physician On Scene Cont.

- **Bystander Physician Present: no online 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; online MEDICAL CONTROL available**
  - The Online MEDICAL CONTROL Physician is ultimately responsible. If disagreement exists between the bystander physician and the Online MEDICAL CONTROL Physician, the paramedic should take orders from the Online MEDICAL CONTROL Physician and place the bystander physician in contact with the Online MEDICAL CONTROL Physician. The Online 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 Online MEDICAL CONTROL Physician.
- Should situations arise which conflict directly with your standing orders, consult the Online MEDICAL CONTROL Physician for appropriate response. Under such circumstances, it is preferable to have the Online 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

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.

Eric Cooper, 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.
Just in Time Training (JITT)

Designation of Condition: On demand training for an unusual occurrence. EMT scope of practice is determined by training and protocol. For an unusual occurrence where a life threat to a patient exists, this protocol will expand the scope of practice to meet the specific needs of such a patient if the protocol’s conditions are met.

This protocol is operational only during an MCI event, declared disaster, or interfacility transport during an MCI or disaster (internal hospital disaster included).

This is inherently NOT meant to serve as a substitute for caring for or transporting a patient with a provider who has the appropriate scope of practice. Such providers may include a Paramedic, RN, or Physician.

This protocol IS intended for the rare situation in which no appropriate provider is present, and the risks of irreparable harm to the patient outweigh the risks of a pre-hospital provider conducting care or transport with medication or equipment the provider has not been formally trained on.

For interfacility transports, it is the sending physician’s responsibility to choose the appropriate level of care for the transfer and provide JITT.

It is the responsibility of EMS providers to know their scope of practice and protocols and stay within them.

ALL EMS Providers
- Assure scene safety and establish primary management
- Identify scope of practice issues and request appropriate level of care provider
- When appropriate level of care provider is not available:
  - Medication JITT:
    - Indications
    - Contraindications
    - Route
    - Dosage
    - Side affects
    - Physician Orders: Guidelines for adjustment and/or discontinuation (in writing for the medical record interfacility transport only)
  - Equipment JITT
    - Instructions on use
    - Troubleshooting common problems
    - Indications to adjust, remove or discontinue
    - Physician Orders: Procedure to adjust, remove, or discontinue (in writing for the medical record interfacility transport only)
- 24-hour notification to MSO/MSA/Training Physician/and SCEMS

Reference SCEMS Interfacility Transports Policy
MCI

Reference the Tri-County Plan found at:
http://www.snocountychiefs.org/documents
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 13 and older can give 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, unless under Parent Initiated Treatment (PIT) as per RCW 71.34

Minors age 13 and older are also entitled to complete confidentiality regarding the above issues, i.e. you can only talk to their parents/family with the minor’s consent, unless they are under PIT as per RCW 71.34. 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.
Defining a Patient / Reporting Requirements

Defining a Patient
A person is considered a patient when any of the following exist. It should be noted that patients would commonly fit into multiple categories. Only one sign or symptom is required.
- Chief complaint reported by patient or another competent person.
- Suspected illness or injury.
- Mental incompetence (includes influence of drugs or alcohol).
- Risk to self or others.

Reporting Requirements
A complete EMS Healthcare Report (EHR) 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 EHR 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.

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 2 vehicles. All of which do not meet the above patient criteria. In this instance no EHR needs to be completed.
Non-Transport Reporting Requirements

Non-transport of a patient should result from a patient refusal documented on an EHR.

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.

Private Transportation. When the senior EMS provider on the scene agrees with a patient-initiated request that is appropriate for private transport. Any alternate plan must be immediate, concrete and reliable. In any questionable case, online MEDICAL CONTROL should be consulted, and in every case a signed refusal for EMS care and transport.

EMS Providers are not trained in assessing necessity for transport for all patient presentations of all diseases. For patients that refuse transport providers should encourage patients to seek additional medical evaluation via private vehicle or alternative means.

Patients who present with conditions that may impact their ability to drive should be advised not to drive.

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.

The Non transport / refusals checklist should be utilized in all non-transport situations.

Determine patient decision-making capacity
- Assess Patient-they must be oriented to person, place, time and situation.
- Patient is of age of consent or meets state requirements for minor’s ability to consent.
- Patient must not appear to have a mental compromise.
- Patient judgment must not be influenced by hypoglycemia, 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.
- Patient must not have a communication barrier preventing clear communication / understanding.

Cont.
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.
- Patient should be notified of any abnormal vital signs, exam findings, diagnostics, including issues related to low <80 and high >300 blood sugar.
- Patient should be notified that pre-hospital EKG findings are preliminary and final interpretation is required by a physician.
- 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.
Resuscitation with Mechanical CPR Device (i.e. Lucas)

Indications for Mechanical Device use ALL of the following:
- Patient size must be appropriate for device
- Non-traumatic arrest
- Device must be placed without compromising manual CPR

PLUS, one of the following:
1. Post-ROSC, the Mechanical Device may be applied for transport should the patient re-arrest during transport
2. Ongoing CPR with:
   - STEMI identified in patient care
   - Persistent or recurrent VF/Pulseless VT
   AND
   - Witnessed arrest
   - ETCO2 >20
   - Patient without terminal diagnosis
3. Hypothermia
4. Poisoning
5. Field identification of significantly limited personnel for likely prolonged resuscitation
6. Patient arrest during transport

When in doubt contact MEDICAL CONTROL
Termination of Resuscitation/Withholding Resuscitation-Non-Trauma

**Non-traumatic Cardiac Arrest**

**BLS Providers**
Request ALS help but may consider Termination of Resuscitation (TOR) prior to ALS arrival in systems with more than a 10 min ETA for ALS, with all of the following:

1. Arrest not witnessed
2. At least four 2-minute cycles of CPR with at least 3 rhythm analyses by AED
3. No shocks delivered by AED
4. No ROSC at any time

**WHEN IN DOUBT CONTACT MEDICAL CONTROL AND/OR AWAIT ALS ARRIVAL**

**ALS Providers**
Termination of resuscitation—Ensure the following have been completed:

1. Definitive airway management for cases thought to be of respiratory origin
2. At least 25 minutes of standard ACLS care, 45 minutes if ETCO2 >20
3. No persistent VF/VT or narrow complex PEA
4. Wide complex PEA or asystole present
5. No neurologic activity present
6. No reversible cause suspected (H's/T's addressed)
7. ETCO2 <40

**IF PATIENT DOES NOT MEET ALL CRITERIA, OR WHEN IN DOUBT, CONTACT MEDICAL CONTROL**

Exceptions—Early transport indicated:
- Age <18*
- Hypothermia
- Pregnant
  - Late term pregnancy requires immediate transport without delay
- Electrocutions/lightning
- Unsafe environment to stop efforts
- Poisoning/overdose other than opiates

Special Circumstances:
- Pediatric arrest:
  - Consult with MEDICAL CONTROL
- Neonatal Arrest:
  - APGAR score of 0 at 10 minutes with family and MEDICAL CONTROL approval
  - Consider withholding resuscitation when the family indicates they have been counseled by their provider that the neonate has a congenital disorder and is not expected to survive, and Medical control approval.
Termination of Resuscitation/Withholding Resuscitation-Traumatic CA

Traumatic Cardiac Arrest

All EMS Providers
Withhold

- Injuries incompatible with life
  - Decapitation
  - Hemicorporectomy
  - Decomposition
  - Obvious external exsanguination
- Evidence of prolonged arrest with dependent lividity or rigor mortis
- Blunt trauma plus
  - Apneic
  - Pulseless
  - Without organized cardiac activity*
- Penetrating trauma plus
  - Apneic
  - Pulseless
  - Without organized cardiac activity*
  - No signs of life
    - No spontaneous movement
    - No pupillary response

* Organized cardiac activity is determined by ALS providers. If ALS is more than 15 minutes away BLS providers should contact MEDICAL CONTROL

WHEN IN DOUBT CONTACT MEDICAL CONTROL

ALS Providers
Termination of resuscitation - Ensure the following have been completed:

- Successful:
  - Airway management
  - IV access and fluid resuscitation
  - Consideration and/or treatment of tension pneumothorax
- Exceptions:
  - Arrest thought to be non-traumatic in origin
    - This protocol does NOT apply to arrests that lead to a trauma (i.e. falls, MVCs, etc. resulting from medical conditions)
  - Obviously gravid patients should be transported immediately
  - Hypothermia
  - Electrocution / lightning strike

Cont.
Termination of Resuscitation-Traumatic Cardiac Arrest Cont.

**Transportation Considerations**

- If within 15 minutes of Trauma Center-transport to Trauma Center
- If within 15 minutes of ED (non-trauma center)-transport to nearest ED
  - If ROSC is achieved during transport redirect to nearest Trauma Center
- If not within 15 minutes of Trauma Center or ED, begin resuscitation
  - After 15 minutes of resuscitation may stop efforts if patient meets all of the following;
    - No signs of life
    - No organized cardiac activity
    - No pupillary response
    - No spontaneous movement
  - Otherwise transport to nearest ED

**WHEN IN DOUBT CONTACT MEDICAL CONTROL**
Scope of Practice
Advanced 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 BLS and AEMT Providers Trained and Approved by the MPD
- 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 en route, 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 increased 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 Procedural Analgesia and Sedation protocol. 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, unwrap the splint, reassess the injury and re-splint.
- Specific conditions:
  - 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.
Double Sequential Defibrillation

Background
Double Sequential Defibrillation (DSD) is not synchronous. It is 2 separate shocks delivered as closely together as possible with separate pad placement. It is believed the different vectors provided by 2 sets of pads provide the benefit of the procedure. In order to utilize DSD, it is important that common terminology is utilized and understood.

Key Definitions:
- **Refractory** VF/pVT is defined as the rhythm never converting with defibrillation
- **Recurrent** VF/pVT is a conversion with defibrillation but eventually deteriorating back to VF/pVT (i.e. VF =>PEA =>VF =>Asystole =>VF)
- DSD is only utilized for **Refractory VF/pVT**

Indication
VF/pVT Refractory to
- 3 or more shocks
  - **AND**
- Administration of at least 1mg 1:10,000 Epinephrine (first round)
  - **AND**
- Administration of first round anti-arrhythmic (Amiodarone or Lidocaine)

Procedure
- If patient in VF/pVT from initial rhythm, ensure 2nd defibrillator is available for DSD (may need to add another medic unit)
- Prepare site for attachment of additional set of external defibrillation pads. Must use 2 devices of the same manufacturer. An AED may be used in manual mode as long as it is of the same manufacturer.
- Apply pads so that one set is anterior-lateral and the other is anterior-posterior
  - Additional pads should be placed during the pause at the end of the 2-minute cycle. Chest compressions should not be interrupted to place second set of pads
  - For anterior-posterior placement
    - Place either the ♥ or + therapy electrode over the left precordium. The upper edge of the electrode should be below the nipple. Avoid placement over the nipple, the diaphragm, or the bony prominence of the sternum, if possible
    - Place the other electrode behind the heart in the intrascapular area. For patient comfort, place the connection away from the spine. Do not place the electrode over the bony prominences of the spine or scapula

Cont.
Double Sequential Defibrillation Cont.

- For anterior-lateral placement
  - Place the ♥ therapy electrode lateral to the patient’s left nipple in the mid-axillary line, with the center of the electrode in the mid-axillary line, if possible
  - Place the other therapy electrode on the patient’s upper right torso, lateral to the sternum and below the clavicle
- Select the maximum energy (360j) on both devices. Charge both devices 15 seconds in advance of the anticipated break in CPR. Ensure chest compressions continue while the device is charging
- At the prescribed time in the CPR cycle, pause CPR and assess the rhythm
- If shock indicated, deliver the sequential shock by depressing both buttons, one immediately after the other
- Immediately resume chest compressions and follow ACLS algorithm for 2 additional DSD shocks
- After 3 total DSD shocks, resume standard ACLS defibrillation regimen
- After completion of call
  - Run user test on both Monitor/Defibrillators
  - Contact MSO/MSA and advise of DSD
  - Document DSD as Manual Defibrillation in EHR (J = “720”, Physician/Ref# = “DSD”)
Maintenance of Peripheral IV Therapy for Emergency Medical Technicians
(EMT with IV monitor training)
(Established by WA DOH curriculum-revised February 2000[1])

Designation of Condition: To enable EMS agencies to use specially trained Basic Life Support providers (EMT with IV monitor training) to perform interfacility[2] transportation of patients with pre-existing gravity fed peripheral intravenous infusions. EMT transport of patients with infusions is limited in this protocol to monitoring only and is optional for the MPD to implement.

Indications

Contraindications
- Patients who are unstable as determined by EMS provider following a thorough assessment including history, vital signs, and appropriate physical exam
- IV medication infusion
- IV blood infusion
- IV pump infusion
- Infusion of IV fluid other than normal saline or Lactated Ringer’s

Procedure
1. Body substance Isolation
2. Check patency and type of infusion solution
3. Stabilization
   a. Dressing over insertion site
   b. Stabilize limb on arm board if necessary
   c. Stabilize tubing with 2 stress loops
4. Fluids
   a. Start with full bag of prescribed solution hung by hospital staff
   b. Adjust flow rate to prescribed rate by physician
   c. Replace bag with sterile technique when 50ccml remain in current bag
   d. Adjust flow rate as needed to maintain infusion per physician order
5. Patency
   a. Observe for patency as necessary and record
   b. Avoid kinks in tubing, pressure over or near insertion site
   c. Observe insertion site for infiltration and extravasation
   d. Consider possibility of clot occlusion if not patent and no other reason for lack of flow

Cont.
6. Discontinuing an infiltrated or occluded IV
   a. Use universal precautions
   b. Turn infusion off via roller clamp
   c. Gently and systematically remove tape
   d. Remove catheter and quickly cover with sterile dressing
   e. Immediately observe for intact catheter
   f. Hold direct pressure over insertion site for 1-2 minutes until bleeding stops
   g. Secure appropriate dressing over site with tape or bandage
   h. If catheter is not intact and a portion is missing, assume catheter embolus - keep limb in dependent position and immediately contact MEDICAL CONTROL

7. Patient Assessment (ongoing assessment)
   a. Respiratory and cardiovascular status assessed at start and repeat as necessary throughout transport
   b. Check drip rate and condition of infusion site with every set of vital signs; at least every 15 minutes

Documentation
- Record condition of infusion site with full set of vital signs; every 15 minutes
- Record hourly amount of ml’s of any fluids in and out, and fluid remaining in bag
- Record total volume infused during transport
- Record solution and time when hanging new bag
- Record time IV catheter removed and length of catheter if IV discontinued

Special Notes
- The EMT with IV monitor training may only transport normal saline or Lactated Ringer’s
- The EMT with IV monitor training may not perform blood draws.
- NO MEDICATIONS in IV and NO BLOOD PRODUCTS are to be given en route.
- IV pump monitoring is not permitted by this protocol
- For situations not described in these protocols, or for other basic life support procedures, the EMT with IV monitor training is to operate under the Washington State Basic Life Support Field protocols

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[1] Agencies requesting access to this training and protocol are responsible for confirming they will be training to the most up-to-date WA DOH version prior to requesting course approval from the Medical Program Director
[2] Interfacility is defined within this protocol as hospital to hospital transport
[3] Normal saline is defined as 0.9% Sodium Chloride Injection USP
[4] Lactated Ringer’s is defined as Lactated Ringer’s Injection USP
Snohomish County Diversion Center EMT

Designation of Condition: In an attempt to provide necessary human and social services to homeless individuals in Snohomish County, SCEMS and the WA DOH have endorsed a small number of EMTs to staff a residential facility for a limited time. These individuals may be experiencing opioid addiction and/or untreated mental health conditions and are likely to benefit from routine physical assessment beyond that offered by layperson residential attendants. This protocol is for use only by SCDC staff EMTs who have completed a series of credentialing tasks as set out by the SCEMS Medical Program Director and listed below.

1. Employment and affiliation by Pioneer Human Services in Snohomish County with the job designation as SCDC staff EMT
2. Valid certification as a Washington State Emergency Medical Technician
3. Registration on the Snohomish County EMS website
   a. Verification of receipt of/access to county protocols
4. Completion of Snohomish County EMS education including
   a. Narcan Administration
   b. Epi Check-and-Inject
   c. Alternative Destination
   d. Overview of Advanced Protocols pertinent to SCDC staff
      i. Provided by SCEMS Education department
      ii. Pending DOH approval of protocols
   e. Additional pertinent education requirements that may be requested by DOH, SCEMS MPD and/or SCEMS Education department based upon program needs identified during implementation process
Snohomish County Diversion Center-Patient Designation

**Designation of Condition:** In an attempt to provide necessary human and social services to homeless individuals in Snohomish County, SCEMS and the WA DOH have endorsed a small number of EMTs to staff a residential facility for a limited time. These individuals may be experiencing opioid addiction and/or untreated mental health conditions and are likely to benefit from routine physical assessment beyond that offered by layperson residential attendants. This protocol is for use only by SCDC staff EMTs (as identified by protocol) and in conjunction with the SCDC Assessment Tool.

**Goal:** Differentiate a “Resident” from a “Patient”

Resident will fall under a Tier 0, 1, or 2 Tier Assessment Tool

- The Tier 0* assessment tool is used at intake and every 6 hours for the first 24 hours, unless they fall into Tier 1. After 24 hours they move into Tier 2.
  *New residents who screen positive for Benzodiazepines in history or toxicology screen start in Tier 1 for the first 4 hours.
- The Tier 1 assessment tool is used when a resident meets the criteria for close observation protocol.
- The Tier 2 assessment tool is used for a resident after their first 24 hours at SCDC, as long as they do not meet close observation protocols.

A SCDC Resident is re-categorized as a Patient when (any one of the following):

1. Assessment findings are abnormal
2. Resident requests medical care outside of routine assistance with OTC medications, prescription medications, or basic/layperson first aid (i.e. Band-Aid, wound cleansing)
3. Gut instinct of SCDC staff EMT

When in doubt contact MEDICAL CONTROL

- Send to the Emergency Department
  - Resident meets criteria to be considered an EMS patient. SCDC staff EMT is expected to promptly follow Snohomish County EMS protocols and arrange transportation to an appropriate medical care facility. The patient retains all rights to refuse care per SCEMS protocols, at this juncture the “patient” reverts to “resident” status. SCDC staff must determine if the resident may remain at the facility at the discretion of SCDC.
- Intake Assessment Protocol / Residents in Tier 0
  - Residents who arrive at the facility with vital signs consistent with Medical Criteria Intake Checklist are evaluated 4 times a day for the first 24 hours.

Cont.
Snohomish County Diversion Center-Patient Designation Cont.

- **Close Observation Protocol / Residents in Tier 1**
  - Reassess resident every 15 minutes to evaluate for changes. Adjust resident category based upon findings as appropriate. Patients stay in Tier 1 for a maximum of 4 hours. Seek medical clearance for patients to remain, or return to facility, for patients who do not meet criteria to come out of Tier 1 at 4 hours.

- **Routine Assessment Protocol / Residents in Tier 2**
  - Reassess resident four times a day or per facility requirements. Adjust resident category based upon assessment findings as appropriate.

Special Circumstances:
- Suspected opiate overdose-Administer Narcan per protocol, protect airway, and send to hospital
- Suspected alcohol withdrawal-Initiate airway and seizure precautions and send to hospital

Refer to all other appropriate protocols as indicated
Wound Care

Designation of Condition: Significant tissue trauma in a wilderness setting resulting in open wounds is at an increased risk of infection over and above what is normally encountered by EMS. More aggressive wound management is indicated. Primary goals are preventing further injury and 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, 500-1000ml 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 1gm IV for adults. 25mg/kg IV, up to 1gm, for children, if not allergic to penicillin or cephalosporin.
PARAMEDIC DRUG SUPPLEMENT

County Wide Drug Therapy Protocol
The drug therapy protocol will be divided into three categories:
- Required and Recommended Drugs
- Optional Drugs
- 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 transport units. The recommended medications are 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 SCEMS Council feels that they are of value in the prehospital 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 protocols will be to present the medication for addition/deletion (or movement to another drug category) at the next regularly scheduled MEDICAL CONTROL meeting.

Intranasal Administration
Naloxone and Versed are allowed for IN use as long as the MAD NASAL™ device is used. Further medications may be allowed via the IN route if agencies wish after interested agencies request for a pilot project through SCEMS.

Pediatric Dosages
All pediatric doses max out at adult dose.
<table>
<thead>
<tr>
<th>Required (recommended)</th>
<th>Required (optional substitution)</th>
<th>AEMT Medications</th>
<th>EMT Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen (Tylenol®)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetylsalicylic Acid (ASA, Aspirin)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Adenosine (Adenocard®)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albuterol (Proventil®, Ventolin®)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Amiodarone (Cordarone®)</td>
<td></td>
<td></td>
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<tr>
<td>Atropine Sulfate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzodiazepine</td>
<td>Diazepam, Lorazepam, Midazolam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calcium Gluconate</td>
<td>Calcium Chloride</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dextrose 50%, 25%, 10% and Oral Dextrose</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Diltiazem HCL (Cardizem®)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diphenhydramine HCL (Benadryl®)</td>
<td></td>
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</tr>
<tr>
<td>Epinephrine (Adrenaline®) (1:1,000 and 1:10,000 Solutions)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Etomidate (Amidate®)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Ketamine</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lidocaine HCL (Xylocaine®)</td>
<td></td>
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<tr>
<td>Magnesium Sulfate</td>
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<tr>
<td>Morphine Sulfate</td>
<td>Fentanyl (Sublimaze®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naloxone (Narcan®)</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Norepinephrine (Levophed®)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Rocuronium</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sodium Bicarbonate</td>
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<td></td>
<td></td>
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<tr>
<td>Succinylcholine (Anectine®)</td>
<td>Vecuronium (Norcuron®)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowed Medications</td>
<td>Optional Substitutions</td>
<td></td>
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<td>---------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Ammonia Inhalants</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Cefazolin (Ancef®, Kefzol®)</td>
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<tr>
<td>Glucagon</td>
<td></td>
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<td></td>
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<tr>
<td>Hydroxocobalamin (CYANOKIT®)</td>
<td></td>
<td></td>
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<tr>
<td>Hydroxyzine (Vistaril®)</td>
<td></td>
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<td></td>
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<tr>
<td>Ipratropium Bromide (Atrovent®)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketorolac (Toradol®)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Methylprednisolone (Medrol®, Solu-Medrol®)</td>
<td>Dexamethasone</td>
<td></td>
<td></td>
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<tr>
<td>Ondansetron (Zofran®)</td>
<td>Promethazine (Phenergan®)</td>
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<tr>
<td>Procainamide HCL (Pronestyl®)</td>
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<td></td>
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<tr>
<td>Topical Ophthalmic Anesthetic (Proparacaine-Opthaine®, Alacaine®)</td>
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</tbody>
</table>

Required/Recommended Medications for ALS staffed non-transport units

“T.B.D.”-To be determined at a later date
Acetaminophen (Tylenol®)

**Class of Drug**
Analgesic, Antipyretic

**Indications**
Fever

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

**Drug Interaction**
Phenothiazines—may produce hypothermia

**Administration**
- Adult: 650mg (max dose)
- Pediatric: 15mg/kg (>6 months)

**Special Notes**
None
Acetylsalicylic Acid (ASA, Aspirin)

**Class of Drug**
Anti-inflammatory, analgesic, antipyretic, anti-coagulant

**Indications**
Non-Traumatic Chest Pain

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

**Administration**
- Adult: 324mg orally for ACS (prefer chewable)
- Pediatric: Should not to be given to pediatric patients.

**Special Notes**
All patients with suspected ACS and without contraindications receive aspirin.
Adenosine (Adenocard®)

Class of Drug
Antidysrhythmic

Indications
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: 6mg rapid IVP (1-2 seconds) followed with a 20cc flush. May be repeated in 1-2 minutes with 12mg. A second dose of 12mg rapid IVP may be given, each followed by a 20cc flush. Single doses of greater than 12mg should not be given. May be given up to three times and always follow each bolus with a 20cc flush.
● Pediatric: Initial 0.1mg/kg rapid IVP. Repeat in 2-3 minutes if no change.
  ○ Second and third dose at 0.2mg/kg rapid IVP.
  ○ Pediatric dosage maxes at adult dose.

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, beta 2 selective adrenergic bronchodilator

**Indications**
1. Albuterol is used to treat reversible airway obstruction caused by:
   a. Wheezing associated with asthma
   b. COPD
   c. Anaphylaxis
2. Hyperkalemia

**Contraindications**
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: 5-10mg in 3ml of sterile NS given as inhalation therapy over 5-15 minutes. May be repeated as necessary.
  - Pediatric: 2.5mg (up to adult doses) in 3ml of sterile NS given as inhalation therapy over 5 - 15 minutes.
  - May be repeated as necessary.

**Special Notes**
Most side effects are dosage related.
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**
Enhanced bradycardia and hypotension when given with other beta-blockers or calcium channel blockers.

**Administration**
- **Pulseless VT/VF**
  - Adult
    - 300mg initial bolus IVP. May re-bolus with 150mg.
  - Pediatric
    - 5mg/kg IV/IO bolus, may repeat x 2, maximum single dose 300mg, 2nd and 3rd dose 150mg each max
- **Sustained VT**
  - Adult
    - 150mg over 10 minutes. May re-bolus with 150mg
  - Pediatric
    - Contact MEDICAL CONTROL prior to administration
    - 5mg/kg over 30 minutes with max of 300mg
- **Sustained SVT**
  - Pediatric
    - Unresponsive to shock, contact MEDICAL CONTROL prior to administration
    - 5mg/kg over 30 minutes with max of 300mg

**Special Notes**
1. May 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**
Other organic cause of coma (head injury, DKA, etc.)

**Drug Interaction**
None

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

**Special Notes**
Be prepared for patient combativeness.
Atropine Sulfate

**Class of Drug**  
Anticholinergic (parasympatholytic)

**Indications**  
1. Symptomatic sinus bradycardia or AV Blocks  
2. Bradycardia associated with PEA  
3. Asystole  
4. Anticholinesterase poisonings-organophosphate and nerve agent  
5. Premedication for RSI in pediatrics (<6 yr old).

**Contraindications**  
None when indicated.

**Drug Interaction**  
Antihistamines, tricyclic antidepressants-additive effect

**Administration**  
- Cardiac Indications:  
  - Adult:  
    - [0.5mg] IV or ET every 3-5 minutes max 3mg (symptomatic bradycardia).  
    - Pediatric: [0.02mg/kg] IVP maximum of 0.5mg  
- Anticholinesterase poisoning (organophosphates or nerve agent):  
  - Adult: [2mg] IV, ET, IO, or IM repeated until symptoms abate.  
  - Pediatric: [0.05mg/kg] IV, ET, IO, or IM repeated until symptoms abate.

**Special Notes**  
1. May be not be effective with high degree AV block, be prepared to proceed with pacing and/or vasopressors.  
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.
Benzodiazepines - (Diazepam-Valium®, Midazolam-Versed®, Lorazepam-Ativan®)

**Class of Drug**
Anticonvulsant, antianxiety, sedative, muscle relaxant

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

**Contraindications**
1. Hypersensitivity
2. CNS depression

**Drug Interaction**
Additive effect to other CNS depressants such as alcohol, narcotics, etc.

**Administration (Non-RSI)**
- **Adults**
  - Diazepam (Valium®): 2-10mg SIVP/IO max of 20mg
  - Lorazepam (Ativan®): 1-2mg SIVP/IM/IO max of 6mg
  - Midazolam (Versed®): 1-2mg SIVP/IM/IO to max of 5mg
  - **NOTE**: HIGHER DOSES MAY BE REQUIRED and may be given AFTER MEDICAL CONTROL contact (except in cases of post-intubation sedation as long as VS are adequate).
- **Pediatric**:
  - Diazepam:
    - Children 6 months-5 yr: 0.2mg/kg SIVP or IO
    - Maximum **single dose** 2mg
    - Maximum **total administration** of 5mg
  - Children >5 yr: 1mg SIVP or IO
    - Maximum **single dose** 2mg
    - Maximum **total administration** of 10mg
  - Lorazepam: 0.05mg/kg IV/IM/IO (max of 2mg per dose).
  - Midazolam: 0.1mg/kg IV/IM/IO up to adult dosing may repeat x 1 for ages >6 months

Cont.
Benzodiazepines Cont.

**Administration (Pre-sedation During RSI)**
- Midazolam (Versed®):
  - Adult: 5mg per dose to a max of 0.3mg/kg.
  - Peds: 0.1mg/kg/dose (max of 2.5mg per dose) titrated to a total of 0.3mg/kg.

**Administration (Post-intubation Sedation)**
- Midazolam (Versed®):
  - Adult: 5mg. Repeat dose as needed.
  - Peds: 0.1mg/kg/dose (max of 2.5mg per dose). Repeat dose as needed.
  
  Intranasal dosages see chart below.

**Special Notes**
1. Above maximum doses are not applicable for post-intubation management.
2. Should not be mixed with other agents.
3. Give through the proximal end of IV tubing and then flush well.
4. Most likely to produce respiratory depression on patients who have taken other depressant drugs, especially alcohol and barbiturates.
5. All pediatric dosages max at adult dose.
### Intranasal Midazolam Dosing Chart

<table>
<thead>
<tr>
<th>Patient age (years)</th>
<th>Weight (kg)</th>
<th>IN Midazolam volume in ml</th>
<th>5mg/ml concentration Volume Dose (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonate</td>
<td>3kg</td>
<td>0.3ml</td>
<td>0.6mg</td>
</tr>
<tr>
<td>&lt;1yr</td>
<td>6kg</td>
<td>0.4ml</td>
<td>1.2mg</td>
</tr>
<tr>
<td>1yr</td>
<td>10kg</td>
<td>0.5ml</td>
<td>2.0mg</td>
</tr>
<tr>
<td>2yr</td>
<td>14kg</td>
<td>0.7ml</td>
<td>2.8mg</td>
</tr>
<tr>
<td>3yr</td>
<td>16kg</td>
<td>0.8ml</td>
<td>3.2mg</td>
</tr>
<tr>
<td>4yr</td>
<td>18kg</td>
<td>0.9ml</td>
<td>3.6mg</td>
</tr>
<tr>
<td>5yr</td>
<td>20kg</td>
<td>1.0ml</td>
<td>4.0mg</td>
</tr>
<tr>
<td>6yr</td>
<td>22kg</td>
<td>1.0ml</td>
<td>4.4mg</td>
</tr>
<tr>
<td>7yr</td>
<td>24kg</td>
<td>1.1ml</td>
<td>4.8mg</td>
</tr>
<tr>
<td>8yr</td>
<td>26kg</td>
<td>1.2ml</td>
<td>5.2mg</td>
</tr>
<tr>
<td>9yr</td>
<td>28kg</td>
<td>1.3ml</td>
<td>5.6mg</td>
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<tr>
<td>10yr</td>
<td>30kg</td>
<td>1.4ml</td>
<td>6.0mg</td>
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<tr>
<td>11yr</td>
<td>32kg</td>
<td>1.4ml</td>
<td>6.4mg</td>
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<tr>
<td>12yr</td>
<td>34kg</td>
<td>1.5ml</td>
<td>6.8mg</td>
</tr>
<tr>
<td>Small teenager</td>
<td>40kg</td>
<td>1.8ml</td>
<td>8.0mg</td>
</tr>
<tr>
<td>Adult or grown teenager</td>
<td>&gt;50kg</td>
<td>2.0ml</td>
<td>10.0mg</td>
</tr>
</tbody>
</table>

To calculate it manually, use the below formula:

- Assess weight: children weight in kg = 10 + 2 (Age in years)
- Calculate appropriate dose of midazolam using the following formula:
  - Children: Total kg X 0.2mg = total mg dose of midazolam, maximum of 10mg.
  - Adults over 50kg: 10mg (2ml) of midazolam.

Total volume in milliliters of midazolam (5mg/ml concentration) = (Total mg dose divided by 5mg/ml) + 0.1ml for dead space of device.

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1 This volume is based on the calculated dose PLUS 0.10ml dead space in the device (the amount of medication that will remain within the syringe and atomizer tip and therefore will not be delivered to the child). The total volume is then rounded off to the next highest 0.1ml. Slightly higher doses may be appropriate at the lower range of volume (in smaller children) due to measurement difficulties and possible underdosing which may not stop the seizure. In some children a higher dose (0.3 mg/kg) may be more appropriate according to studies.
Calcium Chloride

**Class of Drug**
Electrolyte

**Indications**
1. Used as antidote for calcium channel blocker overdoses
2. Symptomatic hyperkalemia
3. Magnesium sulfate overdoses

**Contraindications**
Hypercalcemia

**Drug Interaction**
Increase toxicity of cardiac glycosides

**Administration**
- Adult:
  - 5-10ml SLOW IVP *(DO NOT exceed 2ml/minute)* repeat if necessary, after 5-10 minutes
  - Higher doses are necessary for calcium channel blocker overdoses.
- Pediatric:
  - 0.2ml/kg SLOW IVP *(Do not exceed 1ml/minute)* repeat if necessary, after 5-10 minutes
  - Higher doses are necessary for calcium channel blocker overdoses.
  - Pediatric dosage maxes at adult dose.

**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., PVCs) particularly in the presence of digitalis.
3. Local infiltration will cause tissue necrosis.
4. Contains 3x the amount of calcium versus Calcium Gluconate
5. Use largest IV possible
Calcium Gluconate

**Class of Drug**
Electrolyte

**Indications**
1. Used as antidote for calcium channel blocker overdoses
2. Symptomatic hyperkalemia
3. Magnesium sulfate overdoses

**Contraindications**
Hypercalcemia

**Drug Interaction**
Increase toxicity of cardiac glycoside

**Administration**
- **Adult:**
  - 15-30ml SLOW IVP (Do Not Exceed 2ml/min) repeat if necessary after 5-10 minutes
  - Higher doses are necessary for calcium channel blocker overdoses.
- **Pediatric:**
  - 0.5ml/kg SLOW IVP (Do not exceed 1ml/min), repeat if necessary after 5-10 minutes
  - Higher doses are necessary for calcium channel blocker overdoses.
  - Pediatric dosage maxes at adult dose.

**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**
Wound care as allowed under advanced protocols only

**Contraindications**
Penicillin or cephalosporin allergy

**Administration**
- Adult:
  - 1gm IV every 8hrs
- Pediatric (<17):
  - 25mg/kg IV up to 1gm, every 8hrs
  - Pediatric dosage maxes at adult dose.

**Special Note**
1. May be given slow IV push
2. May be given IM however IV is best route
Dexamethasone

**Class of Drug**
Corticosteroid

**Indications**
Alternative to Methyl Prednisolone for asthma and COPD.

**Contraindications**
Hypersensitivity

**Administration**
- Adult: 10mg IV, IO, IM
- Pediatric: 0.6mg/kg IV up to 10mg IV, IO, IM
- Pediatric dosage maxes at adult dose.
Dextrose 50%, 25%, 10% and Oral Dextrose

Class of Drug
Carbohydrate, nutrient, short acting osmotic diuretic

Indications
1. Symptomatic hypoglycemia.
2. Unconsciousness of unknown origin.

Contraindications
1. Intracranial bleeds.
2. Delirium tremens with dehydration.
3. Administration through the same infusion set as blood.
4. Unconscious (for oral Dextrose).

Drug Interaction
None

Administration
Oral: 12-25gm of orally administered glucose

IV:
- Adult:
  - 12.5 to 25gm 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).
  - D10 125-250ml per dose
- Pediatric:
  - Dilute D50 1:1 with sterile saline to make 25% solution (250mg/ml). Give 1-2ml/kg slow IV/IO push. May be given rectally (paramedic only). Pediatric dosage
maxes at adult dose.
  - D10 2.5-5ml/kg up to adult dose
- Neonatal:
  - Dilute D25 1:1 with saline to make 12.5% solution (120mg/ml). Give 2-4ml/kg
slow IV/IO push.
  - D10 2.5-5ml/kg per dose up to adult dose

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.
3. If patient also has suspected CVA, the lower starting dose should be used.
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**
Additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with Diltiazem HCl.

**Administration**
- Adult:
  - 0.25mg/kg as a bolus administered over 2 minutes (20mg is a reasonable dose for the average patient).
  - If response is inadequate, a second dose may be administered after 15 minutes at 0.35mg/kg.
  - These are maximum doses-titrate to effect of controlling heart rate.
- Pediatric:
  - Not usually used.

**Special Notes**
None.
Diphenhydramine HCL (Benadryl®)

**Class of Drug**
Antihistamine, H1 blocker

**Indications**
1. Allergic reactions
2. Anaphylaxis
3. Extrapyramidal Reaction
4. Motion sickness

**Contraindications**
Acute asthma (relative)

**Drug Interaction**
Additive CNS depression with alcohol, sedatives, narcotics

**Administration**
- Adult:
  - [20-50mg], slow IVP at a rate of 1ml/min or deep IM injection
- Pediatric:
  - [1-2mg/kg], slow IVP; deep IM injection with a maximum dose of 50mg
  - Pediatric dosage maxes at adult dose.

**Special Notes**
1. May have an immediate effect in dystonic reactions.
2. No early benefit in allergic reactions
Epinephrine (Adrenaline®) (1:1,000 and 1:10,000 Solutions)

**Class of Drug**
Sympathomimetic

**Indications**
1. Cardiac arrest
2. Symptomatic Bradycardia
3. Severe bronchospasm
4. Anaphylaxis
5. Croup

**Contraindications**
None when indicated.

**Drug Interaction**
Reduced effects with Beta-adrenergic blocker

**Administration**
- Cardiac Arrest
  - Adult: [1mg] (1:10,000) every 3-5 minutes IV preferred, may be given ET (2-2 1/2 times IV dose)
  - Pediatric:
    - Initial: IV/IO 0.01mg/kg (1:10,000)
    - ET 0.1mg/kg (1:1000)
- Bradycardia
  - Adult: [1mg] (1:1000) in 250ml NS or D5W administered at 2-10mcg/min
  - Pediatric: 1mg in 250ml (4mcg/ml) 0.1-1mcg/kg/min
- Bronchospasm/Anaphylaxis
  - Adult:
    - [0.3mg] (1:1,000) IM (Preferred) SQ (allowed)
    - [0.1-0.3mg] (1:10,000) IV or 1mg ET (IF SEVERE OR NO RESPONSE TO SQ/IM)
    - Repeat PRN
  - Pediatric:
    - [0.01mg/kg (1:1000)], IM (Preferred) SQ (allowed) to a maximum dose of 0.3mg standard pediatric dose is 0.15mg

Cont.
Epinephrine Cont.

- Croup-Administer Epinephrine 1:1,000 diluted in 3ml’s NS via nebulizer.
  - >2yr: 0.5mg/kg per dose (maximum of 5mg total administration)
  - <2yr: 0.25mg/kg per dose (maximum of 5mg total administration)

- Anaphylactic Shock IV/IO Infusion (Drip)
  - Adult: 1mg in 250ml (4mcg/ml), infuse at 2-10mcg/min
  - Pediatric: 1mg in 250ml (4mcg/ml), infuse at 0.1-1mcg/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.
3. All pediatric dosage maxes at adult dose.

**Epinephrine Drip**

Mix 1mg 1:1,000 Epinephrine in 250ml NS or D5W =4mcg/ml
Drip set: 60 drops=1ml

**Adult Dosage:** 2-10mcg/min

- 30 drops/min=2mcg/min
- 60 drops/min=4mcg/min
- 90 drops/min=6mcg/min
- 120 drops/min=8mcg/min
- 150 drops/min=10mcg/min

**Pediatric Dosage:** 0.1-1mcg/kg/min max of 10mcg/min

(Desired dosage in mcg/min x 60drops/ml) ÷ 4mcg/ml =Drops/min
Etomidate (Amidate®)

**Class of Drug**
Sedative-Hypnotic

**Indications**
Adjunct in rapid sequence intubation OVER 2 yr of age

**Contraindications**
1. <2 yr old
2. Pediatrics, at any age, with septic shock

**Drug Interaction**
CNS depressants.

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

**Special Notes**
1. Care must be given to both adult and pediatric patients in shock states. Specifically, septic shock is very concerning in the side effects. In these cases, it is best to use ketamine instead.
2. 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.
3. May Cause the following:
   a. Rapid and deep sedation
   b. Mild local burning and venous irritation at site of injection
   c. Myoclonus (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:
  - 50-100mcg IV, IO, titrated to pain relief, maximum 3mcg/kg.
  - Further doses per MEDICAL CONTROL approval.
- Pediatric:
  - 1mcg/kg IV, IO, titrated to pain relief, maximum 3mcg/kg.
  - Further doses per MEDICAL CONTROL approval.
  - Pediatric dosage maxes at adult dose.

**Special Notes**
1. Less nausea, histamine release than Morphine
2. Note 10-fold decrease in amount used: micrograms, not milligrams
Glucagon

**Class of Drug**
Hormone-hyperglycemic agent

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

**Contraindications**
1. Patients who will be unable to receive supplemental glucose 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 mixed with calcium.

**Administration**
Note: 1mg =1 unit

- **Hypoglycemia**
  - Adult: [0.5-1mg] IM, SQ, IVP, may repeat in 10-20 minutes if no response.
  - Pediatric: [25mcg/kg] IM, SQ, IVP, may repeat in 10-20 minutes if no response.
    - Pediatric dosage maxes at adult dose.
    - THE PATIENT MUST BE GIVEN SUPPLEMENTAL GLUCOSE ASAP; PO, IV, OR RECTAL.

- **Beta Blocker Overdose**
  - Adult: [3 to 10mg] IVP over 1 minute. It. May be followed by an infusion of 2-5mg/hr.
  - Pediatric: [0.1mg/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.
2. Glucagon is supplied in a powder and must be reconstituted by sterile water or saline, 1ml of normal saline for each 1mg of powder and shaken well.
Hydroxocobalamin (CYANOKIT®)

**Class of Drug**
Hydroxylated active form of Vitamin B12

**Indications**
Known or suspected cyanide poisoning (reference Carbon Monoxide Poisoning Protocol)

**Contraindications**
None

**Administration**
- Adult: 5gm over 15 minutes IV repeat x 1
- Pediatric: 70mg/kg single dose
- Pediatric dosage maxes at adult dose.

**Special Notes**
May experience transient hypertension
Hydroxyzine (Vistaril®)

**Class of Drug**
Mild anxiolytic agent with sedating and properties

**Indications**
Control of nausea and vomiting

**Contraindications**
1. Hypersensitivity
2. Pregnant

**Administration**
- Adult: 25-100mg IM.

**Special Notes**
None
Ipratropium Bromide (Atrovent®)

Class of Drug
Anticholinergic bronchodilator

Indications
Atrovent is used to treat reversible airway obstruction caused by:
1. Wheezing associated with asthma
2. COPD

Contraindications
Hypersensitivity to the drug or peanuts (soybean)

Drug Interaction
None

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

Special Notes
Should be used with caution in patients with narrow-angle glaucoma.
Ketamine

CLASS OF DRUG-Anesthetic, analgesic, sedative

**Indications**
1. Induction agent for DAI in patients over 2 yr old, especially in patients who are hypotensive as it increases sympathetic tone, and in patients with bronchospasm as it is a bronchodilator
2. Post intubation management sedation greater than 3 months old
3. Procedural sedation in patients greater than 2 yr old
4. Sedation in the agitated patient greater than 15 yr old
5. Analgesia greater than 2 yr old

**Contraindications**
Absolute:
1. Hypersensitivity to ketamine
2. Children <3 months old
Relative:
3. Evidence of acute cerebral herniation (blown pupil/extensor posturing)
4. Known pheochromocytoma or in patients when an increase in BP would be of clinical concern
5. Can increase toxic effect of tricyclic antidepressants and cocaine
6. Schizophrenia (try to avoid in known schizophrenics)
7. Acute narrow angle glaucoma or ocular injury, possible increase in intraocular pressure (IOP)

**Adverse Effects**
1. Laryngospasm, can lead to respiratory arrest requiring RSI (neuromuscular blockade necessary)
2. Increases salivation
3. Possible increased intracranial pressure (ICP) and IOP
4. Cardiovascular: sympathomimetic response: hypertension, tachycardia, increased myocardial Oxygen demand
5. Mild cardiac depressant
6. Emergence reactions
7. Nausea and vomiting
8. Rapid administration can cause apnea. Should give over 1 minute

Cont.
Ketamine Cont.

**Administration**

1. DAI: 2mg/kg IV/OI over 1 minute. May be repeated once. (1mg/kg IV for severe hypotension MAP <50)
2. DSI: 1mg/kg IV/OI over 1 minute. May be repeated once at 0.5mg/kg
3. Procedural sedation: 0.5mg/kg IV/OI over 1 minute. May be repeated once.
4. Agitated patient sedation: 4mg/kg IM once or 1mg/kg IV/OI, may repeat 0.5mg/kg IV/OI once
5. Post intubation management sedation: 1-2mg/kg IV/OI. May repeat once or 4mg/kg IM
6. Analgesia Adjunct: 0.25mg /kg IV/OI, may repeat once. Use when additional analgesia required after opiate use.

**Special Notes**

1. All patients who receive ketamine must be on O2, ETCO2, and cardiac monitors as soon as possible
2. Analgesia: use after initial opioid dosing.
3. Emergence reaction: may be found with any dosing, more likely with higher doses. Characterized by hallucinations, delusions, disorientation. Treat with low dose Benzodiazepines per formulary.
4. Agitated patient/excited delirium: agent of choice in markedly agitated, difficult to control patient
5. Note that IM dosing for agitation is equivalent to dosing used for DAI. Airway and respirations must be continually assessed
6. Post intubation management, consider for patients with hypotension or bronchospasm
7. Maintains airway reflexes and respiratory drive
8. 100mg/ml concentration may be given IM. Dilute 1:1 with D5W or Normal Saline to make 50mg/ml for IV use.
9. Maximum IM single dose 500mg.
Ketorolac (Toradol®)

**Class of Drug**
Non-steroidal anti-inflammatory (NSAID)

**Indications**
Pain

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

**Administration**
- Adult: 30mg IV
  - 15mg IV for patient >65 yr old
- 60mg 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 HCL (Xylocaine®)

**Class of Drug**
Antidysrhythmic, local anesthetic

**Indications**
1. Sustained ventricular tachycardia
2. Ventricular fibrillation/pulseless ventricular tachycardia
3. IO anesthesia

**Contraindications**
1. Hypersensitivity
2. High-degree AV Blocks

**Drug Interaction**
Additive cardiac depression with phenytoin, quinidine, procainamide, and propranolol

**Administration**
- IV Bolus technique
  - Adult:
    - Ventricular tachycardia: [1 -1.5mg/kg]. If VT persists, [0.5-0.75mg/kg] every 3-5 minutes, up to 3mg/kg total. Start Lidocaine infusion if VT converts (see below).
    - Ventricular fibrillation and pulseless VT: [1-1.5mg/kg] (2-2 1/2 times normal dose, ET) followed by defibrillation. May repeat to a max dose of 3mg/kg. Start Lidocaine infusion if VF converts (see below).
  - Pediatric:
    - Ventricular tachycardia: [1mg/kg]. If VT persists, start drip (see below). May re-bolus x 1 if drip delayed by greater than 15 minutes.
    - Ventricular fibrillation and pulseless VT: [1mg/kg]. May rebolus one time if drip is delayed by 15 minutes
    - Start drip (see below).
    - ETT is 2-2 1/2 times IV dose

Cont.
Lidocaine HCL Cont.

- IV Drip technique
  - Adult:
    - Mix 1gm of Lidocaine in 250ml D5W or NS for a 4mg/ml concentration
    - If up to 2mg/kg has been administered, set drip at 2mg/min
    - If 2mg/kg has been administered, set drip at 3mg/min
    - If 3mg/kg has been administered, set drip at 4mg/min
    - A second bolus after 10 minutes may be given per physician order.
  - Pediatric:
    - Mix 120mg of Lidocaine in 100ml D5W
    - Set drip at 20-50mcg/kg/min
    - Pediatric dosage maxes at adult dose.

- IO Anesthesia
  - Adult:
    - 40mg of 2% Lidocaine
  - Pediatric:
    - 1mg/kg up to 40mg adult dose.

⚠️ Special Notes

For patients over 70 yr 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 torsade de pointes.
3. Acute asthma refractory to other more conventional treatment, or when the effects of beta-adrenergic medications contraindicate their use.
4. The need to stop contractions. This should only be done under the direction of the primary present Obstetrician and or MEDICAL CONTROL.

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

**Drug Interaction**
Potentiates neuromuscular blocking agents

**Administration**
- Refractory ventricular fibrillation and pulseless ventricular tachycardia: 2gm IVP
- Refractory ventricular tachycardia, or wide complex tachycardia, 2gm in 250ml in NS over 15-20 minutes
- Treatment of seizures associated with Eclampsia:
  - Eclampsia no longer seizing: 4gm IV in 100 or 250ml NS over 15-20 minutes
  - Eclampsia with active seizure: 6gm IV in 100 or 250ml NS over 15-20 minutes
- Acute asthma:
  - Adult: 2gm in 250ml in NS over 15-20 minutes
  - Pediatric: 50mg/kg up to adult dose, IV over 15-20 minutes
- Torsade de pointes: 2gm IV push
- Tocolysis of Labor: 6gm SIVP in 250ml over 15-20 minutes
- Pediatric dose for cardiac arrest is 25-50mg/kg max of 2gm
- If no IV/IO access contact MEDICAL CONTROL for IM dosing

**Special Notes**
1. Monitor deep tendon reflexes often, esp. in those patients receiving maintenance drip.
2. Respiratory depression/arrest, hypotension, areflexia may be caused by too rapid administration or overdose of Magnesium Sulfate. These effects can be reversed by Calcium Gluconate 1-gram SIVP over 5-10 minutes
3. All pediatric dosages max out at adult dose.
Methylprednisolone (Medrol®, Solu-Medrol®)

**Class of Drug**
Glucocorticoid; anti-inflammatory; immunosuppressant

**Indications**
1. Asthma/COPD Exacerbation
2. Anaphylaxis

**Contraindications**
Hypersensitivity

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

**Administration**
- 2mg/kg IV, IO, IM up to 125mg

**Special Notes**
None
Morphine Sulfate

**Class of Drug**
Narcotic analgesic

**Indications**
1. Analgesia for acute pain
2. Acute myocardial infarction
3. 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.
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.

**Administration**
- Adult: [2-20mg] slow IV push until desired effect achieved (Use lowest effective dose to avoid complications)
- Pediatric: [0.05mg/kg/dose to a max dose of 0.2mg/kg] slow IVP titrated to effect.
- Pediatric dosage maxes at adult dose.

**Special Notes**
1. Take vital signs before and after administration.
2. Often causes vomiting; administer slowly.
3. Contact MEDICAL CONTROL for orders above 20mg of Morphine.
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**
May induce narcotic withdrawal

**Administration**
- **Adult:**
  - 0.4mg-4mg IVP, IM, SQ, ET, IN. Titrate to respiratory effort/rate. May be repeated at 2 minutes if needed.
  - EMTs IN max is 4mg
- **Pediatric:** 0.1mg/kg IV, ET, IM, SQ, and IO
  - 2mg max. single dose. May be repeated every 2 minutes PRN.
  - Pediatric dosage maxes at adult dose.

**Special Notes**
1. The patient may quickly become conscious and combative.
2. **DO NOT** administer Naloxone to infants of narcotic addicted mothers, or when this is in question.
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
3. Recent or concurrent medication use of phosphodiesterase inhibitors

**Drug Interaction**
1. Additive hypotension with beta-adrenergic blockers, antihypertensives, calcium channel blockers, and phenothiazines.
2. Tricyclic antidepressants and antihistamines may interfere with under the tongue/mouth absorption.

**Administration**
- Adult:
  - Sublingual: [0.3-0.4mg] tablet/spray. Repeat every 3-5 minutes as needed.
  - Ointment: 2” to chest wall with MEDICAL CONTROL contact.

**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 110 mmHg.
Norepinephrine (Levophed®)

Class of Drug
Potent vasoconstrictor (pure alpha)

Indications
1. Severe hypotension, shock
2. Spinal/Neurogenic Shock
3. Septic Shock unresponsive to fluids
4. Cardiogenic Shock

Contraindications
None in above indicated setting

Drug Interaction
None

Administration
- Adult:
  - Standard concentration is 16mcg/ml (4mg/250ml D5W)
  - 8-12mcg/min Titrated down to 2-4mcg/min to BP between 90-110 to maintain LOC, HR, and end organ perfusion to effect. Once stable titrate down to 2-4mcg/min if BP allows.
- Not to be used in Pediatric patients

Special Notes
1. Providers should establish systolic BP 90-110
2. Use large peripheral vein for administration
Ondansetron (Zofran®)

**Class of Drug**
Serotonin receptor antagonist; antiemetic

**Indications**
1. Nausea
2. Vomiting

**Contraindications**
1. Known hypersensitivity
2. Known prolonged QT interval

**Administration**
- Adult: 4mg IV/IO
- 1-12yr: 2mg IV/IO

Orally Dissolving Tablets
- Adult: 4mg
- Pediatric: >6 months 0.1mg/kg up to 4mg (adult dose)

**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.
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 and/or Drug Interactions**
None

**Administration**
- Adult & Pediatric:
  - Dosage Indications
    - Low flow (NC 1-2L/Min) - Patients with chronic lung disease with unusual dyspnea or other problems (see below)
    - Moderate flow (NC 4-6L/Min) - Titrated to level of distress. PaO2 >94%
    - High flow (NRB 10-15L/Min) - Severe respiratory distress, either medical or traumatic, shock, or at provider’s discretion

**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, an NRB is not necessary. Titrate O2 administration to normal O2 saturation.
Procainamide Hydrochloride (Pronestyl®)

**Class of Drug**
Antidysrhythmic

**Indications**
1. Sustained ventricular tachycardia (with pulse) refractory to Lidocaine
2. Management of ventricular dysrythmias when Lidocaine contraindicated

**Contraindications**
1. Pre-existing QT prolongation or torsade 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: [20-30mg/min] IVP until:
  - The dysrhythmia is suppressed
  - Hypotension ensues
  - The QRS is widened by 50% of its original width
  - A total of 17mg/kg of the medication has been administered
  - Infusion [1gm] in 250ml D5W or NS at 1 to 4mg per minute
- Pediatric: Not currently recommended or given in prehospital settings.

**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 <2yr 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**
- Adult: [12.5-25mg] PO, IM, IV, or PR
- Children >8yr. [0.25mg/kg] PO, IM or PR
- (Use should be limited to prolonged vomiting in children). Ondansetron is a better choice.
- Pediatric dosage maxes at adult dose.

**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 cause marked drowsiness
Rocuronium

**Class of Drug**
Non-Depolarizing Neuromuscular Blockade Agent

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

**Contraindications**
Hypersensitivity

**Drug Interaction**
None

**Administration**
Adult & Pediatric: 1mg/kg IV

**Special Notes**
1. Onset of action is 1 minute
2. Duration of paralysis is approximately 30 minutes
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 online MEDICAL CONTROL.
3. Overdoses of tricyclic antidepressants
4. Crush Injuries
5. Hyperkalemia

**Contraindications**
Suspected metabolic or respiratory alkalosis

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

**Administration**
- Cardiac Arrest
- Adult & Pediatric: [1 mEq/kg] (max of 50 mEq) IVP
- Other special circumstances, such as tricyclic antidepressant overdose
- Adult & Pediatric: [1 mEq/kg] (max of 50 mEq), followed by repeat bolus x 2 every 10 minutes if needed

**Special Notes**
1. This agent is no longer a first-line drug for cardiac arrest as per ACLS algorithms.
2. Each amp of Sodium Bicarbonate contains 44 or 50 mEq of Na++. In persons with cardiac disease this will increase intravascular 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 gases should be obtained as soon as possible to direct further therapy.
5. Proper CPR, ventilation, defibrillation and drug therapy is more important than Sodium Bicarbonate therapy
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
6. Prior spinal cord injury or stroke
7. Hyperkalemia, known or suspected (missed dialysis)

**Drug Interaction**
None

**Administration**
Adult & Pediatric: 1.5-2mg/kg IV, IO

**Special Notes**
1. May exacerbate hyperkalemic states
2. Be sure to use some form of sedation.
3. Consider pretreatment with or be prepared to administer Atropine (0.02mg/kg) to pediatric patients <6 yr old who experience bradycardia not due to hypoxia.
Topical Ophthalmic Anesthetic (Proparacaine-Opthaine®, Alacaine®)

**Class of Drug**
Topical/local ophthalmic anesthetic

**Indications**
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**
None

**Administration**
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 drug.
Vecuronium (Norcuron®)

**Class of Drug**
Long acting paralytic (non-depolarizing)

**Indications**
Continued paralysis after Succinylcholine administration and successful intubation if necessary

**Contraindications**
Hepatic disease

**Administration**
Adult: 0.1mg/kg IV

**Special Notes**
1. Remember to use some kind of sedative in conjunction with the paralytic
2. Paralysis will mask seizure activity, use with caution in susceptible patients
APPENDIX ∑ - Summary of revisions

12/31/2019 – Version 4.0
- Major Update – multiple edits throughout protocols, update algorithms, as well as continuity and formatting changes
- Add Analgesia and Sedation in the Non-Intubated Patient Protocol
- Add LVAD Protocol
- Add Anti-Emetics Protocol
- Add DSI Protocol and Update RSI Protocol
- Add JITT Protocol
- Add Documentation Guidelines
- Add Non-Transport Reporting Requirements
- Sections with major edits include: Trauma Team Activations; OBGYN Emergencies; CVAs; SGAs; Spinal Motion Restriction; Dosing for Dextrose, Epinephrine and Narcan; and Pediatric Wide Complex Tachycardia.
- Remove Pericardiocentesis
- Remove Barbiturates, Dopamine, and Vasopressin

8/12/2018 - Version 3.1
- Corrected “Medical Director” to “Delegate Physician” on both Cricothyrotomy protocols
- Corrected typographical error in Intraosseous procedure to reflect more accurate landmark

7/23/2018 - Version 3
- Received approval from DOH. Final revision and update ready for publishing.

6/09/2018 -
- Managed formatting to reduce number of pages
- Removed Checklists per Dr. Cooper request
- Updated procedures to Skill Sheet format

6/1/2018 -
- Added revision tracking box
- Moved airway protocols from Appendix A into the body of the docx
- Inserted Maintenance of IV for EMT protocol
- Inserted SCDC Protocols